Community Energy in the UK

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Anne Chapman

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Anne Chapman

Contents

Foreword

For the transition to a sustainable economy, for establishing a real climate policy, we have to change our energy system into a fully renewable one. This transition is at the same time a great opportunity to achieve the goal of energy democracy. We should remember that when the green movement protested against nuclear power in the seventies, it was not only because of the ecological risks of nuclear energy. It was also a rejection of a - by conception - very centralised top-down energy system. To put it simply: nuclear plants have to be managed like military bases, while wind turbines can be community owned.

The good news is that technological developments are now providing many more opportunities for a decentralised energy system that can be organised in a democratic manner. In this energy system citizens' cooperatives and local authorities can play a crucial role, developing public-civil partnerships.

Combined with these favourable technological developments, a crucial insight is that it was citizens – more than businesses and in most cases governments – who took the lead in the required energy transition. Thus, it was citizens – in a small village in the North of Denmark- who built the first wind turbine as an alternative to a planned nuclear plant, and now 40 years later, they have organized themselves nationally and also in the European Federation, REScoop.

Studies show that by 2050, around 45% of all EU households could be producing their own renewable energy, and more than a third of our energy could come through renewable energy cooperatives. This constitutes a huge opportunity for regional economic development, as locally-owned renewable energy projects deliver eight times the value of projects owned by private companies that are not from the area.

This possible bright future is an important reason for the Green European Foundation to support the transnational project ENERGY DEMOCRACY: Changing the Energy System. In this project, green foundations from the United Kingdom, Greece, Macedonia and Belgium share their experiences and ideas and develop policy proposals to enable a transition to a renewable and democratic energy system.

In this first report, on the situation in the United Kingdom, we can read how citizens have been investing in renewable energy projects while governments have sometimes helped, but often hindered the transition to renewable energy. It is clear that we need other and better politics that enable a fruitful synergy between public authorities and civil engagement.

Dirk Holemans
Project coordinator

Summary

Community Energy in the UK can be said to have started with Baywind co-operative, founded in 1996 by a Swedish company who had developed community-owned wind farms in Sweden and in 1996 built a wind farm in Cumbria, North West England. In 2002 Baywind set up Energy4All to help other communities develop and own renewable energy systems.

There is another beginning though, in the 'low carbon communities' groups that sprang up in towns across the UK from about 2005, in response to increasing concerns about climate change. These groups worked on helping their communities to reduce their carbon emissions. Many saw developing and owning renewable energy systems as a way to both reduce emissions and provide funding for other activities. Installing solar photovoltaic (PV) systems on leased roofs was often the most straightforward way to do this.

In 2010 a feed-in tariff (FIT) system of support for small-scale renewable energy generation was introduced and falling prices of solar PV meant that these systems became financially viable, even without payment for the electricity by the host organisation. Several community-energy organisations sprang up and installed solar PV systems. However, there were many more that started on the process but were not able to get to the point of installing systems before, in October 2011, the government announced an unexpected cut to the FITs rate of around 50%, making projects they were working on unviable. However, solar PV prices continued to fall and systems became viable if organisations hosting them paid for the electricity. Community energy grew, and in 2015 there were thought to be 150-200 community energy organisations, owning solar, wind, hydro and biomass boilers.

However, the growth in community energy was brought to a halt in 2015 when the newly elected conservative government announced drastic cuts to its support for small scale renewable energy. These took about a year to have an effect, but meant that the number of new community energy groups fell from about 30 a year to just one in 2017. Community energy does continue to grow, though primarily through the acquisition of existing generating capacity (particularly large solar farms, but also large scale wind), with some new installations by existing, established organisations.

Community energy is working on new models, including incorporating battery storage with solar PV, electric vehicle charging and ways to sell directly to consumers (something that is difficult to do in the UK regulatory context). However, the ending of FITs in March 2019 threatens to make it difficult for small scale generators to get any payment at all for electricity they supply to the grid.

This review of community energy in the UK concludes that the things needed for it to flourish are:

- Financial viability of small-scale renewable energy systems;
- Motivated and committed people, to set up community energy organisations and in organisations that have control of buildings or land suitable for renewable energy;
- Sources of help and expertise for those people;
- Legal structures which enable co-operative ownership of assets;
- Stability of financial incentives and policies on renewable energy.

1. Introduction

This report is part of the Green European Foundation project, Energy Democracy, Changing the Energy System. It tells the story of people in the UK who have attempted to gain ownership of the bits of their energy system available to them – to meet the challenge posed by climate change – and to help people struggling with the cost of the energy needed to keep themselves warm and healthy.

It is of course, only a partial account and I am aware of much that I have left out. I have tried to give a sense of the trials and tribulations that those involved have experienced, and to draw some lessons on what is needed for community energy to thrive.

The United Kingdom is made of four nations: England, Wales, Scotland and Northern Ireland. Various issues, including the planning system, are devolved in Wales, Northern Ireland and Scotland to the Welsh Assembly, Northern Ireland Assembly and the Scottish Parliament, whilst planning in England is the responsibility of the UK government. Scotland has its own legal system while many laws and regulations do not apply in Northern Ireland. I live in England, so this report does, I am afraid, have an England bias. The planning system is much better for renewable energy in Wales and Scotland than it is in England, and there is much more support for community energy in those nations, with Scotland in particular having a very supportive framework to enable communities to take ownership of land and other assets. Community energy is least developed in Northern Ireland.

2. Beginnings:

Baywind 1996

In 1993 a young English architect, Keith Boxer, went to live with his Swedish girlfriend on Gotland, an island in the Baltic. There he got to know a group of anti-nuclear campaigners who were pioneering local community ownership of wind energy. They had built Sweden's first co-operatively owned wind farm on Gotland and had set up a company, Vindkompaniet, to do more. Keith had read a report by Friends of the Earth which said that in Denmark there was support for wind energy when it was owned locally rather than by big utility companies. He saw that the co-operative ownership model being developed in Sweden would give ownership and control to local people and enable people living near wind turbines to benefit from them. He suggested that Vindkompaniet look for sites in the UK, a place that has lots of wind, and began to look for possible sites.

Meanwhile, a dairy farmer at Harlock Hill, near Ulverston in Cumbria was suffering from lots of power cuts. He thought that this problem would be solved if he had some wind turbines on his land and contacted people in the UK who were developing wind sites, one of which put him in touch with Keith Boxer. In 1994 Keith moved to Barrow to set up an office there to do the mountain of work needed to get planning permission for a wind turbine on Harlock Hill and Vindkompaniet set up a UK subsidiary, The Wind Company Ltd.

First they had to get a contract under the Non-fossil fuel Obligation (NFFO).1 This was the government support scheme for renewable energy. It had been introduced in 1990, primarily as a way of supporting nuclear power. Every two years there was an auction at which companies wishing to generate renewable energy bid for the price they wanted per MW hour of electricity, with different auctions for different technologies. Those who bid for the least subsidy, which for wind were, inevitably, the very big projects, were the ones who were successful and were awarded 20-year contracts. Keith Boxer persuaded the Energy Technology Support Unit (ETSU), who were looking at how smaller scale and community renewables could be encouraged, to introduce a specific band for 'small wind' in the NFFO process. This happened in the third round, which took place in 1994,2 and The Wind Company

were successful in obtaining a contract for the Harlock Hill wind farm.

Planning permission for the wind farm was granted in 1996, though for just five rather than the seven turbines originally envisaged. Finance to construct the wind farm was obtained from Triodos bank and while construction was in progress The Wind Company set about developing a model by which the wind farm could become co-operatively owned. They got a grant of £50k from the Department of Trade and Industry's Energy Technology Support Unit (ETSU) to help with this. This was partly used to pay for legal advice from Malcolm Lynch, a Leeds-based solicitor who is an expert on co-operatives. He helped them set up an Industrial Provident Society (IPS), called Baywind (the wind farm is just north of Morecambe Bay). An IPS is a form of co-operative. People join it by buying shares in the society, but regardless of how many shares they own, each member has just one vote.

The Baywind share offer was launched in 1996. It was advertised on the local radio, by leaflets put through doors in Cumbria and North Lancashire, by events outside supermarkets and then by advertising nationally in ethical/ environmental publications. The aim was to raise enough to buy one of the five turbines, then later do another share offer to buy another one, etc. However, in the event that first share offer raised £1.2 million, enough to buy two of the five turbines.

To ensure that the whole community benefitted from the wind farm, not just those who could buy shares, Baywind set up Baywind Energy Community Trust to provide funding for energy efficiency measures and other projects in the local area. The Trust receives 0.5% of Baywind's income and in 2017 gave out £12,000 in grants, for everything from the refurbishment of a local community hall to support for a local newsletter.[3]

After setting up Baywind, The Wind Company stayed in Barrow for a short while looking at other sites, trying to get planning and NFFO-contracts for wind farms. However, as Keith Boxer said, "Government policy meant that the wind industry in the UK was very stop-start. Not only was it very difficult to get planning permission, but the NFFO process was uncertain and the auctions only took place every two years. If you were unsuccessful you would not have any projects to work on for two years." Unfortunately, The Wind Company did not manage to get any further projects through planning and the NFFO process and was wound up.

This left Baywind with one junior, part-time member of staff and an inexperienced board of directors. Nonetheless, they did a second share offer in 1998/99 which raised £0.67 million to buy one of the turbines at another nearby site and in 2001 Baywind purchased the remaining three turbines at Harlock Hill, using a loan from the Co-operative Bank. They kept being asked by people for help and advice on how to do what they had done. To meet this demand Baywind set up a new organisation in 2002 with money from Baywind and some grant funding. This organisation, **Energy4All** (see Box 1), has worked with many communities helping them to develop, own and operate renewable energy projects. Initially they developed

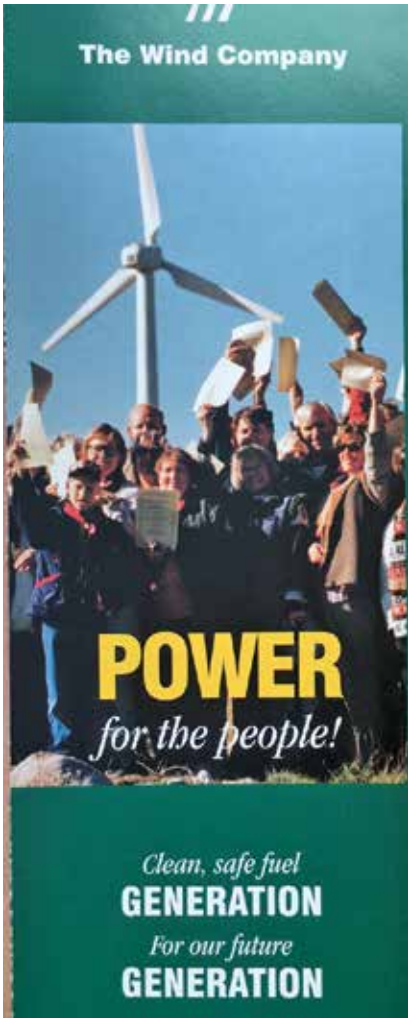


Image provided by Keith Boxer

Leaflet produced to advertise the Baywind Share Offer.

1. https://www.iea.org/policiesandmeasures/pams/unitedkingdom/name-21717-en.php
2. See http://webarchive.nationalarchives.gov.uk/20090609054208/http://www.berr.gov.uk/files/file39336.pdf
3. https://www.baywind.coop/news
4. https://www.westmill.coop

Box 1: Energy4All

A co-operative founded in 2002 based in Barrow-in-Furness, north-west England.

Has set up 24 member co-operatives who are themselves members of Energy4All which together have around 14000 individual members and own 30 MW of renewable energy generation and have raised around £70 million in funds for renewable energy installations.

Employs 15 staff.

Energy4All helps communities develop renewable energy projects, set up co-operatives to own them, obtain planning permission and funding, at least part of which will be through a share offer. The co-operative then becomes a member of Energy4All and pays Energy4All for its ongoing administration. This admin charge also helps to support the cost of developing new projects.

Until 2014 Energy4All co-operatives used a version of the Industrial and Provident Society rules that had been developed for Baywind and did regulated share offers, in which the shares were transferrable (i.e. members could sell their shares to other people). Regulated offers involve considerable cost as they need to be checked by expensive lawyers, so are not suitable for smaller projects. However, Energy4all's use of regulated offers was a deliberate strategy to build confidence. Andrew King, former Chair of Energy4all said: "from day one we worked on the basis that we had to combine co-op ethics and sound business practice/ profitability and wherever possible not to rely on grants".

Energy4All has built up a considerable database of people who are members of their co-operatives or interested in investing in renewable energy and have a good track record of developing and running successful community energy projects. As Annette Heslop, Energy4All's finance director said: "Our offers now tend to be oversubscribed. People have confidence we will deliver, and returns of 4-5% are attractive compared with interest rates you can get elsewhere."

Energy4All is one of the partners in RESCOOP MECISE, a project development assistance project under the Horizon 2020 programme of the European Commission, see http://www.rescoop-mecise.eu. They won an Ashden Award in 2012.

https://energy4all.co.uk

www.ashden.org/winners/energy4all

wind projects, but more recently have done solar, hydro and biomass heating. One of their first projects was Westmill in Oxfordshire, working with a green-minded land owner, Adam Twine, who had a long battle to get planning permission for a 5-turbine wind farm.[4] Energy4All have done several projects, primarily in Scotland, with the commercial wind developer, Falck Renewables. Falck develop the wind farm and once it has the relevant permissions Energy 4All set up a local co-operative which raises money through a share issue to buy a share of the revenue from the wind farm, the size of the share being dependent on how much is raised. They have also worked successfully with Edinburgh Council on the Edinburgh Solar Co-op. Not all their co-ops are based in a particular geographic area: the Schools Co-op, for example, does solar PV systems on local schools, with the surplus, after payment of costs and share interest to members, going to those schools;[5] the M&S Energy Society is a partnership with the retail chain, Marks and Spencer, and raised money from M&S customers and the public to install solar PV systems on eight M&S Stores across the country in 2016.[6]

In 2008 Energy4All received three years' funding from Advantage West Midlands (AWM) to set up community renewable energy projects in the rural West Midlands. They employed Jon Halle, and later Eithne George, who set up an office in Ludlow in Shropshire and began looking for projects. They worked on anaerobic digestion and hydro projects as well as wind. However, it was difficult to secure the feed-stock needed for anaerobic digestion over the long term and there was an increasingly well-organised opposition to wind turbines, with the result that in the end they failed to get any through the planning system. Another restriction was that the grid in rural areas was often too weak to be able to accommodate anything but the smallest renewable energy systems (see Box 2). The projects that they were finding were smaller in scale than would be viable under the Energy4All model: solar photovoltaic systems on roofs of community buildings and small scale hydro. These became financially viable after the introduction of the Feed-in tariff in 2010 (see Box 6), provided the share offer and ongoing administration costs could be reduced. So in 2011, when the AWM funding ran out, Jon and Eithne set up **Sharenergy** as an independent co-operative, working in much the same way as Energy4All, but focussing on smaller projects. The societies they set up sold withdrawable shares, which have become known as community shares (see Box 3). They have now worked with around 30 community groups, on wind, solar, hydro and biomass heating projects and raised over £20 million through share offers.

5. https://schools-energy-coop.co.uk

6. https://www.mandsenergysociety.com

7. See https://www.sharenergy.coop

Box 2: The Electricity Grid in the UK

The electricity grid in the UK was built to take electricity from predominantly centrally located large, coal-fired power stations, to businesses and homes across the country. The high-voltage transmission network is owned and operated by National Grid plc. The low voltage distribution network, which takes power into homes and businesses, is owned by regional Distribution Network Operators. These are private companies, who are monopolies within their region, regulated by Ofgem.

An electricity system supplied by renewable energy will consist of smaller, more dispersed generators. Renewable energy requires land, and the land is in rural areas. But many rural areas have a weak distribution network so require upgrading to be able to accommodate the energy from renewable generation. The DNOs are required to connect renewable generators but, except for small, domestic systems, they can charge the generator for work required to upgrade the distribution network so it can cope with possible loads. This can result in one farmer being charged, say, £5k to connect a 50 kWp wind turbine, and their neighbour, who applies later, being quoted £100k because the first farmer had used up the capacity in the local distribution network and extensive work would now be required to connect a second turbine. The need to pay for expensive upgrades means that renewable energy developers have had to propose large systems which can cover the costs of such work.

The amount it will cost to connect a renewable installation to the grid is difficult to predict and it can take up to 3 months to get a quote. The system of getting quotes is difficult for the non-expert to understand.

In the last few years the DNOs have become better at engaging with community energy organisations. What is required of them is changing, which is reflected in their shift to become Distribution System Operators: operators of an active distribution system, involving demand management and storage as well as dispersed generation and consumption.

Heartland Community Wind, a Sharenegy project.

Box 3: Community Shares

Community Shares are shares in Societies. These were known as Industrial and Provident Societies, but following the 2014 Co-operative and Community Benefit Societies Act, are either:

- community benefit societies (CBS) - exist to benefit a defined community
- or co-operative societies (CS) – exist to benefit their members.

In both there is one member one vote, regardless of the number of shares a person holds. Both are considered to be forms of co-operative by Co-operatives UK. Societies are registered with the Financial Conduct Authority (FCA) who in 2014 issued guidance on the difference between a CS and a CBS. This said that a CS should trade with its members – the basic model being a consumer co-operative. This is not possible for most energy co-operatives in the UK, so since 2014 community energy organisations have generally been CBSs.

Societies can raise capital by issuing shares. Shareholders become members and the society is owned jointly by its members. Shareholders are paid interest on their shares. This is a charge for the use of the capital rather than a distribution of the profits of a society and legislation states that it should be no more than is necessary to 'attract and retain the capital'. A CS can distribute profits to members by payment of a dividend, which is related to the scale of their transactions with (e.g. purchases from) the society. A CBS should either reinvest its profits or use them for the benefit of its community.

Societies can sell transferable shares, which members can sell to other people, but most societies only sell withdrawable shares. These can only be sold back to (or withdrawn from) the society, and have become known as community shares. Societies are governed by their rules and most societies have rules which say that they can suspend share withdrawals if they do not have sufficient capital. The value of shares can be written down by a society, but they cannot go up in value if the business is successful. Because shares can only be sold back to a society the society has control over who becomes its members. Many community share offers, for example, give priority to those who are local to the project for which funding is being sought.

Because withdrawable shares cannot be traded the legislation governing public offerings of securities in the UK does not apply to them. Offers of community shares are therefore unregulated, avoiding the considerable costs associated with regulated offers. This also means that there is no protection for those buying shares: the only recourse would be civil proceedings against the directors of a society for misleading information in the share offer document.

The financial crash in 2007/8 led to a decline in trust in the banks and very low interest rates. People were therefore open to the idea of community shares: they provided people with something good to do with their money which paid a higher rate of interest than that being offered by banks or building societies.

The Community Shares Unit (CSU) was launched in 2012, building on previous work which looked at the growing number of societies which were using share offers to raise capital. It is a joint initiative between Locality and Co-operatives UK with the objective of:

- supporting enterprises,
- promoting good practice and
- raising awareness of community shares as a sustainable funding mechanism for community enterprises.

The CSU produces the Community Shares Handbook, which sets out the relevant legal requirements and voluntary good practise standards for societies. It has also established the Community Shares Standard Mark. This can be awarded to share offers that follow best practice. See http://communityshares.org.uk.

3. Beginnings:

Low Carbon Communities 2005-2010

In the mid 2000s concern about climate change in the UK was growing.

Many local community groups formed about this concern. Some of these were part of transition town groups.8 Others came together after seeing Al Gore's film, An Inconvenient Truth, released in 2006. The government too was talking about climate change. In 2005 the UK prime minister, Tony Blair, put climate change on the agenda of the G8 and the EU. In 2008 the Climate Change Act was passed with all-party support after extensive lobbying by Friends of the Earth. This set targets to reduce greenhouse gas emissions by 34% by 2020 and 80% by 2050. It required government to produce 5-year carbon budgets and set up the Committee on Climate Change9 to provide an independent view on the budgets and the government's plans for meeting them. The government required local authorities to come up with climate change strategies to reduce emissions of greenhouse gases in their areas and required all public sector organisations in a locality to work together in 'Local Strategic Partnerships'.

Climate change is something we all contribute to, and people wanted to do something to reduce their own impact, and that of their community: they wanted to become a 'low carbon community'. There were groups such as Going Carbon Neutral Ashton Hayes, Climate Friendly Bradford-on-Avon, Low Carbon West Oxford, Stretton Climate Care, Dorchester Climate Project, Sustainable Charlbury, South Lakes Action on Climate Change and many others, including one that I helped set up, LESS (see Box 4). Local Green Party members and councillors were often key members of these groups. They set about doing energy audits of people's homes and community buildings, calculating carbon footprints, and providing advice on how to reduce energy use. Groups often got funding and other support from their local authorities, local strategic partnerships or the sustainability funds of AONBs. The Energy Saving Trust[10] ran a programme called Community Action for Energy (CAfE) which, amongst other things, organised conferences to bring all the different groups together. It was at one of these, in 2008, that I heard about Low Carbon West Oxford (see Box 5) and their plans to lease a roof for a solar PV system. A Low Carbon Communities Network was set up in 2008 to be a voice for all these groups and enable them to learn from each other.

8. The transition town concept had been developed in Kinsale, Ireland in 2004, but was taken to Totnes in Devon by Rob Hopkins in 2006. Transition groups sprang up all over the country in the next few years. They emphasized practical action to increase self-sufficiency and combat the impact of peak oil, climate chaos and economic instability – see https://transitionnetwork.org.

9. www.theccc.org.uk

10. See https://en.wikipedia.org/wiki/Energy_Saving_Trust. Accessed 27 August 2018.

Box 4: LESS

I was one of the founder directors of LESS, a Community Interest Company (CIC) set up in 2007 with funding from Lancaster District LSP to do 'climate change advice'. We covered energy and local food, giving advice to the public at a market stall which we took to various locations. Initially LESS stood for 'Local and Effective Sustainable Solutions' but after a while we ditched that mouthful and just called ourselves LESS, with the strapline, 'Promoting Sustainable Living'.

In 2009 we received funding from the Arnside and Silverdale AONB sustainable development fund to do a project called 'Connect to your Carbon'. This involved a series of events in the AONB area on how people could reduce their carbon footprint. We also did a project for the LSP looking at how Lancaster District could meet the government's green house gas emissions reduction targets.

In 2010 we managed to get funding from an energy company and a charitable trust to set up the Home Energy Service, based on the Household Energy Service in Bishops Castle, Shropshire. This had been set up by a community organisation, the 'Wasteless Society', in partnership with the Marches Energy Agency, a charity set up by Shropshire County Council in 1995. The Home Energy Service trained volunteers to visit people in their homes and give advice on how to reduce energy use and carbon emissions. It was particularly focussed on helping those in fuel poverty, taking referrals from other agencies and advice services.

Also in 2010/11 we were part of 'Halton Carbon Positive', which was one of the winners of DECC's 'Low Carbon Communities Challenge' (Halton is a village 3 miles east of Lancaster). Our part of the project involved organising an 'Energy Fair' at the Halton community centre, doing energy audits of community buildings and installing a solar PV system on the roof of an industrial building in Halton. LESS now has a small amount of long term funding, from the Feed-in Tariff payments for that system.

Lack of sufficient funding meant that LESS had to cease doing work on energy in 2016 and now only works on local food projects.

Aside from large scale wind projects developed by Energy4All, there were two community owned hydro projects installed before 2010. The first was Torrs Hydro[11] in New Mills, south of Manchester, installed in 2008 with £100k from a share offer (from 208, mostly local shareholders), £140k in grants and a £70k loan from the Co-operative Bank. The project was viable because the local Co-operative Food store agreed to buy the electricity, via a private wire. A similar hydro scheme was installed at Settle, North Yorkshire in 2009, supplying electricity to an adjacent former mill building, now converted into flats.[12] Both projects were instigated by a community interest company, Water Power Enterprises, or H_2OPE. H_2OPE[13] identified the sites, provided the expertise on hydro systems, negotiated the legal agreements and found grant funding. They worked with local community organisations: the local Friends of the Earth Group in New Mills and 'Green Settle' in Settle, to build support for the project and promote the share offer.

Cuts to public funding by the Conservative/Liberal Democrat coalition government elected in May 2010 led to many of the grants that had sustained low carbon community groups drying up. However, the most important thing for the community energy sector that happened in 2010 was the introduction of the Feed-in Tariff (FIT) in April that year (see Box 6). This was the result of a campaign by a coalition of NGOs which resulted in an amendment to the 2008 Energy Bill, originally put down by the Labour MP Alan Simpson.[14] Feed-in tariff systems have been vital in the expansion of small scale renewable energy in many countries, and it was to prove a big boost for small-scale renewable energy in the UK.

11. http://www.torrshydro.org

12. http://www.settlehydro.org.uk

13. http://www.embark.com.au/pages/releaseview.action;jsessionid=590A928E920066AA6400746D59EF3FE2?pageId=8061056 – article from December 2014.

14. See https://friendsoftheearth.uk/climate-change/feedin-tariff-campaign-boosts-uk-solar-power for their account of the campaign, and Johns, 2015 p.128-129 for how Alan Simpson got the government to support a Feed in Tariff.

Box 5: Community Energy in Oxford

After extensive flooding in summer 2007, for the third time in seven years, a group of residents in West Oxford got together to help their community reduce its carbon emissions and become more cohesive and resilient. They set up Low Carbon West Oxford with project groups on food, waste reduction, transport, trees and wildlife, renewables and home energy. They developed a 'low carbon living programme' in which a group of households meet together for a series of six 'Carbon-busting' sessions with local experts, each of which looked at a different aspect of their carbon footprint. The first pilot group of 36 households in 2009 reduced their emissions by 36%.

To provide long-term funding for this and their other projects they had the idea of developing renewable energy systems. This would produce a 'double cut' in carbon emissions: the first from the generation of renewable energy, the second from investing the surplus income from energy generation in carbon-cutting projects in the local community. To do these projects they set up an Industrial and Provident Society, **West Oxford Community Renewables (WOCR)**, which launched a share offer in July 2009. However, because they had funding for systems from grants they did little marketing of the share offer and by September 2010 had raised only £30 k from 90 shareholders.

WOCR's original idea was to do a hydro scheme at Osney lock on the river Thames, but this proved to be a long and complex process. Meanwhile they found that leasing the roof of a local community centre for a solar PV system was relatively straightforward: a local solicitor drew up a lease and planning permission was easily obtained. Their first, 11 kWp system, costing £50 k, was installed in August 2010 using funds from the share offer as well as grants. In 2010 they received £0.8 million in grant funding from the Low Carbon Communities Challenge run by DECC and £100k prize money from Nesta's Big Green Challenge, a carbon-cutting competition for community organisations. This allowed them to do further solar PV systems, including on a local school, a supermarket and on social housing, as well as a wind turbine. A hydro scheme was finally installed at Osney Lock in 2015, by a separate IPS set up by WOCR, whose share offer raised £0.64 million from 200 investors.

There are several other community groups in Oxford following the example of Low Carbon West Oxford. One of the most established, **Low Carbon Oxford North**, received a Local Energy Action Fund grant from DECC in 2011 to run an outreach programme.

In 2013 they launched **Oxford North Community Renewable Energy** and installed solar PV systems on two local schools using funds raised by a share offer. **Low Carbon East Oxford** has run a project to improve the energy efficiency of private rented homes.

In December 2011 the **Low Carbon Hub** was established in Oxford. This is two organisations: an Industrial Provident Society which installs and manages renewable energy projects using funds from community share offers, and a Community Interest Company (CIC), which receives the surplus income from the IPS. The members of the CIC are 23 community groups working on the low carbon and sustainability agenda. The Low Carbon Hub employs professional staff to develop and manage projects. To date it has installed 38 renewable energy systems, most of which are solar PV on schools, with a total installed capacity of 4.2GW. To fund these systems it raised £1.7 million through a community share offer in 2014 and £2.5 million in 2016. It expects to pay 5% share interest to investors.

Key to these achievements in Oxford are some skilled, committed individuals and the support of Oxford City Council. Barbara Hammond, one of the founders of Low Carbon West Oxford, had been a civil servant working on renewable energy. Sam Clarke, one of the founders of Low Carbon Oxford North, is a previous chair of Friends of the Earth (England, Wales and Northern Ireland). Low Carbon East Oxford was chaired by Craig Simmons, a Green Party councillor on Oxford City Council. The Low Carbon Hub came about as a result of Oxford City Council asking Barbara Hammond to look at how social enterprise could grow community energy. Barbara Hammond is now CEO of the Low Carbon Hub. Oxford City Council has provided funding for the Low Carbon Hub, including a £2.3 million loan fund.

See:

- www.lowcarbonwestoxford.org.uk,
- http://wocore.org.uk
- http://cagoxfordshire.org.uk/gv_listing/low-carbon-east-oxford
- www.gov.uk/government/publications/low-carbon-communities-challenge-evaluation-report
- https://www.nesta.org.uk/project/big-green-challenge
- http://www.osneylockhydro.co.uk
- https://lcon.org.uk/about/lcon-the-story-so-far
- www.lowcarbonhub.org and www.ashden.org/winners/low-carbon-hub

Box 6: The Feed-in Tariff and Renewable Heat incentive

Introduced in April 2010, the Feed-in Tariff (FIT) is a mechanism to support small-scale renewable energy generation (up to5 MW). Once installed by a suitably qualified installer and connected to the grid, the owner of the system applies to an energy supply company to receive the following Feed-in tariff payments:

Generation tariff: a rate paid for every unit of electricity generated, whether it is used on-site or exported. The rate varies according to the type of technology and the size (installed capacity) of the system.

Export tariff: a rate paid for every unit of electricity exported to the grid.

Once a system is registered the generation and export tariff rates it receives increase with inflation every year and payments continue for 20 or 25 years, depending on the technology. The energy supply companies share the costs of the FIT payments between them; ultimately the costs are borne by payers of electricity bills.

A feed-in tariff scheme provides a measure of certainty to investors in renewable energy as to their income from a renewable energy system over 20 or 25 years, thus facilitating investment. However, it is more difficult than other support mechanisms for the government to control the amount of subsidy given.

The rates introduced in April 2010 were increased in line with inflation in April 2011 and were due to be reviewed in 2012. However, by mid-2011 the amount of solar PV installed was much greater than expected and in danger of using up a significant proportion of the budget that the Coalition government had set for the FIT scheme. In March 2011 the government announced a 'fast track' review of the FITs scheme which significantly cut rates for solar PV systems bigger than 50 kWp from August 2011. Then at the end of October that year, after further falls in solar PV prices, the government published a consultation which proposed to cut rates for all sizes of PV systems by around 50%, for systems installed after the 12thth December, two weeks before the end of the consultation period. This was challenged in the courts by Friends of the Earth and two community energy organisations (Ovesco and MORE Renewables), with the result that the cut did not in fact take effect until the following February. However, it nonetheless had the effect of cancelling the installation of many planned systems.

In April 2012 the government brought in further changes: a minimum energy efficiency standard for buildings supplied by solar PV systems in order to receive FITs payments, and a reduced, multi-installation tariff for organisations that received FITs payment from 25 or more PV systems. In July that year a digression mechanism was introduced, bringing in automatic falls in rates every 3 months, though these could be adjusted depending on how many systems of that size had been installed.

The FITs rates were further drastically cut by the Conservative government in 2016, followed their success in the May 2015 election and a consultation that summer. They also brought in quarterly caps in deployment for each technology band: once the total installed capacity (in MW) of systems of a particular technology and size (for example solar PV systems between 10 and 50 kWp, or wind between 50 and 100 kW) which applies to be registered for the FIT in any period reaches the cap, further systems cannot be registered until the following quarter. Reaching the cap also triggers 'contingent digression' of the FIT rate, reducing it by 10%, rather than the default digression set out for each quarter in the government's response to their 2015 consultation. The eligibility of extensions to existing systems for the FIT was also removed.

The FITs scheme is due to end in March 2019.

Feed-in Tariff rates are available at www.ofgem.gov.uk/environmental-programmes/fit/fit-tariff-rates.

See also: http://www.fitariffs.co.uk for information about FITs.

The Feed-in Tariff legislation does not apply to Northern Ireland. The mechanism for supporting renewable energy generation there was the Northern Ireland Renewables Obligation but this closed to new entrants in April 2017. See www.ofgem.gov.uk/publications-and-updates/northern-ireland-renewables-obligation-guidance-closure-scheme).

The Renewable Heat Incentive (RHI) for non-domestic buildings was introduced in 2011 and a scheme for domestic ones in 2014. It aimed to increased uptake of biomass boilers, heat pumps, solar thermal and the production of biomethane. Like the FITs it pays a rate for every unit of heat produced, though funding comes from general taxation, via Ofgem, rather than payers of energy bills

See https://en.wikipedia.org/wiki/Renewable_Heat_Incentive.

4. Growth: 2011 to 2015

Throughout 2010 and into 2011 the costs of PV panels were falling and several community organisations saw an opportunity to install solar PV systems on roofs leased from others, with funding from community share offers. The costs were getting to the point where the income from the FIT was sufficient to pay share interest to members and, over time, to pay back their capital while generating a surplus to put into a community benefit fund. It was not always necessary even to charge the building occupants for the electricity generated, making it an attractive proposition for building owners.

The first to do a solar PV system in this way, just with funding from a community share offer, was Ovesco, based in Lewes in Sussex (see Box 7). For a year they had been working on a project to install a 100 kWp system on the roof of the local Brewery. In his book, Energy Revolution, one of the people involved, Howard Johns, describes how they were faced with a situation that became all too common in the coming years:

> It took us nearly a year of hard work to finally get all the pieces of the puzzle in place for our first project with Ovesco. We had the lease negotiated, the EPC contract in place, the offer document written, and the marketing out there for our launch, all in all a huge amount of work. Then we found out that the UK government planned to reduce the feed-in tariff that currently made our project viable in just two month's time to less than half of what it was.
>
> The changes took us and the whole solar industry by surprise and meant that we suddenly had a rather scary deadline to work to. We had to raise £350,000 and then build what was at the time a sizeable project in a matter of weeks.
>
> Johns, 2015 p.247.

Fortunately they did raise the money and built the system. Ovesco went on to grow as a community energy organisation (see Box 6).

Another organisation with a share offer in 2011 was Bath and West Community Energy (BWCE). This had been set up in 2010 by people from Transition Bath who had expertise in energy, business and community projects. BWCE were good at involving the key players in their local area, crucially getting support from the Local Education Authority, who wrote to local schools on their behalf telling them about BWCE and saying that they could sign the BWCE lease agreement. They also had help from Carbon Leapfrog, a network of financial and legal professionals who offered pro bono advice to community-led low carbon projects who helped them negotiate a co-operation agreement with SSE plc, one of the 'big six' energy companies in the UK.

Box 7: OVESCO

Lewes, in East Sussex, not far from the South Coast of England, was the second Transition Town, after Totnes in Devon.

In 2007 a group of people from the Lewes Transition Town Energy group set up **The Ouse Valley Energy Services Company**, (a Community Interest Company) to bid to the local council for a project giving out grants for renewable energy systems. They were successful in this and as a result of the grants over 50 solar thermal panels were fitted between November 07 and April 08. In 2009 they were providing energy advice and grants for insulation, heating and renewables, on behalf of Lewes District Council.

In 2010 they set up OVESCO as an IPS for community benefit and in 2011 were the first community energy organisation to install a solar PV system completely funded by a community share offer (see text). They have gone on to do six more solar PV projects, on schools and local businesses funded by a second share offer. Together their solar PV systems generate around 0.25 MWh of electricity a year. Over 90% of their 250 members live in or near Lewes and receive 4% interest on their shares.

Ovesco have shared their experience and expertise with other community energy groups in their area. Using grant funding, and as part of the Community Energy Peer Mentoring programme, they supported over 30 groups in the South East between 2011 and 2015. At least 10 of these went on to install renewable energy systems themselves. In 2013 they helped set up Community Energy South, a forum for mutual support of community energy groups in the South of England.

In July 2018 Ovesco Sunny Schools, (the trading name of a new Community Benefit Society) launched a share offer to raise £140k to install 90kW of solar PV and 37kW of solar thermal panels on four local schools.

See www.ashden.org/winners/ovesco and https://ovesco.co.uk

From the start BWCE thought big. Their share offer document, published in October 2011, said:

> Over the next 15 years, we aim to develop over 25 MW of renewable energy installations which we estimate may require over £50 million of investment through a mixture of debt and equity financing. Over the next three to four years we aim to install 4.5 MW of capacity through solar PV, wind and hydro technologies. As BWCE becomes more established we want to develop energy efficiency programmes and opportunities to supply electricity and heat direct to consumers. We aim for BCWE to become a fully rounded, community-owned energy services provider.

Box 8: Projects blocked by opposition

Teddington & Ham Hydro Co-operative: gained planning approval for a hydro scheme at Teddington Lock on the River Thames, west of London in September 2015, the outcome of 5 years of hard work. However, the Lensbury Club, a premium leisure centre and hotel on the banks of the river adjacent to the lock (originally a club for Shell employees and still a subsidiary of the Shell oil company), challenged the local authority's decision. Their judicial review was rejected by the High Court, but in August 2016 the court of appeal ruled in favour of the Lensbury Club, thus quashing the planning approval. At this point there was insufficient time to reapply for planning permission and construct the project before the deadline to receive the FIT rate for which the system was pre-registered, the current rate being too low to make the scheme viable. Teddington & Ham Hydro attempted to sell the project but have not been successful and in September 2018 were considering winding up the co-operative.

(See http://www.hamhydro.org)

Bute Community Power: was established in 2013 and planned to install two 250 kW wind turbines. They had a site with a willing land owner and managed to get planning permission on appeal. However, the owner of the mineral rights for the land, Bute Estate, who had objected to the planning application, then claimed that their rights would be affected, although a survey in 2009 had shown that there were no minerals of any commercial value on or near the site. Nonetheless, not being able or willing to enter into a costly legal battle with the Estate, the landowner, a local farmer, was effectively forced to withdraw from the lease, so the project could not go ahead.

BWCE set up a Community Fund to receive the surplus generated after payment of interest. This was to be used for new, low carbon projects in Bath and the surrounding areas, including clean energy generation, insulation, transport and food production, as decided by the members of BWCE.

The initial tranche of 12 solar PV projects (10 schools, a rugby club and a farm), totalling 400 kWp, cost £1.15 million to install. BWCE did a survey of potential investors before their launch and concluded that they were likely to be able to raise £0.4 million through community shares if they offered 7% share interest. SSE plc, who installed the solar PV systems, provided them with a loan of £1 million so they only had to raise £0.15 million from the share offer to go ahead. Less than four weeks into BWCE's eight week offer period, the government published a consultation on changes to the FIT rates, proposing to reduce them by around 50% (see Box 6) from 12th December. However, BWCE had raised the £0.15 million needed and by 12th December had installed 10 systems and raised £0.72 million, enabling them to pay off much of the loan.[15]

In Lancaster I was trying to do something similar, but was not so far advanced and in the end not so successful. Following experience of managing the grant-funded installation of a solar PV panel on a leased roof for LESS (see Box 4), I had got together with other people in Lancaster, some of whom, like me, were involved in the local Green Party, and set up a co-operative called Morecambe Bay Community Renewables (MORE Renewables, for short) in the summer of 2011. We wanted to do small scale solar PV systems on community buildings. By mid-October we thought we had found some projects and hosted a launch event to drum up interest in a share offer. However, two weeks later the review of the FITs rates was published which proposed to cut rates for solar PV by around 50% (see Box 6). Our projects were unviable at the new rates so, like many other groups up and down the country, we rather gave up for a while.

However, the cuts to the FITs, which eventually took place in February 2012, were not the end of community energy in the UK. Solar prices continued to fall and systems became viable if the occupiers of the buildings were charged for the electricity they produced. We did a 50 kWp solar PV system in 2012, which was extended in 2014 by 39 kWp. We also installed a small biomass boiler in 2013 and a 10 kWp solar PV system in 2015.[16] We looked at many, many

other projects but none came off – it is remarkably difficult to persuade someone to let you put a solar PV system on their roof and the projects we have done have been with organisations where we knew key people involved. MORE Renewables was not the only community energy organisation that found it difficult to find projects. Other organisations have spent years developing projects that have not come to fruition because the building owner has, in the end, said no to signing a lease, or because of opposition from other interests. Two examples of the latter projects are shown in Box 8.

The coalition government that came to power in 2010 was both good and bad for community energy. On the down side, cuts to public expenditure meant that local authorities and other public sector organisations had less money to support community groups, including those working on energy. Regional assemblies and development agencies, some of which had been proactive in supporting community energy, were abolished, as were the targets that local areas had to achieve, which included targets to reduce emissions of greenhouse gases. A report by Green Alliance[17] published in October 2011 found that "climate change work has narrowed, is very weak or absent in 65 per cent of local authorities."

Another problem was the prevalence of climate scepticism in some parts of the conservative party. For example, a survey of MPs in 2014[18] found that only 30% of Tory MPs thought that science had established that climate change is largely man-made, with 10% thinking that it is "environmentalist propaganda for which there is little or no real evidence". Added to that, there was a strong anti-wind lobby in many rural Tory areas. A Tory MP, Eric Pickles, was Secretary of State for Communities and Local Government and oversaw the planning system in England.[19] In 2013 he put out a ministerial statement[20] about wind power, which said that "current planning decisions on onshore wind are not always reflecting a locally-led planning system". He went on to 'call in' for his personal consideration applications for wind farms. Over the coming year he rejected 19 of the 22 applications he considered, six of which had been recommended for approval by planning inspectors. It was reported that senior Liberal Democrats accused him of using a 'back door' to strangle on-shore wind, "motivated by a need to shore up support from wavering Conservative voters in the party's rural heartlands."[21] It became increasingly difficult to get planning permission for wind turbines in England, making the most cost-

Box 9: Coalition government support for community energy

Measures that helped community energy, brought in by the Coalition government included:

- pre-registration of solar PV systems: community organisations could register a non-domestic solar PV system that was less than 50 kWp to 'lock in' the feed in tariff rate at the date of pre-registration, then install the system up to 12 months later, plus they had 6 months longer than other organisations for systems bigger than 50 kWp.
- the relaxation of the requirement for the building supplied by a solar PV system receiving FIT payments to have an Energy Performance Certificate (EPC) of band D or better. If the system was owned by a community organisation an EPC had to be submitted with the FIT application, but it could be as low as level G;
- tax relief on investments in community energy organisations. The Enterprise Investment Scheme and the Seed Enterprise Investment Scheme meant that tax-paying investors could claim back 30% or 50% of their investment respectively. These schemes are available to all enterprises carrying out 'qualifying trades' but having an income from FITs or the RHI made trades ineligible, unless they were being carried out by a community energy organisation.

15. See https://web.archive.org/web/20111212055557/http://www.bwce.coop: BWCE website archived on 12 December 2011, accessed on 12/9/18.

16. See www.morerenewables.co.uk

17. Green Alliance 2011, p.3

18. See https://www.theguardian.com/environment/2014/sep/10/climate-scepticism-still-rife-among-tory-mps-poll

19. Planning in Scotland, Wales and Northern Ireland is devolved to the Scottish Parliament, Welsh Assembly and Northern Ireland Assembly respectively.

20. https://www.gov.uk/government/speeches/local-planning-and-onshore-wind

effective renewable energy technology very difficult for English community energy organisations to develop.[22]

In 2013 rising energy prices were becoming a political issue. In November 2013 the Prime Minister, David Cameron, reportedly ordered aides to "get rid of all the green crap" from energy bills to bring down costs to consumers.[23] Resulting changes to the 'Energy Company Obligation'[24] by which energy companies had to pay for insulation and energy efficiency measures in the homes of the fuel poor, led to fewer such measures being installed, as well as cuts in funding to community energy organisations that were working with energy companies to help them meet their targets.

On the positive side, community energy fitted well with Prime Minister David Cameron's 'Big Society' agenda,[25] which sought to devolve power to local communities and support co-operative and mutual organisations. Also, the Department of Energy and Climate Change (DECC) was controlled by Liberal Democrats: Chris Huhne to 2012, then Ed Davey. Ed Davey in particular was very supportive of community energy. DECC provided grants and loan schemes for groups in England, which helped to make up for a lack of other funding. In Scotland more extensive support had been available from the Community and Renewble Energy Scheme (CARES) since 2011,[26] and in Wales support was available from the Welsh Government's Ynni'r Fro scheme.[27] Other measures brought in by the coalition government which supported community energy are shown in Box 9.

In January 2014 DECC published a Community Energy Strategy.[28] This said that around £17 million had been invested in community renewable energy, through 40 share offers (p.34). The strategy was full of warm words of encouragement for local authorities and commercial developers to work with community energy groups. An industry taskforce was established on how shared ownership, with communities taking a stake in commercial renewable energy developments, could be encouraged. The expectation from the government was that "by 2015 it will be the norm for communities to be offered the opportunity of some level of ownership of new, commercially developed onshore renewables projects" (p.36). The strategy also set up working groups on Planning & Permitting, Hydro-power, and Network Connections (p.63).

Box 10: Mongoose Energy

Bath and West Community Energy (BWCE) helped set up several other community organisations across the South West, developing 12MW of community-owned renewable energy systems. In 2015 the directors of BWCE decided that they needed to set up a separate organisation to take over this work.

Mongoose Energy is a company which is majority owned by the community energy organisations that it provides services for. It brings together local people and commercial developers to identify, develop, finance, build and manage community-owned, renewable energy projects. It has primarily done large scale solar PV projects in the South West of England.

https://mongoose.energy

Some local authorities were great in supporting Community Energy. Local authority support was essential to establish the Low Carbon Hub (see Box 5) and for Bath and West Community Energy (see above). Cornwall Council ran a Green Cornwall Programme,[29] which included a revolving loan fund for community renewable energy projects. Cannock Chase Council asked a community energy organisation from an adjacent area to work with it to form a community benefit society to install solar PV on the roofs of its council houses: 314 bungalows, occupied by mainly elderly tenants, were fitted with solar panels and provided with free electricity.[30] In Plymouth the local council effectively set up Plymouth Energy Community.[31] However, other local authorities thought that procurement rules meant that they could not, for example, lease their roofs to community energy groups for solar PV projects. In Leicestershire, Green Fox Community Energy Cooperative spent a great deal of time and effort developing a relationship with Leicester City Council. Leicester City Council wanted to put solar PV on five of its buildings and put out a tender document which seemed to be aimed at getting a community energy organisation to do this. However, when the tenders

Opening of John Cleveland College Community Wood Heat, set up by Green Fox Community Energy.

were evaluated by the procurement department at Leicester City Council, they decided to award it to a private company which gave a cheaper price for installation of the solar PV systems. This resulted in little community benefit and the profits going to a private company. In this case, as in many others, the Community Energy Strategy did not seem to change the approach of local authorities.

21. See https://www.independent.co.uk/environment/green-living/eric-pickles-accused-of-rejecting-wind-farms-to-win-votes-9804278.html

22. An example of one that did success is the Four Winds Energy Co-operative, an Energy4All co-op that in 2014 installed two turbines on sites of former coal mines in Derbyshire and Yorkshire. See http://www.fourwinds.coop

23. https://www.theguardian.com/environment/2013/nov/21/david-cameron-green-crap-comments-storm

24. https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06814

25. https://en.wikipedia.org/wiki/Big_Society

26. https://www.localenergy.scot/

27. https://gov.wales/topics/environmentcountryside/energy/renewable/local-renewable-energy-generation/final-evaluation-of-ynnir-fro/?lang=en

28. https://www.gov.uk/government/publications/community-energy-strategy

29. See https://www.cornwall.gov.uk/media/6577859/Green-Cornwall-March-14.pdf

30. http://chasesolar.org.uk

31. http://www.plymouthenergycommunity.com

My experience of phoning up commercial solar farm developers who had put in planning applications in our area suggested that the words of the Community Energy Strategy had similarly little effect on them. They were not interested in working with community energy organisations unless they had to. What did change things was when the rules were changed in April 2015, to allow two installations receiving the FIT to share one grid connection, if at least one of them is owned by a community organisation. This meant that commercial developers of large scale solar PV systems could build 10 MW sites, with half owned by a community energy organisation, and both receiving FIT payments. Some developers set up a community interest companies to own one half the 5MW sites, rather than engaging with the local community or a local community energy co-operative. Community interest companies[32] qualify as community energy organisations under the government's rules: they have an 'asset lock', there is a cap on the dividends they can pay shareholders and they need to provide benefits to a defined community. But they are structured as a normal company, without open membership, and can be controlled by just a few individuals. They do not have to provide the local community any share of ownership. Other developers worked with organisations such as Communities for Renewables,[33] or Mongoose Energy (see Box 10) who helped them set up community benefit societies or community interest companies.

Community energy organisations have tended to focus on electricity generation, rather than projects that use renewable heat. Heat projects are considered more complicated and more risky. This is partly because the income from heat projects is inherently less predictable: the future output from a solar PV panel, wind turbine or hydro can be predicted with reasonable certainty, but the amount of heating a building uses depends on the behaviour of the users, and how insulated it is – things that can change in the future. At MORE Renewables we got around this problem by having a 'shared ownership' agreement with the Women's Holiday Centre who had asked us to fund a biomass boiler for them. The ownership was split according to how much each had put into the project, with the agreement saying that after three years they could buy us out for the total costs of the project to us, less our total revenues, sharing the risk between the two organisations. Also, there was no problem with the work needed to look after a biomass boiler: it was replacing a coal-fired heating system that had needed to be loaded with coal; so staff at the centre were happy to instead load biomass pellets, which were purchased by the centre, into the new boiler.

In the Herefordshire village of Woolhope, an area with plenty of unmanaged woodland and many properties without mains gas, Woolhope Woodheat's idea in 2011 was to install woodchip-burning biomass boilers, free of charge, in hard-to-heat buildings. They would then maintain the boilers and supply them with woodchip from local woodlands and charge for the heat they produced. In 2012 they launched a share offer for their first project: a district heating system fed by a biomass boiler at Canon Frome Court, an intentional community of about 50 adults and children living in a Georgian Manor. The offer successfully raised £325k and the 200 kW boiler was installed in 2013.[34] This was the first renewable heat project installed by a community energy organisation in the UK. The agreement with Canon Frome was that they would charge them at least 20% less than the cost of heating oil. Unfortunately, against all expectations, the cost of heating oil fell substantially in the coming years. Woolhope Woodheat has been a successful co-op, though has not paid as much share interest to members as was predicted. It has proved difficult for it to find new projects, particularly after the oil price fell, but also because some people they initially approached, after learning about biomass boilers, decided to install them themselves. Woolhope was supported by Sharenergy which went on to support Green Fox Community Energy Co-operative in Leicestershire to install an 800 kW biomass boiler in a local secondary school.[35] This has, to date, saved the school capital and revenue costs of over £0.6 million as well as paying share interest to members and benefits to the local community. In Southern England, some directors of Wey Valley Solar Schools Energy Co-operative[36] set up Springbok Wood Heat,[37] with support from Energy4All. They have installed a district heating system at a care home/sheltered housing complex which is supplied by a woodchip biomass boiler.

An important factor in the growth of community energy in the UK has been its co-operative ethos and in particular the willingness of people involved to share information and help each other. There are conferences were people meet, hear about what others have been doing and get ideas for projects they could do. There is a community energy practitioners Yahoo group where you can post questions and get answers from people who have practical experience

of doing what you are trying to do. People share financial models and share offer documents. In 2014 DECC funded a short-term peer mentoring scheme, giving grants to established community energy organisations to help them work with new groups. In Wales, a peer mentoring scheme, Renew Wales, was set up in 2012 to provide mentors for groups seeking to take action on climate change and is still in existence.[38] Co-operatives UK launched a community energy peer mentoring scheme in July 2014, which ran until autumn 2016. As one of the first community energy organisations in north west England to do a solar PV system, MORE Renewables was one of the mentors on this programme and supported 6 other groups. Community energy organisations have also set up local networks, such as Bristol Energy Network,[39] Community Energy South[40] and the North West Community Energy Network.

Organisations to represent and lobby for the community energy sector now exist in England, Scotland and Wales.[41] Community Energy England, which was set up in 2014, manage the Community Energy Hub, a website with information on community energy where groups can share resources and information.[42] There is also a 'Community Energy Coalition', of charities, campaign groups and the larger community energy organisations.[43]

In the summer of 2015 it was thought that there were 150-200 community energy organisations in the UK, with another 150-200 in the early stages of formation.[44] 82 of those organisations responded to a survey carried out for Community Energy England. This found:

- 38 organisations owned 175 separate renewable energy systems;
- 144 were solar PV, 16 wind, 14 hydro and 1 biomass CHP, with a total capacity of 30 MW;
- 32 of these 38 organisations were member organisations, who had 9677 members between them;
- 3 of those organisations had over 1000 members and 15 had less than 100 members;
- the total funding raised by the 38 organisations was £50 million;
- 29 organisation had raised £28.6 million from community share offers;
- One organisation (Westmill solar) had received an investment of £12 million from Lancashire County Council's Pension fund;
- grant funding made up around 1% of total funds and was mostly for non-generation costs or early feasibility work.
- 55 of the 82 groups had projects in development, totalling 145 MW over 448 separate schemes, 87% of which were solar PV.[45]

Community energy was part of a renewable energy industry which had grown exponentially since 2010, so that by 2015 it had a turnover of £14.9bn. It has been claimed that if this had continued an all-renewable UK electricity supply would have been achievable by 2025.[46]

32. See www.gov.uk/government/publications/community-interest-companies-how-to-form-a-cic
33. http://www.cfrcic.co.uk
34. See https://woolhopewoodheat.org.uk
35. See https://greenfoxcommunityenergy.coop/projects/john-cleveland-college-community-woodheat-co-operative-1
36. www.weyvalleysolar.co.uk
37. http://www.springbokwoodheat.co.uk
38. https://www.renewwales.org.uk
39. http://bristolenergynetwork.org
40. https://www.communityenergysouth.org
41. www.communityenergyengland.org, www.communityenergywales.org.uk, http://communityenergyscotland.org.uk
42. https://hub.communityenergyengland.org
43. www.ukcec.org
44. P.9 of Quantum Strategy, 2015
45. Quantum, 2015.
46. https://www.theguardian.com/environment/2017/may/10/challenge-conservatives-energy-priorities-cuts-renewables

5. Brakes: 2015

The summer of 2015 was a depressing one for the renewable energy industry in the UK, including Community Energy. Against expectations, the Conservatives won a narrow parliamentary majority in the General Election in May that year, so were now in power on their own.

One of the first impacts was a ministerial statement in June[47] which said that local residents must have the final say over whether onshore wind farm applications are approved; applications had to be in an area identified as suitable for wind energy as part of a Local or Neighbourhood Plan, and have the backing of local residents – a high bar given that there is always some opposition to wind turbines. For at least one community wind turbine the statement held up their planning application, as the authority were unsure how to interpret it, with the result that, by the time they did get planning approval (3 years after first submitting the application), the FIT rates were so low as to make the project unviable.[48]

Then there was an announcement that the ability of community energy groups to pre-register solar PV systems (see Box 9) would be removed from 1 October 2015 (though this was later reinstated), and another review of FITs which proposed to drastically cut the rates and brought in quarterly caps on deployment (see Box 6). For on-shore wind the amount of deployment allowed was so small it became very difficult to get any subsidy. Finally, tax relief for investments in community energy was removed in November 2015, with one month's notice,[49] and the Urban Community Energy Fund was closed.

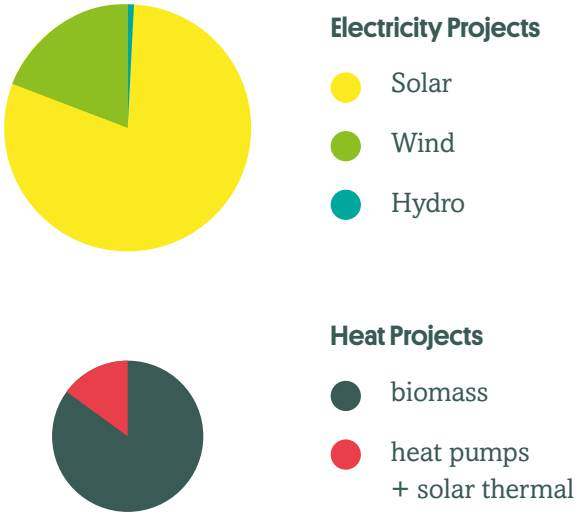
For community energy groups there was a flurry of activity to pre-register solar PV projects before the end of September which they then had a year to install. So in many ways the impacts of policy changes in 2015[50] were delayed for a year. This was seen in the dramatic decline in the number of new community energy organisations founded. In 2017 there was only one such organisation founded in England, Wales and Northern Ireland, compared to 13 in 2016 and 33 in both 2014 and 2015. Of the 33.5 MW of electricity generating capacity added by the community energy sector in 2017, at least 80% was through acquisition of existing projects, with only 15 new projects installed in 2017.

The impact of the 2015 changes on the renewables industry in the UK was devastating, with many job losses. The Solar Trade Association, for example, said that 32% of jobs in that industry were lost by the summer of 2016[51] and the Renewable Energy Association has said that the changes to FITs in 2015/16 resulted in 9,000 jobs being lost.[52]

The government's intentions for renewable energy were perhaps revealed by the scenarios for future electricity generation published in November 2015. They predicted little expansion in renewable generation in the next two decades, with only off-shore wind growing in the 2020s, and no new solar or on-shore wind generation.[53]

The Community Energy State of the Sector Report 2018, which surveyed the activity of community energy groups in England, Wales and Northern Ireland in 2017 found:

- 302 community energy groups;
- 204 of these had active electricity generation projects;
- 9 had installed heat-generating projects;
- 5 had transport projects (such as electric vehicle charging points);
- 3 were involved in energy storage,
- 76 were involved in energy efficiency/demand management projects.



The total electricity-generation capacity was 168 MW, comprising 157 projects, producing 202 GWH of electricity in 2017. There were 9 heat-generation projects, with a total capacity of 1.9 MW. In addition, Community Energy Scotland[54] has a membership of 400 community organisations, and it is thought that in June 2017 81 MW of electricity-generation capacity was community-led or owned (Scene, 2018 p.13).

47. Statement by the Rt Hon Greg Clark MP, Minister of Housing, Communities & Local Government, Published 18 June 2015.
48. Community Energy State of the Sector 2018, p.39.
49. https://www.theguardian.com/environment/2015/oct/28/government-subsidy-cuts-put-green-energy-companies-at-risk
50. Community Energy State of the Sector 2018, p.15.
51. https://www.theguardian.com/environment/2017/may/10/challenge-conservatives-energy-priorities-cuts-renewable
52. https://www.r-e-a.net/images/upload/news_541_180830_REA_Future_of_Small_Scale_RES_Support_Response_Final.pdf
53. https://www.theguardian.com/environment/2017/may/10/challenge-conservatives-energy-priorities-cuts-renewable
54. http://communityenergyscotland.org.uk

6. Current prospects

In the summer of 2018 the government published another consultation on the future of the Feed-in Tariff.[55] In 2015 the government had said that the FIT generation tariff would be closed to new applicants from the end of March 2019, but now it said that the FIT export tariff will also cease from April 2019, meaning that small scale generators will have no guarantee that they will be paid a fair price, or any price at all, for electricity that they export to the grid. The government has no plans for new public support for renewable energy until 2025 at the earliest.

Some renewable energy systems are viable at current FIT rates: what you need is a big, unshaded south-facing roof, of a type which is cheap to fit panels to, where the host building will use most of the electricity and pay a decent price for it. Such projects are hard to find! Very large scale solar PV farms with battery storage are being installed with no subsidy.[56] These are far larger than the projects that most community energy groups feel able to take on.

Community energy groups have branched out into other areas, including installing electric-vehicle charging points[57] and battery storage.[58] Recent years have also seen attempts to develop new models which enable local generators to sell directly to local consumers. This is generally not possible in the UK: if a wind turbine is installed near a village people living in that village are not able to buy electricity directly from the wind turbine. Instead the generator has to sell it to an electricity supply company through a power purchase agreement, and local consumers have to buy their electricity from electricity supply companies, generally for two or three times the cost the generator has sold it for. A solar PV system on a roof is connected 'behind the meter': its output supplies the building, and any excess over what is being used at any moment is exported to the local distribution system. That electricity will be used by the building's neighbours, but there is no mechanism whereby those neighbours can pay the owners of the solar PV panel directly. MORE Renewables' project at Lancaster Cohousing was viable because the development has its own private wire network: there is a substation for the whole development, owned by Lancaster Cohousing, at which electricity is imported and exported from and to the grid. The substation is like the meter of an individual property, with electricity from the solar PV system, and from a hydro scheme owned by Halton Lune Hydro,[59] feeding into the network on the development side of the substation. The solar PV arrays do not directly supply the house they are on, but the network as a whole. Individual houses and offices are supplied from the network and pay Lancaster Cohousing for the electricity they use. This was possible because the houses are leasehold, with the air space above the roof retained by the owner of the freehold, Lancaster Cohousing Ltd, who leased it to MORE Renewables. When insufficient solar or hydro electricity is available Lancaster Cohousing buys it from an electricity supply company, and when they have excess they sell it.

Energy Local[60] is one organisation which is attempting to devise a system for doing effectively the same thing using the distribution system (creating what some have called a virtual private wire network):

- a group of consumers and generators in a local area get together and form an 'Energy Local Club', a co-operative;
- everyone in the club has a smart meter fitted, which monitors their consumption and generation on a half-hourly basis;
- the consumption and generation within the club are matched ('netted off') each half hour and the generators are paid for the electricity used;
- each member of the club has a contract with the energy supplier working with Energy Local, to buy electricity when they need it and to sell surplus generation.

Another key aspect of the model is helping consumers to switch their use of electricity to times when it is available from local generators, or can be purchased from a supplier at a cheap rate. Energy Local has

trialled this system in the village of Bethesda in North Wales where there is a community-owned hydro scheme, working with the energy supplier, Co-operative Energy. They are currently working on setting up seven further Energy Local clubs in Wales, where they have support from the Welsh Government, and one in Oxford.

Another recent development is DNOs (the companies who own the low voltage distribution network - see Box 2) working with community energy organisations on storage and demand management projects that reduce the need for reinforcement of the distribution network. Energise Barnsley,[61] for example, have received funding from Northern Powergrid to install batteries in domestic properties, some of which have solar PV, to see if the batteries can reduce the need to reinforce the local network when clusters of solar PV systems are installed in an area. They are also looking at whether installing batteries in properties with air source heat pumps can enable those properties to shift their use of electricity away from peak periods.

The government seems to have concerns about some of these projects. In a speech to the Community Energy England conference in June 2018, for example, the head of Local Energy at BEIS, Patrick Allcorn, said Ofgem were concerned that if local energy comes 'off-grid' the costs of the grid would still be there and have to be borne by those who cannot afford them. Electricity consumers with solar PV and batteries can drastically reduce the amount of electricity they buy from a supplier, and if the network charges and 'policy costs' (such as for energy efficiency schemes and support for renewables) are part of the price they pay per kWh, reduce the contribution they make to those costs. Patrick Allcorn said that there are equity problems with some people having low bills and others not. He said the government has three objectives for energy: affordability; security of supply, and 'clean', the latter always coming last.

Solar PV owned by MORE Renewables on the roofs of the terraces at Lancaster Cohousing.

55. https://www.gov.uk/government/consultations/feed-in-tariffs-scheme

56. For example www.gov.uk/government/news/subsidy-free-solar-comes-to-the-uk

57. See for example www.chargemystreet.co.uk, a CBS set up to provide on-street charge points in areas where households often do not have their own off-street parking.

58. For example http://www.bristolenergy.coop

59. http://haltonlunehydro.org

60. http://www.energylocal.co.uk

61. http://www.energisebarnsley.co.uk

7. Lessons

The history of community energy in the UK shows that there are several things needed for it to thrive.

The first is people who want to do something tqo address climate change or benefit their local community; people who are used to working with others in their community, running organisations and community projects. Those people either need to have skills, knowledge and expertise on renewable energy, managing projects and running organisations, or they need to be able to call on someone who does to help them. To do projects on energy efficiency those groups need grant funding. To do renewable energy projects they need small-scale renewable energy generation to be a viable financial proposition and to have access to funding for feasibility studies and start-up costs and a legal structure that enables them to raise the capital costs. They also need people or organisations who have control of land and buildings and are prepared to work with them and lease their roof or land for renewable energy systems. Renewable energy projects, if they are sufficiently profitable, can then provide long-term funding for energy efficiency projects, or for other things the local community would like to see happen. The policy and financial framework for renewable energy needs to be sufficiently stable and predictable over time for communities to be able to go through the often lengthy process of developing and installing systems before the rules change.

The things needed therefore are:

- Financial viability of small-scale renewable energy systems;
- Motivated and committed people, to set up community energy organisations and in organisations that have control of buildings or land suitable for renewable energy;
- Sources of help and expertise for those people;
- Legal structures which enable co-operative ownership of assets;
- Stability of financial incentives and policies on renewable energy

The first and last of these are currently lacking in the UK. However, we do now have an infrastructure of organisations and experienced people that could rapidly expand the community energy sector once the financial viability of small-scale renewable energy improves.

Abbreviations/ Glossary

AONB	Area of Outstanding Natural Beauty. A landscape designation in England and Wales
BEIS	Business, Energy and Industrial Strategy: UK government department, created in July 2016, with responsibility for energy policy.
CIC	Community Interest Company – a company run for the benefit of the community. CICs have an asset lock, which means that their assets must be passed to a similarly asset-locked organisation if they are wound up.
CBS	Community Benefit Society (see Box 3)
CS	Co-operative Society (see Box 3)
DECC	Department of Energy and Climate Change: a UK government department created in 2008, to take over some of the functions related to energy of the Department for Business, Enterprise and Regulatory Reform, and those relating to climate change of the Department for Environment, Food and Rural Affairs. In July 2016, when Teresa May became Prime Minister, it became part of the Department for Business, Energy and Industrial Strategy (BEIS).
FIT	Feed-in Tariff (see Box 6)
IPS	Industrial Provident Society (see Box 3)
kWh	1000 Watt hours – unit of energy.
LSP	Local Strategic Partnership: a partnership of the public sector and other organisations in a local area, the formation of which was mandated by the Labour Government which lost power in 2010.
MW	million Watts, unit of power
Ofgem	Office of Gas and Electricity Markets. The government regulator for electricity and downstream natural gas markets in the UK.
PV	Photovoltaic
UK	United Kingdom of Great Britain and Northern Ireland. Great Britain consists of England, Scotland and Wales.
W	Watts, unit of power

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