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Evaluation of the Next Generation programme for Community Energy – innovation

YEAR TWO REPORT

www.tisburyelectriccarclub.com

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About this working paper

This working paper presents findings from Year 2 of CAG Consultants' evaluation of the Next Generation programme. While the overall programme started in June 2018, CAG Consultants, in partnership with Fiveways, were commissioned by Power to Change to evaluate the Next Generation programme in April 2019. The programme aims to support the community energy sector in two ways:

- by bringing more solar farms into community ownership whilst maximising the financial, environmental and social impact for their local communities (CORE)
- by supporting the development of innovative business models for the community energy that are not dependent on Feed-in Tariff subsidies (Innovation).

This paper presents interim evaluation findings about the innovation strand of the Next Generation programme, covering the processes used and interim outcomes/impacts. It also shares learning from the programme for the benefit of community groups, policy makers and other community energy stakeholders. The executive summary of this report is presented as a separate document.

About the authors

CAG Consultants is an employee-owned co-operative with more than 30 years' experience of high-quality research and evaluation on economic, social and environmental issues, with particular expertise on evaluation and sustainable energy. Fiveways have broad expertise in advising and evaluating the community and voluntary sector, including governance and diversity issues.

Glossary of abbreviations used in this report

Abbreviation	Description
ABI	Association of British Insurers
API	Application programming interface
B&WCE	Bath and West Community Energy
BCE	Burnside Community Energy
BCU	Bristol Credit Union
BEC	Brighton Energy Co-operative
BEIS	Department of Business, Energy and Industrial Strategy
BHESCO	Brighton and Hove Energy Services Company
CAG	CAG Consultants
CB	Community business
CBF	Community benefit fund
CBS	Community benefit society
CE	Community energy
CEB	Community energy business
CEE	Community Energy England
CCEL	Chester Community Energy Limited
CoMoUk	An umbrella organisation for shared transport in the UK
COP26	Conference of the Parties 26 – the international climate conference held in November 2021
CORE	Community Owned Renewable Energy
COVID	Coronavirus – COVID 19
CREW	CREW Energy
CSE	Centre for Sustainable Energy
CT	Carbon Trust
DNO	Distribution Network Operator
ESC	Energy Systems Catapult
ESCO	Energy services company
ESFA	Education and Skills Funding Agency
ESG	Environmental Social and Governance
ERDF	European Regional Development Fund
EU	European Union

Abbreviation	Description
EV	Electric vehicle
FCA	Financial Conduct Authority
FiTs	Feed-in Tariff
GCEC	Gloucestershire Community Energy Company
GHG	Green Homes Grant – voucher scheme
GHG LAD	Green Homes Grant – local authority scheme
GLA	Greater London Authority
HNIP	Heat Networks Investment Project
LCC	Leicester City Council
LCDT	Launceston Community Development Trust
LED	Light emitting diode (low energy lighting)
LLS	Lockleaze Loves Solar
Loomio	A software platform used by CEE
kWp	Kilowatt peak
MAT	Multi-Academy Trust
NG	Next Generation programme
NDA	Non-disclosure agreement
PCC	Plymouth City Council
PSDS	Public Sector Decarbonisation Scheme
PtC	Power to Change
PEC	Plymouth Energy Community
PV	Solar photovoltaics
RCEF	Rural Community Energy Fund
RHI	Renewable Heat Incentive
R&D	Research and Development
Salix	A Government-funded loan fund open to public sector bodies
SoS	Secretary of State
SPV	Special purpose vehicle (for investment)
TECC	Tisbury Electric Car Club
TRL	Technology Readiness Level innovation scale
ToC	Theory of change
UKPN	UK Power Networks (DNO)
UKRI	UK Research and Innovation
WPD	Western Power Distribution (DNO)

1. Introduction

1.1 Introduction

This paper presents CAG Consultant's 'summative assessment' for the second year of the evaluation. This means our overall assessment of process and impact, covering the evaluation aims and the four types of impact covered by the research questions. It also draws out learning to inform future work in the community energy sector by Power to Change and other stakeholders.

This research presented in this paper was undertaken in early summer 2021 and presents a snapshot of progress by the innovation projects and Next Generation programme at that time.

The paper is structured as follows:

- Chapter 2 – overview of progress on the innovation programme
- Chapter 3 – evaluation of project-level activities
- Chapter 4 – evaluation of programme-level activities
- Chapter 5 – overall assessment of the innovation programme against research questions, Theory of Change and systems map
- Chapter 6 – overall learning and recommendations for the future.

Evaluation findings on the community ownership strand of the programme are presented in a separate volume.

1.2 Rationale for the Next Generation programme – innovation

Power to Change's Next Generation programme aims to support existing community energy businesses to make a step change in the nature and scale of their current business. The programme started in June 2018 and was expected to run for 3 years to June 2021. Owing to delays arising from COVID, the programme has now been extended to December 2021.

A major driver for the Next Generation programme was the recognition that community energy businesses (CEBs) offer opportunities for generating income that, depending upon the business model, can subsequently be used to finance socially beneficial activity, for example by providing a mechanism for addressing local concerns and priorities. In most cases community energy businesses are locally rooted and accountable and offer significant opportunities for integration with other local initiatives (e.g. through the integration of energy-focused schemes within other forms of community regeneration initiative, such as affordable housing schemes).

With the demise of grants and subsidy schemes such as the ‘Feed-in Tariff’¹, community energy schemes need to pursue different approaches to ensure their ongoing sustainability. New opportunities are available through the creative use of technologies to effect commercial linkages between community businesses and their customers. Other opportunities are offered by energy storage and demand-management technologies and crowd-funding mechanisms. The Next Generation innovation programme offers an opportunity to investigate and demonstrate how community energy businesses can identify and exploit these new opportunities and thereby capture value for local communities.

1.3 Methodology

The approach and methodology used for this developmental, theory-based evaluation are set out in Appendix 1, highlighting the limitations of the evaluation research.

1 The Feed-in Tariff (FiTs) provided subsidy for renewable electricity generation. It was only available for community energy installations commissioned by end March 2020. Other types of energy providers only received FiTs on installations commissioned by end March 2019.

2. Overview of progress on the innovation programme

2.1 Overview of status of innovation projects

A total of 11 innovation projects received grant support from the Next Generation programme in the past year, of which five joined in Round 1 and a further six in Round 2. Further details of each project, and a map showing their location, can be found [here](#).

The Next Generation grant is divided into four Phases with around £25,000 of grant support being provided in each phase. Projects are required to meet ‘stage gates’ at the end of each Phase, based on completion of activities set out in their final grant application. The timetable of the project was extended to the end of December 2021 because of COVID impacts on delivery. The status of each group in summer 2021 is shown in Table 1 below.

Table 1: Status of innovation projects

Innovation group	Description	Round	Current phase	End date
Brighton Energy Co-op	piloting of EV charge points, located at solar PV sites that can provide workplace and ‘destination’ parking	1	4	Dec 2021
CREW Energy	installing heat networks and renewable heating systems on community buildings and/or social housing	2	4	Dec 2021
Nadder CE	development of a rural car club using EVs, to provide better access to low-carbon transport for those with no or limited access to a car	1	5	Dec 2021
Lockleaze Loves Solar	developing a model for the installation of roof-top solar PV panels on community homes, for those who cannot afford to invest in panels themselves	1	Closed	June 2021
Bath & West Community Energy	developing a network of small consumers that can potentially offer flexibility services to their local Distributed Network Operator using a range of assets such as water heaters, heat pumps and EV chargers	2	3-4	Dec 2021

Innovation group	Description	Round	Current phase	End date
Carbon Co-op	development of data tools for energy users, led by an Energy Data Co-operative	2	3	Dec 2021
Chester Community Energy	development of a loan scheme to fund LED lighting and other energy efficiency improvements on community buildings	1	2	Tbc / Dec 2021
Plymouth Energy Community	development of business models for community-led, net zero carbon affordable housing	2	2	Dec 2021
Gloucestershire Community Energy	development of low carbon heating system for social housing, including heat pump, PV and battery systems, potentially including flexibility services	2	1	Dec 2021
Burneside Community Energy	development of a community-owned renewable energy supply to a new housing development in Cumbria	2	1	Autumn 2021
Green Fox	development of an energy services model for Zero Carbon Schools, to create energy bill savings for schools while funding energy efficiency and other low carbon measures in these schools	1	2	Autumn 2021

The Centre for Sustainable Energy (CSE) and a number of CSE consortium partners (e.g. Everoze, Co-operatives UK, Low Carbon Hub) have delivered support to the 11 innovation projects. Each project liaises with a CSE support worker and is allocated a technical lead within the CSE consortium via a monthly or bi-monthly progress call. In addition to follow-up support actions agreed in these calls, a number of other activities have been implemented by the CSE consortium during Year 2 of the programme²:

- Continued provision of the online Basecamp platform for sharing documents and messages within the innovation programme (between projects, CSE consortium, Power to Change and CAG).
- Informal monthly drop-in sessions, hosted by CSE, which were open to any members of the innovation project team to discuss current issues that they were encountering.
- External monthly ‘innovation lab webinars’, organised and hosted by CSE, which showcased learning from innovation projects within and beyond the Next Generation programme to a wider audience.
- In addition, CSE has worked during this year to develop a CE mentoring programme that will be implemented by their partners Co-operatives UK between July and December 2021.

Our findings on programme management and dissemination are presented in chapter 4.

² Owing to the constraints imposed by COVID, all of these activities have been virtual.

2.2 Assessment of progress on business models

We have grouped the 11 Next Generation projects into three categories in terms of progress with their business models up to summer 2021, as shown in the table below.

Table 2: Status of innovation projects

Category	Description	Projects
Strong progress	Five groups have made good progress in implementing their business models, albeit to a slower timetable than anticipated because of COVID and other external factors. They have been flexible and dynamic in responding to challenges and are now beginning to deliver measures on the ground. Three of these groups have reached Phase 4 of their grant, with Bath & West CE currently waiting for Phase 4 approval. Carbon Co-ops has reached Phase 3 but has already developed a functional software product that is being rolled out to members on a paid basis. Even for these groups, the viability of their business models is marginal and not yet proven: full information should be available between December 2021 and March 2022.	Bath & West CE Brighton Energy Co-op Carbon Co-ops CREW Energy Nadder CE
Moderate progress	PEC has made considerable progress with techno-economic modelling of project options but the viability of their business model is still unclear.	Plymouth Energy Community (PEC)
Limited progress	Chester CE and Gloucestershire CE have proceeded slowly because they have encountered external barriers. Chester CE's business model is held up by a regulatory issue, while Gloucestershire CE's model has been held up by issues with the main project partner and by the end of subsidies from the Renewable Heat Incentive scheme.	Chester CE Gloucestershire CE
Closure	The three remaining groups have pursued their business models as far as possible within the Next Generation programme and have found that their models are not financially viable. One of these three projects withdrew from the programme at end June 2021 and the other two are expected to withdraw shortly. While Lockleaze Loves Solar reached Phase 5 of its grant, the other two groups progressed to Phase 1 (Burnside) and Phase 2 (Green Fox). There were two main reasons why these three groups were unable to progress their business models: firstly, the economics of their business models were marginal; and secondly, they were adversely affected by external factors (e.g. regulatory constraints or decisions made by partner organisations).	Lockleaze Loves Solar Green Fox Burnside CE

Our research suggests that some of the Round 2 projects have shown as much, or more, progress than some of the Round 1 projects. Across both rounds, the projects that made most progress tended to show at least some of the following success factors:

- Organisational capacity (e.g. at least one part-time paid member of staff)
- Ambition and drive (on the part of the project lead and/or their wider team)
- Pro-active project management, learning from and adapting to challenges
- Appropriate knowledge and skills (particularly the project lead)
- Clearly defined project with clear objectives
- Less complex business models with fewer partners involved
- Good partner relationships, built up over time
- No conflicts of interest, enabling partners to develop trust in the project
- Well-networked organisation within the CE sector
- Local organisation, strongly embedded in their local community.

A further success factor was luck. Some of the projects ran into problems because of external issues outside their control (e.g. a key partner going out of business or deciding not to proceed; an important regulatory issue being unresolved; or a subsidy scheme ending).

The Next Generation programme included two groups (Chester CE and Gloucestershire CE) that are run on a fully voluntary basis. The time inputs and skills contributed by their volunteer directors were considerable. But it is understandable that these groups progressed their projects more slowly than some of the 'professional' CE groups within the Next Generation programme.

The next chapter presents detailed findings on each of the innovation projects.

3. Findings on individual innovation projects

This chapter presents more detailed findings on the eleven projects within the innovation programme. The groups are presented here in alphabetical order.

- Bath & West Community Energy
- Brighton Energy Co-op
- Burnside Community Energy
- Carbon Co-op
- Chester Community Energy
- CREW Energy
- Gloucestershire Community Energy
- Green Fox
- Lockleaze Loves Solar
- Nadder CE
- Plymouth Energy Community

3.1 Project evaluation – Bath & West CE

3.1.1 About the group and their innovation project

Bath & West CE is a well-established community energy group, established in 2010 and structured as a Community Benefit Society serving an area with a population of around 260,000. The group was founded to contribute to decarbonisation of the energy system by implementing renewable energy that is locally controlled, delivering local benefit and involving local people in developing solutions to the low carbon energy transition. The group has 2 full-time and 2 part-time staff, together with 20 regular volunteers and 700 shareholder members (of whom 400 live in the local area). B&WCE have run multiple share-offers, raising at least £9 million in total. At the time of its application, the group had installed 12.35 MW of renewables capacity and had distributed £175,000 of surplus for community benefit, focusing on fuel poverty and carbon reduction initiatives. The group is currently transitioning from being a renewable energy provider to becoming more of a community energy services company.

B&WCE received innovation funding for their 'Flex Community' project, run in partnership with Stemy Energy. 'Flexibility services' or 'demand side response' can play a role in enabling the local electricity grid to accommodate more renewable generation. This project is testing the provision of flexibility services by 50 local households to the local Distribution Network Operator (Western Power Distribution), aggregated by B&WCE via Stemy Energy's cloud-based platform. The electrical assets that would be used to provide flexibility can be automatically controlled via the platform and include domestic hot water heaters, air source heat pumps and electric vehicle chargers. At this stage, the project is simulating real-time flexibility requests for Western Power Distribution (the DNO) to test the model, test household responses and validate the business model for scaling and replication.

3.1.2 Review of progress in Year 2

This is a Round 2 project which joined the Next Generation innovation programme in the summer of 2020. The project has made good progress but has been impacted by several factors that have slowed progress against their original targets (e.g. hiatus in supply chain linked to Brexit). They have now signed up 22 households who already have (or are in the process of buying) flex-ready hot water controllers, air source heat pumps and/or electric vehicle (EV) chargers. They have recently launched a marketing campaign to reach their target of 50 participants and are developing detailed 'customer journeys' and 'installer journeys'.

Specific challenges encountered during the project have been:

- **Reluctance of equipment manufacturers to share API.** B&WCE found that they needed a Non-Disclosure Agreement with manufacturers before API could be shared. Companies appear to have been reluctant to share theirs with a relatively small CE group rather than developing their own way of providing flexibility.
- **Building the online portal.** Stemy Energy's online platform was less developed than they had anticipated and had to be adapted to the UK market. The functionality of the portal was carefully tested before its launch, to reduce the risk of households encountering hitches.
- **Identification of equipment that is 'flex enabled'** and capable of being automatically controlled via the Stemy platform. There turned out to be only 3 ASHP suppliers and 2 EV charge point suppliers who met this specification at the time that the project went live. This gave the households some choice of supplier, even if the choice is less broad than originally hoped.
- **Recruitment of households**, which has been adversely affected by COVID (e.g. B&WCE not being able to visit properties) and by the need to ensure that households are suitable for participation in the scheme (e.g. not vulnerable individuals).
- **Confusion arising from Green Homes Grant voucher scheme** – customer and installer awareness of the GHG generated a flurry of enquiries to installers about heat pumps but the grant was then pulled, so B&WCE will lose some people for whom it will now be too expensive to install a heat pump. Also, installers got overwhelmed so it was difficult to persuade them to deal with applications from Flex Community households.

3.1.3 Findings on process

B&WCE have taken a highly professional, low risk, approach to delivery of the project, so as to maintain B&WCE's good name and reputation. In summer 2021, they had submitted their report for the end of Phase 3 of their Next Generation grant and were about to embark on Phase 4, the final phase of the grant.

A programme stakeholder commented that this project is an interesting example of a CE group working with a private sector innovator to achieve social outcomes. A key element of the innovation is that B&WCE are developing a single customer journey for customers who can choose their kit and installer, and then go on to optimise flexibility outcomes via B&WCE's platform. B&WCE are using their trusted relationship within the local community to get people involved with flexibility.

B&WCE have established a strong relationship with Stemy Energy. The benefit of the partnership to Stemy is that they learn about the challenges of recruiting participants and how to apply their technology in the UK. There are differences between the UK and Spanish market. For example, Spanish households tend to have more electric assets than UK households e.g. electric heating, air conditioning and/or swimming pool.

3.1.4 Interim findings on impact

Impact on grantee

B&WCE report that the Flex Community project has helped them generate good will with their members and the wider CE market, showing that they are not standing still but seeking to be innovative and agile in exploring new opportunities that will ultimately benefit the Community Fund.

Next Generation support has also acted as a stepping stone to other opportunities for B&WCE. For example, B&WCE has entered into a further partnership with Stemy Energy in the EU-funded REDREAM project. This will enable them to recruit another 100 households in a WPD 'Constraint Management Zone' and further improve the business model. The CMZ is outside B&WCE's normal area of operation. The EU funding has complemented Next Generation support by enabling B&WCE to recruit a marketing officer. The EU-funded officer is helping B&WCE with Next Generation project marketing as well as the EU REDREAM marketing (e.g. social media, videos, zoom calls).

Potential risks to B&WCE have been carefully managed. For example, B&WCE pre-qualifies suppliers for households but the household itself is responsible for selecting their own equipment and entering into an agreement with Stemy Energy so that B&WCE is not legally liable if equipment goes wrong.

Impact on people (e.g. volunteers, employees)

The Next Generation project has helped B&WCE to develop its technical knowledge and the skill base of its local project staff. For example, they have improved their skill in negotiating with equipment suppliers and in selecting customers for flexibility projects. Skills development has been amplified by EU support via REDREAM. For example, the EU project provided support from marketing and recruitment experts which helped to shape the second round of B&WCE's recruitment campaign for the Next Generation project. It is not clear whether staff employed in these projects, whose skills have been improved, will be retained within B&WCE beyond the end of the Next Generation and REDREAM projects.

Impact on place (including users in the community)

Work with 'Flex Community' users is at an early stage. B&WCE undertook some initial feedback interviews last year and was in the process of running a second wave of feedback surveys at the time of this research. Findings from these surveys will be available later in the project. B&WCE is interested to do further impact research with new tranches of people coming on board during 2021, which might include surveys or video work.

Users involved in the 'Flex Community' trial generate little financial benefit but have the satisfaction of being part of a cutting-edge project. Users need to agree to automatic control of their energy technology's electricity consumption, within pre-agreed comfort levels. Beyond the trial phase, when the project is fully functioning, the intention is that users will receive an annual flexibility payment plus a share of direct flexibility revenue from the Distribution Network Operator (DNO). However, anticipated household revenue is unlikely to be more than £100 per year, so B&WCE suggest the messaging to households needs to be environmental or values-based rather than economic.

Impact on marketplace

The delays mean that B&WCE have not yet been able to gather enough simulation data to test the 'Flex Community' model. They anticipate doing this by the end of the project.

3.1.5 Plans for the future

A key issue for the future will be how many households are needed to make the ‘community energy aggregator’ model viable. The business model will include consideration of:

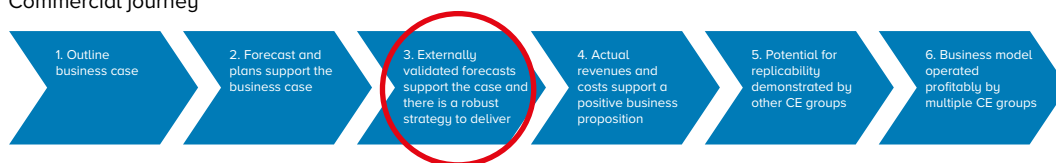
- How much flexibility the CE group needs to offer.
- When do they need to offer it.
- What revenue(s) they could earn.
- How they split the revenue between the interested parties.
- How many participating households are needed to make it viable.

B&WCE is considering whether there could be other sources of revenue, in addition to flexibility payments from the DNO. For example, it might be possible for a CE group to obtain finder’s fees from installers, for putting customers their way; or for there to be an annual subscription from households for being part of the scheme, even if they don’t actually get called to offer any flexibility in practice.

Subject to limitations about commercial sensitivity (e.g. in relation to Stemy Energy’s role), B&WCE expect to be able to share information on the average price per kW of flexibility offered. B&WCE is not aware of other CE groups undertaking similar projects but there is a similar commercial offer from Kaluza and Octopus Energy. A summary of B&WCE’s dissemination activities is presented in Appendix 4.

Our assessment against the innovation scale is shown below, as agreed with B&WCE:

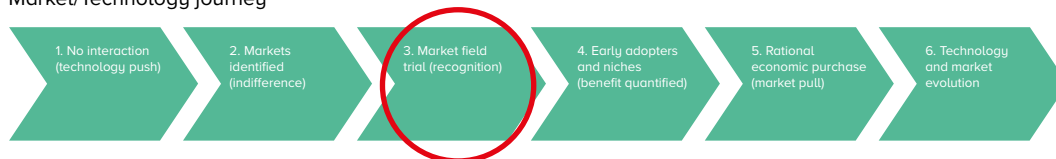
Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.1.6 Key project learning points from B&WCE to date

Learning about this business model

- B&WCE’s trusted status within the local community, including those interested in energy issues, enabled them to recruit community members easily for this trial project.
- CE groups need to be selective as to the customers they accept onto flexibility projects of this nature – e.g. need reliable internet connection; need to recruit people as ‘pioneers’ willing to take some risk; need to screen out vulnerable people who could not cope with the risks involved in the project (e.g. having their hot water controlled; potential failure).
- Smart equipment manufacturers (e.g. EV charge points, air source heat pumps) are rarely willing to share Application Programme Interface (API) information without requiring signature of a Non-Disclosure Agreement (NDA), which is extremely time-consuming. B&WCE and Stemy have developed a ‘work around’ to avoid accessing equipment API³.
- A key question for the viability of the ‘Flex Community’ business model will be how many householders are needed for the project to be financially viable.
- Significant investment is required in developing relationships with customers and installers and fully understanding their requirements.
- Credibility and reputation of B&WCE is an important part of the ‘value proposition’ for this business model. The CE group needs to maintain this and manage expectations to avoid risk of failure and loss of reputation: it really matters to people if they are left without adequate heating, hot water or mobility.

3 Rather than controlling the equipment through the manufacturer’s API, the ‘work around’ is for the equipment’s smart functionality to be switched off so that Stemy’s control box can control the equipment directly. This limits some of the functionality of the automatic control process (e.g. heat pumps can be turned on or off but cannot be ramped up or down).

3.2 Project evaluation – Brighton Energy Co-op

3.2.1 About the group and their innovation project

Brighton Energy Co-op (BEC) is a well-established CE group that has been running for 10 years. It has over 700 members with about 70% in the Brighton area and has more than 70 solar PV arrays at 40 locations in the South East. Income from selling this solar electricity is distributed as interest to their members, as capital repayment and also goes into their community fund. The group has several paid staff and takes a highly professional approach to its work. BEC has run several community share offers, the latest being launched in March 2021 which raised £200,000 in three days.

BEC have been funded by Next Generation to investigate and pilot electric vehicle (EV) charge points linked to their existing solar panels ('PV plus EV'). The aim was to develop a business model for EV charge points that would help to support future investment in community-owned solar viable after the end of the Feed-in Tariff, while also supporting low-carbon usage of EVs by members of the local community. At the time of the Year 1 report, BEC had identified a range of locations for the charge points, developed financial projections for charge point costs and revenues, developed a procurement process for EV charge points and placed orders for 10 'Pod Point' charge points. Installation of the charge points was delayed by the COVID pandemic during the spring of 2020.

3.2.2 Review of progress in Year 2

BEC has developed COVID-compliant procedures for charge point installation so this has now started in spite of ongoing COVID restrictions. At the time of the evaluation research, in April 2021, BEC had installed three charge points at the University of Brighton and one at Bolney Wine estate. The remaining charge points were due to be installed shortly at other locations in Brighton and other parts of Kent/Sussex where BEC has solar assets (e.g. Amberley Museum, Cardon School, Park Gate residential development, Shoreham Port, Maidstone Football Club). BEC staff have developed a communications strategy with local EV users and local resident organisations and has run a survey with EV users and potential users in one charge point area.

Specific challenges for this project have been:

- **Delays** to charge point implementation owing to COVID.
- **Negotiation of legal agreements** with the owners of potential charge point sites being time-consuming and creating additional delay (e.g. taking at least one year in one case)
- **Usage** of the charge points being very limited so far, because COVID has reduced use of workplace sites such as the Brighton University car parks.
- **Charge point locations** being tied to existing or planned PV arrays, which are not always suitable locations for charge points.
- **Uncertainty** about future revenue from charge points, because of competition from other providers in the local area.

3.2.3 Findings on process

BEC has reached Phase 4, the final phase of Next Generation grant funding. BEC follows a highly professional, commercial process for identifying potential 'PV plus EV' sites. They have a business development manager and follow a well-defined business development process, identifying potential sites using Google Earth and then bringing them 'onboard', involving referrals from existing customers, direct contacts and cold calling to develop a pipeline of projects. Despite this, BEC's project has progressed slowly because of the challenges noted above, which are largely beyond the group's control.

3.2.4 Interim findings on impact

Impact on grantee

The Next Generation programme has enabled BEC to increase their expertise and capacity around EVs. For example, a part-time member of staff has been brought in to lead on communications and engagement around the charge points.

The Next Generation grant has enabled BEC to learn about the feasibility of installing charge points and to explore the viability of their 'PV plus EV' model. They hope that the model may play a role in enabling more commercial/institutional roof-top PV schemes, while also improving access to EV charge points for members of the community. As an urban group, they have not had access to Rural Community Energy Fund (RCEF) funding, and the board would not be able to commit funds raised from community shares to an innovative project of this nature, with no guarantee of a financial return.

The learning from the project has given BEC the credibility to pursue other 'PV plus EV' projects. In particular, BEC is launching a £2million European Regional Development Fund (ERDF) project which will include 12 'PV plus EV' charging projects. BEC is also exploring potential sites for PV arrays and EV charging on car parks with Brighton and Worthing Councils and is developing an EV-related research project in partnership with the University of Portsmouth.

Impact on people (e.g. volunteers, employees)

BEC offers opportunities to local people (e.g. via the Kickstart Scheme and internships) but the impact of these activities is not attributable to the Next Generation programme.

Impact on place (including users in the community)

It is still too early to assess the impact of charge points on local EV users within the community, because the COVID pandemic is currently constraining travel and use of the charge points. However, BEC has undertaken a survey with 60 current and potential EV users in one charge point area. This survey identified concerns that constrain people's investment in and use of EVs (e.g. range anxiety, concern about lack of charge points, concern over the lack of second-hand market for EVs). BEC aims to undertake future monitoring work with charge points users but this research will need to be tailored to the type of charging location⁴.

Impact on marketplace

BEC's experience suggests that the EV charge point market is evolving fast. While consumer use of EVs is still at an early stage, installation of charge points in urban areas is becoming a 'rational economic purchase' for some providers (e.g. supermarkets, councils). The key question is whether, and where, there is a niche for community energy groups to provide charge points.

3.2.5 Plans for the future

BEC have a theoretical financial model for the economics of adding EV charge points to solar PV investments by community energy groups. Subject to some uncertainties, payback within 5 years should be feasible in locations that are suitable for EV charge points, where:

- Cheap, renewable energy is available from solar panels owned by a community energy group.
- There is a demand for EV charging (e.g. workplace parking; or locations conveniently accessible to the public near homes or travel destinations).
- Installation costs are reasonable (e.g. short distance from charge point to electricity supply).
- The benefits of renewable, community-owned charge points can be communicated to users.

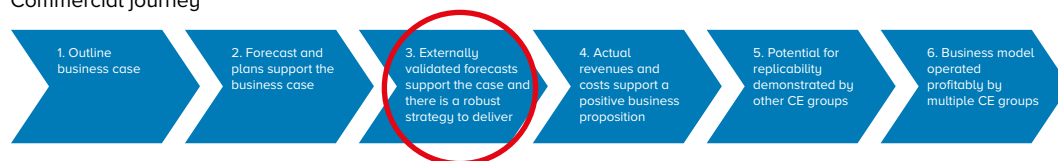
The cost assumptions in this model are backed up by robust data from BEC's experience but there is still considerable uncertainty about charge point revenues (which would be shared between BEC and the site owner). BEC expect that the predicted ramping up of EV usage in years 3 or 4 may still make the charge points profitable.

BEC are still developing their thinking about the niche for 'PV plus EV' in the community energy sector. Given the installation of charge points by other organisations in urban centres like Brighton, the best niche may be elsewhere (e.g. at business locations and/or community facilities in less urban areas).

4 The charge points have a QR code which can take users to the BEC website, but the charge points will not collect vehicle registration or personal data. For residential sites, BEC will be able to survey local residents; at workplace sites, it may be possible to survey employees to assess charge point impacts. At Brighton University sites, feedback on charge point impacts can be gathered via the University's annual transport survey. BEC aim to undertake such survey work before the end of the project.

BEC has already been sharing their insights and knowledge beyond the Next Generation programme as set out in Appendix 4. Our summary assessment against the Next Generation innovation scale is presented below. By the end of the project, BEC expect to have reached stage 4 of the commercial journey, with visibility of actual charge point revenues and insights into viable locations.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.2.6 Key project learning points to date

Learning about this business model

- Three key factors for charge point installation are:
 - (1) Location – e.g. proximity to electrical connections to minimise groundworks
 - (2) Price – this varies widely between charge point suppliers
 - (3) Usage – it is important for CE groups to model potential usage to maximise return on investment and avoid ‘stranded assets’.
- In urban areas, other organisations such as supermarkets and local authorities are actively installing EV charge points. This presents potential competition for charge points installed by community energy groups, particularly if usage of the other charge points is free.
- The charge point supply chain is currently under strain from the high charge point installation activity – and community groups such as BEC that are installing a few charge points are lower priority for suppliers than councils or supermarkets that are installing hundreds.
- Setting up lease or licence agreements with the landlord at charge point locations is one of the main hurdles in this approach.
- While BEC now have template agreements, use of these templates is generally more straightforward for small, private organisations that have simple decision-making processes. In contrast, legal costs and time delays are higher when dealing with larger, more bureaucratic organisations like universities, where templates still need adaptation and sign-off. BEC have found that sites often employ lawyers costing £1,500-2,000 to negotiate a lease for a charge point that is worth £3,000-3,500, which makes little sense. A move to simple, proven legal agreements is needed.

3.3 Project evaluation – Burneside Community Energy

3.3.1 About the group and their innovation project

Burneside Community Energy, founded in 2015, arose out of a community planning and visioning exercise in Burneside village, Cumbria. BCE is run by 7 volunteer directors, with a further 5 volunteers managing the group's Community Benefit Fund. The group has no paid staff but uses external funding to commission paid consultancy advice. At the time of the Next Generation application, it had 116 members of whom 77 were from the local community. The group has installed 700kW of solar PV on the local mill, via community share offers, and has installed solar PV on the local school. The group is continuing to raise funds for further phases of its major solar PV project.

BCE's innovation project involved investigating the feasibility of developing a community-owned energy supply system for a proposed development of 93 new homes in the heart of the village, on land owned by the local mill. The plan was to develop a self-sustaining local supply business, generating income through sales of electricity and heat (ideally at below market rate) and using supply/demand balancing to minimise the impact on the capacity-constrained local electricity grid. The technical plan was ambitious, potentially involving a micro-grid and energy store. The Next Generation project built on previous feasibility work funded by Electricity North West's 'Powering our communities' fund and the Rural Community Energy Fund (RCEF).

3.3.2 Review of progress in Year 2

Burneside CE investigated the technical and economic viability of the local supply system, working with the landowner, the village community and the housing developer's design team. They aimed to move towards a 'Heads of Terms' agreement with the developers about how the local supply business would work. If the project had proceeded as planned, later stage of the work would have involved more detailed feasibility modelling and contribution to the planning application for the development.

However, the landowner has decided that the proposed new housing will not now go ahead within the timeframe of the Next Generation programme. The change of plan was due, at least in part, to the challenges that COVID posed for the landowner's local mill business. BCE has therefore withdrawn from this innovation project, closing it before they reached Phase 2.

To summarise, specific challenges for this project included:

- **High levels of risk** in a complex project
- **Dependency** on partner commitment to the project.

3.3.3 Findings on process

The challenges posed by COVID had a significant impact on this project, not only in terms of impacting the landowner's plans but also impacting the time that team members could commit to the project. However, COVID did bring some benefits for this remote rural team, as online working enabled them to participate more actively in learning events run by Next Generation, Community Energy England and others.

However, the technical and regulatory challenges posed by the project would have been significant even without COVID. The Burnside project is similar in scope to the PEC project, involving feasibility and modelling work aimed at identifying a viable, feasible and sustainable low-carbon energy system for a new housing development. As for PEC, there were significant issues about how to share costs and risks between the different stakeholders (e.g. BCE, the landowner, the developer, the eventual residents). Although BCE discussed the issues with these stakeholders during the project, they reported that it took a long time for the other parties to understand how BCE worked and the level of risk that it could feasibly carry while fulfilling its responsibilities to community shareholders.

Landowner & developer didn't get the whole risk dimension for BCE. [...] They didn't really understand community energy per se or the nature of our requirements on this project – the nuts and bolts of what a community benefit society means, the rules, the safeguarding that is needed, the contractual requirements to agree and share the risk etc. [...] We talked to them about it all but it wasn't until they saw the contractual arrangements that they realised we meant what we said and started taking us seriously. We should have gone to them with a contract a lot sooner. (BCE representative)

3.3.4 Interim findings on impact

Impact on grantee

The Next Generation grant enabled BCE to progress the emerging ideas for the new development. It would not have been possible to progress the project without external funding. The grant also had a wider impact of bringing the group more into contact with the wider CE community. For example, BCE held discussions with PEC about build energy performance specifications and energy modelling, and shared information with Lockleaze Loves Solar about PV roof leasing arrangements and housing associations.

We couldn't have proceeded without it. We're out on a limb geographically and it connected us with the outside world. (BCE representative)

Impact on people (e.g. volunteers, employees)

Involvement in the feasibility project has given BCE directors more insight into technical options and regulatory issues.

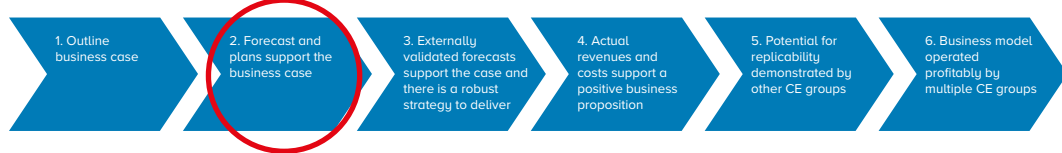
Impact on place/market place

This project closed at an early stage so did not have a direct impact on the local community or the wider CE marketplace. However, the feasibility work may have some future application if and when the housing development is progressed.

3.3.5 Plans for the future

Our assessment of this project against the innovation scale, as discussed with BCE, is shown below. BCE assessed the technology journey as being at step 2 ‘markets identified’. This may be due to the inclusion of innovative energy storage in the housing development design in addition to batteries, solar PV, heat pumps and a microgrid.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.3.6 Key project learning points to date

Learning about process

- It is important to engage the wider community and bring them along with the story of the project so that they understand how the project connects with their local area and issues.
- Using Zoom has actually helped some community meetings by ensuring that people take turns to speak rather than having side conversations or speaking over each other, and it has encouraged more people to attend because they can do so from home.
- Getting to the point where different stakeholders really understand each other's perspectives and issues can take a long time. Looking at written materials (e.g. draft contracts) helped to clarify issues in this case.
- Community Benefit Societies have particular perspectives and constraints that need to be communicated to potential partners and other players in the energy system.

Learning about this business model

- Developing a community-owned energy supply system for new housing is currently highly challenging, but the reason why this project could not be progressed relates to external factors rather than infeasibility.
- The 'energy store' concept considered by Burneside was at the cutting edge of technology and had not previously been used in the UK, by the commercial or community energy sectors.
- Roof tops within the new development would not have provided a sufficient area of solar PV for the economics of the scheme to work. An alternative would have been to install ground-mounted solar PV close to the development.

3.4 Project evaluation – Carbon Co-op

3.4.1 About the group and their innovation project

Carbon Co-op is an energy services and advocacy co-operative that helps people and communities to make the radical reductions in home carbon emissions necessary to avoid runaway climate change. The Carbon Co-op was founded in 2008 as a response to members' concern about the threat of climate change and to enable the development of a collective and pro-active response leading to a large-scale reduction in carbon emissions from homes and communities. At the end of 2020, the co-op had 267 members and 20 employees with governance provided by a board of 12 directors made up of both members and staff.

The co-op has had an interest in digital systems since its inception and is aware that the creation, aggregation, processing, analysis and manipulation of energy data is becoming increasingly important as the energy system becomes more decentralised and more decarbonised. While the private sector has to date dominated data collection, manipulation and management, support from Next Generation is being used to build an Energy Data Co-op. Carbon Co-op sees a potentially powerful role in the digital energy system for citizen co-operatives: groups of consumers, enabled through digital technology, to collectively provide and use energy services.

3.4.2 Review of progress in Year 2

This is a Round 2 project which joined the Next Generation innovation programme in the summer of 2020. A longlist of software-based energy services, that will form the offer of the Data Co-op, was developed via a stakeholder workshop in May 2020. Through a mini business modelling process, four services were identified for further development:

- **Powershaper Monitor (Smart Meter Service)** – this fee-paying service allows Data Co-op members to download and analyse their smart meter data. The data can inform energy tariff choices or other decisions (e.g. maximising benefits from solar PV or from a new heat pump). Carbon Co-op has 60 people enrolled for this service and aims to reach 2-3,000, potentially selling this service for a modest annual fee.
- **Impact Tracker** – this allows users to baseline their energy use and then track the impact of technical and behavioural changes on their energy use (including changes arising from their involvement with Carbon Co-op). This has been piloted and is used by 50 Data Co-op members and 50 non-members. It is available free to Data Co-op members and has not yet been monetised.
- **Home Environment Monitoring and Investigation service** – at an early stage of development. This service uses cheap monitoring equipment to monitor temperatures, humidity and so on, allowing users to collect home environmental data for benchmarking, troubleshooting, retrofit planning and evaluation.
- **Home Retrofit Logbook** – will enable homeowners to log energy efficiency work, in the same way that a car logbook records and shares maintenance work. Development of this service is still at an early stage.

Specific challenges for this project have included:

- **Project managing** the development of multiple software products which are being developed in parallel.
- **Defining monitoring arrangements** with the CSE consortium for work on these software products. There were differences of opinion between the project and the consortium about the level of ‘process reporting’ detail needed to justify expenditure of the Next Generation grant.
- **The need for expert support** beyond the CSE consortium, when members of the consortium were not able to help. For example, Carbon Co-op benefited from ‘pro bono’ mentoring by Thoughtworks.

3.4.3 Findings on process

Carbon Co-op are in Phase 3 of their Next Generation grant. There were initial capacity issues within the organisation, with the initial project lead not feeling confident that they had the skills required to lead the project. The situation improved after Carbon Co-op changed their project management arrangements in response to these issues. Some elements of the project have been progressing as fast or faster than expected (e.g. the Powershaper monitor service), and the project is now taking forward four services rather than the original target of two services.

3.4.4 Interim findings on impact

Impact on grantee

The Next Generation funding has enabled Carbon Co-op to develop business model templates for four energy services, beginning to put two of these into action. There is some cross-subsidy via other projects (e.g. access to smart meter data has been facilitated via another project, as mentioned in Carbon Co-op’s application).

Involvement in the project has changed how Carbon Co-op manages software development. A change was necessary because it was impracticable to develop multiple software products at once using conventional project management methods. They now adopt a ‘production design cycle’ approach, which helps to get to a ‘Minimum Viable product’ more quickly and helps to streamline management of multiple projects.

Impact on people (e.g. volunteers, employees)

It is not clear whether the Next Generation support has enabled Carbon Co-op to employ more staff or whether it has upskilled staff or volunteers within the organisation, beyond the management changes outlined above.

Impact on place (including users in the community)

Carbon Co-op have done some 'observed user testing' and are currently working with an external organisation, Shortwork, to interview staff and end users. The report on this survey work will be available before the end of the project.

Participants are self-selected and tend to be early adopters and technically-confident people who have the right sort of inclination and interest. While gender diversity is good, ethnic and social diversity is currently less evident with participants being predominantly white, urban educated professionals or retirees who are already engaged with energy or climate issues. However, the Impact Tracker product looks at environmental justice as well as environmental impact, examining changes in knowledge and confidence over time. This may become more relevant as and when the products are rolled out more widely.

Impact on marketplace

While roll-out of some of the products appears viable, it is too early to assess impact on the CE marketplace.

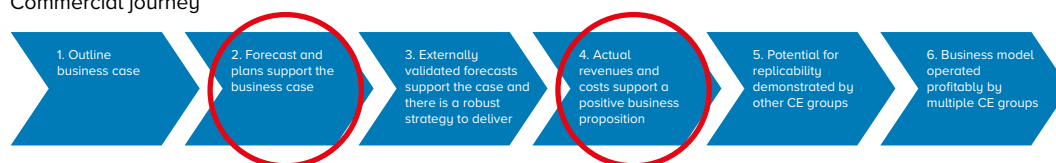
3.4.5 Plans for the future

Carbon Co-op will provide a business plan to Power to Change by the end of the Next Generation project, indicating which data services may or may not be viable products. They are slightly ahead of this as they are already selling one product (the Powershaper Monitor). The current status of the energy service models is presented in 'Business Model Canvas' format, which highlights the main 'value proposition' from a new business model, as well as specifying key partners, activities, resources, customer relationships, customer segments, channels, costs and revenue streams.

Carbon Co-op have modelled cashflows from the Powershaper Monitor product and estimate that they will need a minimum of 2000 users by 2023 to break even. They expect to achieve this through a 'social franchise' route. This would enable many community energy groups to offer the service without possessing the technical expertise to operate their own smart meter access service. Carbon Co-op's dissemination activities are set out in Appendix 4.

Our assessment of Carbon Co-op status is shown against the innovation scale below. The two circles shown on the commercial journey relate to the Powershaper Monitor (stage 4) and other products (stage 2).

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.4.6 Key project learning points to date

Learning about process

- In software development, it can be helpful to use rapid ‘project development cycles’ to develop and test software products with users, with products being repeatedly refined and retested in successive cycles. This approach has helped Carbon Co-op get to ‘Minimum Viable Product’ more quickly than their previous, conventional project management approaches.
- The project manager for a technical project of this nature needs the right set of skills and expertise.
- The funding of software development projects needs different monitoring arrangements from hardware installation projects.

Learning about policy

- There is considerable interest in open data standards and in Carbon Co-op’s Powershaper Monitor (i.e. smart meter service) amongst energy suppliers (e.g. Octopus Energy) and policy makers (e.g. BEIS).

3.5 Project evaluation – Chester Community Energy

3.5.1 About the group and their innovation project

Chester Community Energy Limited (CCEL) is run entirely by volunteers, comprising five directors and a company secretary. The organisation was founded in 2016 and now has 90 members. It has installed three solar PV arrays on the roofs of council-owned buildings and has raised two rounds of community shares. Income from the solar arrays provides a return to members, with the surplus being distributed via their community benefit fund (CBF).

CCEL was funded by Next Generation to set up a scheme that uses loans to fund replacement of old lighting systems in community buildings with energy-efficient LED lighting.

3.5.2 Review of progress in Year 2

CCEL has successfully installed energy-efficient LED lighting in five community buildings on a funded basis, three of which were part-funded from their CBF. They have found a cheaper source of materials to keep costs down, keeping the average installation price including VAT below £3,000.

CCEL have created a cashflow model that shows the viability of doing this on a loan-funded basis, where the building criteria are suitable (e.g. where the building has sufficient usage so that cost savings from the LED lights justify the capital cost of lighting replacement). However, they have still not overcome the blockage identified in Year 1, that their CBS is unable to obtain FCA approval to issue credit to community organisations⁵.

During the past year, CCEL progressed to Phase 3 of their Next Generation grant, trying various angles to overcome the FCA blockage. However, none of them has yet provided a robust, replicable model. Particular **challenges** were that:

- FCA's 'innovation route' was unresponsive and provided no real assistance.
- Via CEE's Loomio service and CSE's support, CEL identified two other CBS who have obtained FCA accreditation but their circumstances were slightly different (e.g. they were lending to private individuals not community organisations).
- They are aware of at least one CBS providing 'lighting as a service'. But this did not provide a route to recover installation costs, and they have been advised by a specialist barrister and solicitor that service charges could be construed as interest. This means that CCEL could still be defined as providing credit to private consumers under the Consumer Credit Act if it followed this route.
- They tried arranging the loans through their local credit union but found that the credit union could only lend to individuals, not community organisations.
- Potential intermediaries would levy charges that made the model unviable.

5 Unincorporated organisations count as 'private consumers' and are protected under the Consumer Credit Act in the same way that a private individual would be. Lending to companies or other incorporated organisations is much less problematic as they are not classified as 'private consumers'.

We understand that CCEL has recently received new legal advice which suggests there might still be a way forward, and is currently doing one final push to resolve the regulatory issues by submitting a 'limited' application to the FCA.

If the loan-based model cannot be progressed, CCEL will continue to offer LED lighting to community organisations that can meet most of the cost upfront, with support from the CBF where this is justified. They could offer more if they had grant funding but they don't have the capacity to identify potential grant sources.

3.5.3 Interim findings on impact

Impact on grantee

Funding and support from the Next Generation programme stimulated CCEL to establish their LED lighting activities. The impetus provided by the structure of the Next Generation programme was almost more important than the funding. This may be, in part, because the CCEL directors chose to continue working on a voluntary basis, donating their payments back to the organisation.

We were already thinking about LED lighting but NextGen allowed us to take it on and we wouldn't have done it otherwise... Or at least it would have been extremely difficult. We needed the motivation to take it on as much as the funding. They provided a structure for us to work at. Even the application process helped us to think through the issues and structure our thinking, [and] generated ideas. (CCEL representative)

A second area of impact was that CCEL produced a lot of policy documents for the organisation as part of the Next Generation and FCA applications. Beforehand they only had a data protection policy. A CCEL director reported that involvement in the Next Generation programme had built up their policies, systems and strengthened their governance, and that it had also raised their profile within the community.

A third area of impact is that the Next Generation evaluation funded a member survey for CCEL, which helped CCEL to understand their membership better and to test interest in future investment rounds. The findings of this survey are presented in a separate report.

Impact on people (e.g. volunteers, employees)

As outlined above, CCEL directors continued to work on a voluntary basis and routed their Next Generation payments back into CCEL. A CCEL director reported that they had increased their specialist technical skills through the project, particularly in learning about smart technology, movement sensors and other aspects of LED lighting. They have also learned how to administer LED installations smoothly, for example sorting out the detail of installations in advance as this can affect prices significantly later on, and ensuring that the initial survey is sufficiently detailed to pick out any unusual features of the building being surveyed.

Impact on place

CCEL directors report that they had good feedback from beneficiaries, with the operators of community buildings reporting that they and their users were pleased with the improved environment provided by LED lighting. The main benefits of LED lighting for the community groups were reduced lighting costs, ease of maintenance (e.g. fewer bulb or tube replacements) and improved image through provision of modern lighting. Carbon savings were not reported to be a significant motivator for the community groups to replace their lighting systems.

There may be less additionality for LED installations in future as regulations about lighting were announced by the Government in June 2021. Village halls and community centres may have to replace fluorescent tubes with LEDs at some point, since most types of fluorescent tube will be phased out in 2023.

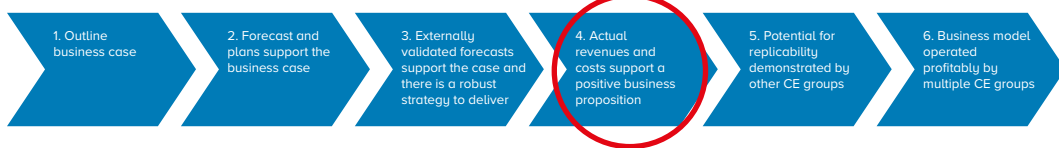
Impact on marketplace (i.e. assessment against TRL)

There has not yet been impact on the CE marketplace. But, if CCEL succeed in finding a route to FCA approval which is more manageable for small CE groups, CCEL’s model may assist other groups in the CE sector.

3.5.4 Plans for the future

The future of this project depends on CCEL obtaining ‘limited’ FCA approval. Our revised assessment against the innovation scale is presented below. The blue ellipse indicates that the model is currently blocked by lack of FCA accreditation.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.5.5 Key project learning points to date

Learning about process

- CCEL’s initial decisions about delivery worked well: they decided to treat clients as partners rather than customers; to be fair to their contractors (working with one contractor and not re-tendering for each job); to use quality materials with a five year warranty and to work with local people as far as possible.
- As a small voluntary group, CCEL does not have much capacity to identify sources of grant funding. But CCEL accesses additional capacity by collaborating with other local charities (e.g. Cheshire West Voluntary Action administers the application process for CCEL’s CBF; and Cheshire Community Action promotes CCEL’s LED offer in rural areas).

Learning about this business model/policy

- Problems with accessing FCA approval as a Community Benefit Society have so far proved insurmountable for this project. CCEL do not think it appropriate that the FCA accreditation requirements for a small CBS scheme should be the same as for large credit card companies and payday lenders, which they appear to be. However, they are currently trying to obtain ‘limited’ accreditation which may yet provide an easier route for small-scale credit schemes offered by community organisations.
- As an alternative to CE groups providing finance, Power to Change itself could consider offering low or no cost finance to community organisations that want to improve their premises, along the lines of the successful ‘Salix’ loan scheme for public sector organisations.

3.6 Project evaluation – CREW

3.6.1 About the group and their innovation project

CREW Energy is a not-for-profit Co-operative made up of south-west Londoners who care about making London a more resilient and sustainable community. Established in 2014, CREW helps community groups and individuals in London – and particularly in the boroughs of Wandsworth, Merton and Lambeth – to access low-carbon solutions. At the time of the Next Generation application, CREW had three directors who received part-time payments and also put in additional voluntary time. They also had around 20 members and shareholders, plus around 10 regular volunteers. A couple of members were paid for specific tasks (e.g. ‘energy café’ work, funded via a UKPN grant).

The initial aim of CREW’s innovation model was to develop a financially sustainable model for installing and maintaining heat pumps in public sector or commercial buildings as well as housing estates, with installation costs funded through a community share offer. The intention was that revenue would be generated through Renewable Heat Incentive payments as well as potentially flexibility payments through Demand Side Response services. It was also intended that support would be offered to private sector householders to facilitate the installation of heat pumps.

3.6.2 Review of progress in Year 2

CREW has slightly changed its focus because of changes in funding availability, including the end of the non-domestic RHI in March 2021 and the end of the domestic RHI in March 2022, the introduction of the Public Sector Decarbonisation Scheme and the introduction of the Green Homes Grant (temporarily, during 2020/21) and proposed Boiler Upgrade Scheme (previously known as the Clean Homes Grant). The project has investigated a number of routes for facilitating clean heat, in partnership with a number of London local authorities, community groups/charities, social housing providers and private home-owners. With each group there are different opportunities (e.g. funding sources) and different constraints. COVID has also constrained activities during the past year.

The first major success for CREW in this field has been the installation of heat pumps in the Devas Club building, a community centre used for youth activities in South London. The installation was funded by CREW’s first share offer which raised £50,000, and the heat pump was expected to receive approval for non-domestic RHI funding. CREW plan to investigate whether the Devas Club heat pump and associated hot water tanks could be used to generate additional income by offering flexibility services to the electricity grid.

The group has plans for a second share offer and further heat pump installation with other partners, including a theatre, libraries and schools. CREW has also been pursuing other sources of funding and has been successful in winning Government funding from the ‘Low Carbon Skills Fund’ to support heat pump installation. They see a great deal of potential in partnering with local authorities and schools in London.

We can do the whole chain: the outreach, assessment, raising finance, project delivery. The piece we still need to get the council comfortable with is our ability to raise the necessary finance. (CREW Energy representative)

To summarise, specific challenges for this project have been:

- **The end of non-domestic RHI funding** at end March 2021
- **Launching CREW's first share offer** during the COVID pandemic

3.6.3 Findings on process

CREW has been pro-active in finding a way through the challenges of COVID restrictions and the changing landscape of Government funding. The success of their first share offer, undertaken during the height of the second COVID lockdown, is testament to this. Despite joining in Round 2 of the Next Generation scheme, they have reached Phase 4 of their grant.

3.6.4 Interim findings on impact

Impact on grantee

CREW stated in the Power to Change grantee survey that they could not have undertaken this project without Next Generation funding.

CREW's £50,000 shareholder was run in early 2021, raising £31,000 directly from the community and £19,000 from the Booster scheme funded by Power to Change, via Co-operatives UK. CREW drew on the knowledge and experience of one of their directors who is also involved with another community group and benefited from handholding advice from other CE groups (primarily London based groups, outside the NG portfolio). CREW Energy achieved the 'Standard Mark', the quality assurance mark for community shares, but with hindsight think that this may not have been worth it, as it involved considerable extra work and does not appear to have had meaning with consumers.

A key learning point on community shares is that it is worth maintaining upward momentum during the process (e.g. planning events to attract interest during the share raise period and possibly even contributing some of your own cash at times).

CREW is already well networked within London, working with various councils, with other CE groups, social landlords and schools, and accessing funding from a range of sources. They are starting to engage more with UKPN. But these networking activities appear to be attributable to CREW's dynamism rather than the Next Generation grant.

Impact on people (e.g. volunteers, employees)

CREW's activities include skills development and training for young people, offering opportunities for them to become part of CREW's team as Domestic Energy Assessors or volunteers. This training activity was funded by the Next Generation grant. CREW's work with the Climate Action Group in Merton includes an arrangement by which CREW enables the council to take on a few young apprentices, funded via the Kickstart programme.

Impact on place (including users in the community)

CREW proactively approached the Devas Club about installing a heat pump, having previously undertaken energy efficiency measures at the club. The Devas Club trustees took time to get comfortable with the idea, but eventually went ahead because they were keen to cut carbon emissions, because they trusted CREW and because CREW funding meant that they could install the heat pumps despite having no capital to invest because of COVID. Through a succession of meetings and Zoom calls, CREW effectively persuaded the Devas Club to change their heating system.

So much of this stuff is about changing behaviour and attitudes and this is key. You can set as many policies as you like but if you don't take people with you there's no point. (Devas Club representative)

CREW takes a holistic approach to its work, with an emphasis on community engagement. So, having installed the heat pumps at the Devas Club, they hope to use them to raise environmental awareness amongst the local community, including young people using the club.

While the heat pump has not yet been used during a heating season, and the impact on users is not yet known, the Devas Club trustees are reported to be happy to have taken this step to reduce their emissions. There are expected to be marginal savings in running costs for the club: CREW will monitor heating output and running costs. A benefit to the Devas Club is that the heat pumps have become part of the Club's story, helping them to 'green' their profile and encourage donations from individuals and trusts.

It gives me a glowing feeling when people are talking about decarbonising and it's such a crisis; it's a lovely feeling to know we have had double glazing, LEDs, insulation, heat pumps..... And a lot of it is thanks to [...] and CREW for making it happen. Without [...] we wouldn't have had the oomph and energy to get this off the ground. (Devas Club representative)

Impact on marketplace

CREW Energy’s work shows that there are a number of routes by which CEBs can enable heat pumps installation on community and public sector buildings, with details being dependent on the nature of the partner, the scope for community share raises and the external funding sources available at the time. However, this will be more challenging in future given the end of the non-domestic RHI scheme at end March 2021, unless alternative funding streams are available (e.g. the Public Sector Decarbonisation Scheme, local authority carbon offset funds, Community Infrastructure Levy funds).

3.6.5 Plans for the future

CREW is still investigating business models for domestic heat pumps on behalf of private householders. Again, this is closely linked with the availability of the domestic RHI scheme, which ends in March 2022, and the successor scheme (the Boiler Upgrade Scheme, formerly known as the Clean Heat Grant).

CREW is also still investigating the scope for additional ‘flexibility services’ revenue from heat pumps that are linked to hot water buffer tanks. In pursuing this additional revenue stream, CREW is liaising closely with other groups pursuing similar approaches (e.g. B&WCE (within the NG programme) and Brighton & Hove Energy Services Company (BHESCO)).

The group is already active in disseminating learning from their activities, as set out in Appendix 4. Our assessment of their Next Generation activities against the innovation scale is shown below.



3.6.6 Key project learning points to date

Learning about process

- Don't waste time on multiple small share offers – aim to raise a large amount in one go.
- Don't hold a share raise over the Christmas period and during a pandemic!
- Do plan events to maintain and attract interest during a share raise.
- Engaging with partners can be very slow – but it's worth the patience.
- Developing legal agreements always takes longer than expected.

Learning about this business model

- There is considerable scope for CE groups to install heat pumps in partnership with councils and schools, bringing in PSDS, carbon offset funds, Community Infrastructure Levy funds and/or crowdfunded/community share funding. But this requires CE groups to be well-informed about potential funding sources for them and their partners.
- The 'core offer' of CE groups to councils, schools and community organisations is engagement with stakeholders and tenants, handholding them through the process of planning and installing heat pumps, plus offering wider fuel poverty and switching advice.
- Given increasing interest in 'Environmental Social and Governance' goals within the private sector, there may be more opportunities in future for CE groups to work in partnership with private companies (e.g. local developers).
- Installing heat pumps for private homes in cities can be problematic (e.g. because of planning requirements that a heat pump should be at least 1m from a property's boundary).

Learning about policy

- It is CREW's understanding that BEIS does not currently propose to let multiple dwellings access the Boiler Upgrade Scheme (formerly known as the Clean Heat Grant).
- There is considerable uncertainty about longer term support for decarbonising heat and retrofit. More clarity from Government about the replacements for non-domestic RHI and GHG policies could enable CE groups to make a more significant contribution to renewable heat.

3.7 Project evaluation – Gloucestershire CE

3.7.1 About the group and their innovation project

The aims of the Gloucestershire Community Energy Co-op (GCEC) are to enable local communities and individuals to take part in renewable energy schemes across the county, and to encourage energy saving initiatives. By installing solar panels on community buildings, and developing suitable sites for wind and hydro schemes, they aim to give everyone in Gloucestershire a chance to benefit from low carbon, locally generated electricity and renewable heating.

GCEC is a relatively small group: it had 48 members in spring 2021, all from the local area. Most of the groups' work is undertaken by their five voluntary directors; there are no paid staff. The group was established in 2010 and its main activities to date have been to install 45 kWp of solar panels on the CityWorks building in Gloucester and selling low-cost electricity to community groups who use the building. GCEC have investigated a number of potential projects in recent years, including potential purchase of a solar asset via CORE.

The Next Generation project is focused on enabling the installation of heat pumps and solar panels with battery storage in council-owned homes.

3.7.2 Review of progress in Year 2

The Gloucestershire project has evolved considerably since the group joined Round 2 of the Next Generation programme in summer 2020. The initial plan was to install solar PV and batteries in council-owned sheltered housing. More detailed research showed that this would not be economically viable, so the plan was to add a shared-loop Ground Source Heat Pump that would attract non-domestic RHI, improving the viability of the project. However, COVID made it challenging to install any equipment in sheltered housing, as residents were highly vulnerable. COVID delays also meant that the project did not obtain council go-ahead in time for installation before the end of the non-domestic RHI scheme in March 2021.

GCEC have now developed a revised plan, involving the installation of air source heat pumps, batteries and solar panel equipment on 7 social housing bungalows. This will effectively be a pilot for a suite of renewable and low carbon technologies, generating heat and power. GCEC plan to offer time of use tariffs so that they can simulate provision of flexibility services to the electricity grid, to assess whether this would generate additional value for customers. The viability of the project will be influenced by the nature of the tariff that each household previously used.

The project is expected to be part-funded via the domestic RHI which will be available until the end of March 2022. Viability depends on a proportion of the £110,000 installation cost being funded by the Next Generation grant, with a further capital contribution being funded by the council and the remainder being funded by a GCEC share offer.

The project is working in partnership with Stroud District Council in Gloucestershire because this council still owns council housing. The council has a district-wide commitment to be carbon neutral by 2030 and sees community energy as crucial in building support for this. They see community energy as potentially offering public engagement, linked to improving security of supply, reducing fuel poverty, improving comfort, user experiences and health. This small-scale pilot project in social housing is relatively unusual as council housing managers tend to pursue larger scale and more mainstream projects. In supporting the pilot, the Council hopes to demonstrate an innovative approach that could be replicated in other homes in the district.

GCEC's recent work has focused on firming up the financial side of the proposition (e.g. getting hard quotations from contractors) and having their financial model independently reviewed. They have also worked to increase their familiarity with the battery that will be used, which is the most innovative element of the package.

Specific challenges from GCEC's perspective are:

- **The end of the non-domestic RHI scheme** at end March 2021, and the upcoming end of the domestic scheme in March 2022.
- **Dependency** on council approval and funding, which is beyond their control.

3.7.3 Findings on process

The GCEC project has progressed slowly and is still in Phase 1 of the Next Generation grant. Being a small group, run entirely by volunteer directors, the group is careful about the workload that it takes on. The allowance claimed by directors (£100/day) is lower than for most of the other innovation projects, and the directors choose to engage less with internal learning activities in the programme, possibly because they have other priorities for their time.

There are several potential hurdles yet to be overcome. For example, GCEC are not able to approach potential social housing tenants until they have approval from the local council. They do not yet know the appetite of the tenants for this project, nor the tariff they are currently on. It will be important to install the heat pumps before the start of the heating season in winter 2021/22 in order for the installations to qualify for domestic RHI payments. Therefore there are still some uncertainties about whether the revised project will proceed as anticipated.

3.7.4 Interim findings on impact

Impact on grantee

GCEC's other activities to date have focused on installation of solar PV on council buildings, including the CityWorks building which is used by 20 socially-motivated organisations (e.g. mental health trusts, arts organisations). This project will broaden their range of activity, if it goes ahead.

GCEC has worked closely with the council and has built a good relationship and good mutual understanding between the two organisations, focused around this project. This may generate further opportunities in time. For example, GCEC recently discussed other ideas with the Council's Low Carbon Officer, such as decarbonising a council leisure centre.

Impact on people (e.g. volunteers, employees)

GCEC is run entirely by volunteer directors. Given that the project has yet to go ahead, the impact of this project on them has so far been limited. Conversely, the voluntary nature of their inputs means that GCEC does not want to overcommit to work. The Next Generation grant and some use of their own funds has enabled them to bring in professional expertise when needed (e.g. paid advice from ShareEnergy and the Severn Wye Energy Agency to audit GCEC's financial spreadsheet for the proposed project).

Impact on place (including users in the community)

If and when the equipment is installed, GCEC will maintain an ongoing relationship with the households and help them to monitor their energy bills and carbon savings. Depending on whether the previous heating system was gas or electric storage heaters, families might save £200 per year or more. Targeting of households has yet to be agreed with the council (e.g. possible focus on fuel poor households struggling to pay bills for electric storage heating).

As a CE group, GCEC is well-placed to offer handholding to households getting used to their new equipment, not just walking away after installation. GCEC has not yet thought about the awareness-raising potential of the project, but this may emerge if and when they proceed.

Impact on marketplace

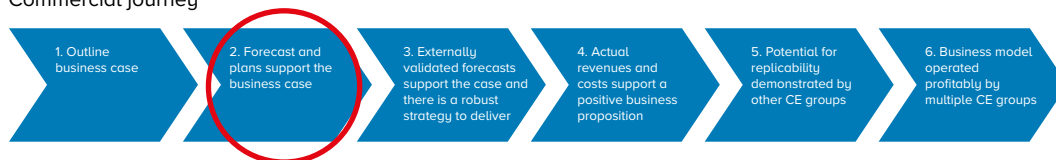
This project is not sufficiently advanced to have impact on the CE marketplace.

3.7.5 Plans for the future

The financial model developed by GCEC is currently dependent on three main sources of income: domestic RHI payments, export from solar PV and revenue from flexibility services offered to the electricity grid via the battery system. The council also proposes to share a proportion of tenants’ energy savings with GCEC. While this model is viable if the equipment is installed prior to the end of domestic RHI in March 2022, future use of the model may not look viable after the closure of RHI unless other funding sources can be found.

Our assessment of this project’s business model against the innovation scale is as follows:

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.7.6 Key project learning points to date

Learning about process

- Some Councils that have declared a Climate Emergency are recruiting ‘Low Carbon Officers’ or similar staff. These make a good starting point for CE groups trying to establish a relationship with their local council.
- However, senior council support is absolutely critical for any project that is reliant on council involvement. An enthusiastic and supportive ‘Low Carbon Officer’ may struggle to get commitment from the rest of the organisation, involving staff across a range of departments, unless there is already senior-level buy in.
- Other initiatives (e.g. the Green Homes Grant Local Authority Delivery scheme) have occupied the council’s time and reduced its capacity to engage with other projects.

Learning about this business model

- External verification of the CE group’s financial model was important for building council trust in the proposed scheme.
- Collaboration with councils is complicated by the fact that councils can borrow more cheaply than CE groups: some form of blended finance may be appropriate.
- Marketing of renewable heat/energy is more challenging in a diffuse rural area than in a more tight-knit city.
- The take-up of renewable heat/energy by owner occupiers is hampered by the need to fund measures upfront and by reticence about new technologies.
- Aesthetics and planning issues may be a barrier to acceptance of air source heat pumps.

Learning about policy

- Initially the RHI for both domestic and non-domestic properties was due to end in March 2021, but the domestic scheme has been extended to March 2022. The viability of this and other CE business models will be dependent on the successor scheme.
- The future of the Local Electricity Bill is important to empower CE groups with small-scale generators in urban areas to sell their electricity locally and get a price better than 5p/kWh. This is commonly allowed in other countries.

3.8 Project evaluation – Green Fox Community Energy

3.8.1 About the group and their innovation project

In 2012 Green Fox Community Energy Co-operative (Green Fox) was established to facilitate community owned low carbon energy in Leicester and Leicestershire. A year later Green Fox set up another co-operative which launched the first community energy share offer in Leicestershire and raised £570,000 for a biomass boiler at Hinckley Academy – significantly reducing the school energy bills and carbon emissions. A further share offer secured £265,000 to install other low carbon technology including PV. The co-operative has just over 200 members. Green Fox does not have paid staff but pays for consultancy inputs when needed. One director plays a lead role, supported by five other directors. In relation to the Next Generation funding, Green Fox is operating in a low-income area and has worked in partnership with Leicester City Council and local schools.

Green Fox was funded by Next Generation to develop a ‘Zero-Carbon Business Model’ for Multi-Academy school trusts (MAT), working in partnership with Leicester City Council (LCC), the Attenborough Learning Trust (Trust), Loughborough University and the Energy Systems Catapult (ESC). This is similar to an ‘energy services company’ (ESCO) model for schools but is different in the fact that it fully decarbonises schools⁶. Green Fox developed the model in partnership with four Trust primary schools and had hoped to make it available to roll out to other schools, providing zero-carbon schools, improved facilities and educational opportunities for pupils.

3.8.2 Review of progress in Year 2

During Year 1, Green Fox worked with the CSE consortium and its own partners to develop a two-stage approach to zero carbon schools. Stage one developed a ‘Base Model’ which involved interventions such as energy efficiency measures, solar PV and tariff switching at a cost of £215,000 across the four primary schools.

Stage two developed a ‘Base Model Plus’ scenario involving total decarbonisation of the schools through Air Source Heat Pump (ASHP) technology. Green Fox investigated more innovative technologies (e.g. flexibility services) that could bring further value to the model. During Year 2, Green Fox validated costs within the model through Salix Finance reports, market tendering and industry benchmarking. A further £710,000 was required to implement the Base Model Plus, equating to a total of £925,000 to fully decarbonise the four primary schools.

Loughborough University carried out detailed techno-economic modelling of the half-hourly meter data, and modelling of potential interventions, which showed that the Base Model would work. The financial savings were predominantly achieved through a reduction in the cost of electricity which was purchased at a relatively high price by the Trust.

6 A key difference between a conventional ESCO model and the proposed ‘zero carbon schools’ model is that in the latter, the energy costs paid by the school would not rise above the rate in which the school’s energy can be procured in the marketplace. So the model would create a zero-carbon school without the school’s energy bills rising.

Incorporating renewable heat through ASHPs into the Base Model Plus was more challenging. There were dependencies in this model, such as the previous heating system used by the schools (e.g. gas, gas-powered district heating, electricity) and the new electricity tariffs available to the schools.

Green Fox and partners looked at a range of other technologies and approaches that might have added revenue to the model, including power purchase agreements, private wire, microgrids, peer to peer models and heat storage. They found small companies and smaller energy suppliers willing to innovate with them, but found that there were regulatory barriers to some of these approaches and that others were marginal in terms of adding value to the model.

Ultimately the Base Model Plus was found to be uneconomic primarily due to the high price of the ASHP technology. The project only progressed to Phase 2 of the Next Generation grant and Green Fox decided to withdraw from the Next Generation programme on the grounds that their zero-carbon schools Base Model Plus model was not currently viable. However, their final report will identify what would need to change to make the model viable.

Green Fox report that the current challenges for implementation include:

- **The scale of funding** required for ASHPs to decarbonise a whole school. Councils, schools or government may be better placed to find funding on this scale, rather than CE groups.
- **Regulations** such as the requirement for Education and Skills Funding Agency (ESFA) approval for solar PV on schools.
- **Legal documentation** such as leases and licences.
- **Challenges in obtaining support from key partners** – good partnership working and communication are key to making school projects work.

3.8.3 Findings on process

Progress on this project was delayed by a number of factors, including the complexity of the modelling over the ten buildings. Delays were caused by receiving quotations by heat pump suppliers and the problems of not being able to visit sites due to COVID restrictions.

Ultimately the Trust and the Council did not feel sufficient commitment to the project to help Green Fox overcome the barriers to implementation. The relationship between the school, the City Council and the project partners became more challenging as the project proceeded. It is not clear whether this was because of the need for better communication at key points, because of mismatched expectations or because of different perspectives on the role of a future ESCO.

More fundamentally, there were some issues affecting viability that Green Fox or the Next Generation programme could possibly have flagged at an early stage.⁷

⁷ For example, some of the pilot schools were served by a district heat network, albeit gas-fired, and one school had a new boiler recently.

During the project the Public Sector Decarbonisation Scheme (PSDS), was launched by BEIS which provided grant funding for local authorities to undertake decarbonisation actions themselves. The availability of PSDS funding made the ESCO-type model less relevant, as the City Council secured a £25 million grant to help decarbonise their estate, including schools.

3.8.4 Interim findings on impact

Impact on grantee

Green Fox report that this project would not have happened without support from the Next Generation programme, both in terms of funding and the ability to test ideas with the CSE consortium. While the project did not reach the implementation stage and has not resulted in a share offer, it has increased the skills and knowledge base of the organisation and has enabled them to work with specialist, high-level organisations such as the Energy Systems Catapult who advise the Government.

Impact on people (e.g. volunteers, employees)

As noted above, the project has contributed to skill development within Green Fox Community Energy. As the project did not reach the stage of issuing a share offer, it did not create any lasting employment within Green Fox CE.

Impact on place

As this project did not reach the implementation stage, it did not have a direct effect on the local community. It is possible that there may have been learning within the MAT as well and that some of the ideas generated by the project might be taken forward in other ways, but this is speculation as we do not have any evidence to support this.

Impact on marketplace (i.e. assessment against TRL)

While this project did not reach the implementation stage, it did provide an estimated cost to decarbonise a primary school in the UK. Although the Base Model Plus was unviable, a Green Fox director thinks that it was still beneficial to have the time and funding to examine a potential new, post-subsidy business model in detail.

Next Gen was all about trying to get business models without subsidy. It's buying time to work on a project – thinking time, developing time. There is no other source of funding for that. It's important to allow community energy organisations to do that. They may not have many of the models coming through that are going to work. But they [Power to Change] are building up the sector. (Green Fox CE representative)

The Green Fox director commented that the Next Generation programme was beneficial in bringing different CE groups together into one programme. For example, new links have been formed between Nadder CE and Green Fox CE that may result in Green Fox taking forward the EV car club model. Green Fox found the interconnectivity between organisations valuable, despite contact being largely online owing to COVID restrictions.

3.8.5 Plans for the future

The Green Fox final report will aim to highlight what needs to be done strategically to make schools zero carbon. This may involve an ESCO model but might just involve the school making its own decarbonisation investments, with external ‘handholding’ advice from a CE group or another advisor. Green Fox’s dissemination activities are set out in Appendix 4.

Our revised assessment against the innovation scale (see below) reflects the challenges that have emerged during Year 2 for the Green Fox project in terms of regulatory barriers for solar PV for schools and the availability of other funding opportunities for schools (e.g. PSDS). Our assessment of the market/technology journey is spread across three levels because the technologies considered range from the tried and tested (solar PV) to more innovative approaches such as microgrids and peer to peer supply. Regulatory and commercial issues are shown as currently blocking the model (blue ellipse).

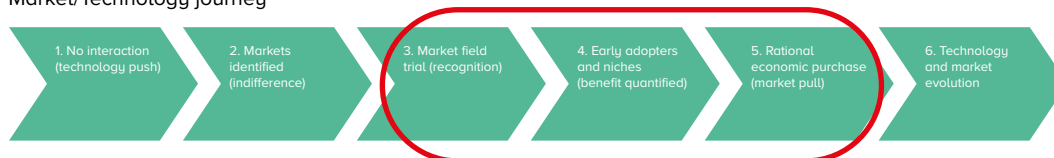
Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.8.6 Key project learning points to date

Learning about process

- It is important to keep all stakeholders fully engaged and ‘on message’ throughout. Green Fox assumed that all the project partners were committed from the outset, but perhaps should have invested more resource in keeping them up to date with project progress and helping them understand the business model and associated benefits. They relied on one of the other project partners to do this rather than taking ownership of this themselves. This might have helped to maintain trust with partners.
- Better risk planning and identification of mitigation measures could have been done at the outset and would have helped to offset setbacks.

Learning about this business model

- Value for money is the key driver for schools, and it is a challenge for community energy projects to demonstrate this to the key stakeholders. This is particularly true for novel business models such as this where it is not a typical ESCO model, but one whereby the schools benefit downstream from savings made. Effective communication around this issue is important.
- Actual market costs received via competitive quotes were significantly lower than those assumed by Salix reports. Lighting controls in particular offer a significant cost benefit opportunity.
- Some projects may have managed to avoid the ESFA issue by just going ahead with a licensing agreement without seeking prior approval. But this would not be a fully robust and replicable approach.
- While local authorities can access a range of funding sources (e.g. PSDS) that may be more attractive than CE group funding, there may be a niche for some CE groups to provide handholding support to schools. But it is not clear whether this would provide a viable business model for CE groups.
- It is easier for CE groups to work with academy schools as they are independent from their local authority, although in this case the local authority was the landlord.
- Analysis of half-hourly meter data, which was undertaken for this project by Loughborough University, would be overly demanding for most CE groups.

Learning about policy

- There are currently significant barriers to CE groups funding solar PV on schools, because of the requirement for ESFA approval.
- Green Fox would like their final report to go to BEIS and the Department for Education, to encourage a more strategic approach to achieving zero carbon schools, including addressing the barriers that this project has encountered.
- There is potential for the CE sector to work more closely with the Energy Systems Catapult and similar bodies that are investigating innovative energy models.
- There may be scope for some legal work to help CEBs develop more appropriate legal agreements for this type of project.

3.9 Project evaluation – Lockleaze Loves Solar

3.9.1 About the group and their innovation project

Lockleaze Loves Solar (LLS) is a joint initiative run by Low Carbon Gordano (LCG – a CE group) and the Lockleaze Neighbourhood Trust. Low Carbon Gordano is a well-established CE group, based in North Somerset, that has installed major solar PV arrays and raised funds through share and bond offers. It has around 450 members and contributes around £15,000 per year to its Community Benefit Fund (CBF), 90% of which is allocated to local carbon-saving projects and 10% to carbon saving initiatives in developing countries. LCG does not have employees but it pays for consultancy inputs from some directors, supplemented by inputs from volunteers.

LLS was funded by Next Generation to develop a business model involving the installation of roof-top solar PV on local housing in a low-income area. The project aimed to provide discounted electricity to households who could not afford to install solar PV themselves, thereby tackling fuel poverty as well as reducing carbon. The aim was to create a model for funding post-FITs solar installation that could be rolled out more widely in the CE sector and with benefits being shared with the wider community via CBFs.

3.9.2 Review of progress in Year 2

The first business model developed by LLS involved partnership with an energy supplier who would buy the electricity generated by LLS-owned roof top solar and sell it, at a discounted rate, to local households. There were various issues with this model (e.g. leasing arrangements for roofs) but the project came unstuck with the failure of Bristol Energy, the energy supplier involved in the project. This financial model was marginal but might have been progressed if another energy supplier partner could be found. Given the fuel poverty objectives of the project, LLS were looking for an energy supplier that would not charge ‘time of use’ tariffs in case these were disadvantageous to vulnerable households.

In the absence of a substitute for Bristol Energy, LLS developed a second ‘pivot’ business model. This would have been a signposting service that would connect householders who wanted to install domestic solar PV and batteries with a source of low-cost funding and an installer who could offer good value installations. A small margin would have been added to monthly repayments on the loan (approximately £20/year) to enable LLS to continue funding sign-ups to the scheme.

LLS pursued the second business model with Bristol Credit Union (BCU). Legal advice indicated that LLS would be acting as a credit broker on behalf of BCU. This could have been overcome through a relatively small regulatory change on BCU’s behalf and a signed agreement between LLS and BCU. However, the FCA did not approve the regulatory change within the timescale for the project.

Particular challenges were that:

- **The second business model** only worked for owner-occupiers and was therefore unlikely to reduce fuel poverty in line with the aims of the LLS project.
- **Quotes** obtained for wholesale PV and battery equipment proved less competitive than they appeared, because they excluded ancillary business costs required for installation.

Having encountered these intractable issues, LLS decided to withdraw from the Next Generation programme in July 2021, having reached Phase 4 of its grant.

3.9.3 Findings on process

LLS has taken an agile approach to managing its innovation project, responding to unexpected challenges by trying different approaches. The group set itself a hard task, to find a viable model for domestic roof-top solar that would benefit lower income households at risk of fuel poverty. With hindsight, perhaps this was too stretching and complex a target for an unsubsidised scheme.

The pivot strategy eliminated some costs and legislative burdens and, given time, would have helped drive the uptake of domestic PV amongst a relatively small number of customers. However, it also meant that we were far less able to help those in fuel poverty. If, at the very beginning, we had agreed that it was acceptable to achieve one or more of several intersecting goals, rather than committing ourselves to achieving all of them (or none) then it might have been easier to agree on small incremental improvements that built toward the overall goal, rather than trying to solve a single large, complex and knotty problem. (LLS – V2 Findings report)

Different members of the LLS team had varying levels of optimism about the eventual outcome of the project. Some had been concerned for some time that the models were neither financially viable nor able to meet LLS social objectives but others were more enthusiastic and continued to try to find a viable way forward.

It is challenging and in this case so far not possible to make a business case for solar PV in the absence of upfront funding. As things stand it is difficult to develop solar schemes that allow for the generation of cost benefit to the customer, when relying on loan finance. There was less interest in the scheme than anticipated and this may suggest that residents in disadvantaged communities may simply have more pressing priorities than a solar initiative that, in practice, would deliver limited financial benefit (possibly none for the first ten years). (LLS – notes from autumn interview 2021)

3.9.4 Interim findings on impact

Impact on grantee

Low Carbon Gordano directors reported that they would probably not have been involved in LLS in the absence of Next Generation support. They had a project ‘on the shelf’ but needed external funding for various pieces of enabling work. Next Generation funding made this possible.

Impact on people (e.g. volunteers, employees)

Involvement in this innovation project, and in the Next Generation programme, has increased linkages between LLS individuals and people in other CE groups. For example, one of the key people from LLS will be doing some work with Brighton Energy Co-op in future. It is not clear whether LLS has increased skills and knowledge within LCG or whether this knowledge was pre-existing.

Impact on place

There has been no direct impact on the local community because the project did not go ahead. It is possible that there might be indirect impact in future if the learning from LLS informs future community energy activity within Bristol.

Impact on marketplace (i.e. assessment against TRL)

While neither of the business models investigated by LLS have proved viable, considerable learning has been generated about the conditions required for success.

For example, the final report submitted by LLS states that Version 1 of the LLS model would have been viable if one or two conditions had been met, out of the following three:

- Domestic rooftop solar PV installation costs (including all scaffolding and overhead charges) of £500/kW or less
- Annual average domestic self-use greater than 40%
- A 25-year guaranteed electricity export tariff of greater than 6p/kWh

The final report points out that none of the conditions above currently apply. In practice, PV installation costs are currently around £700/kWh, self-use (without batteries) rarely exceeds 30% and no guaranteed 25-year export tariffs are available.

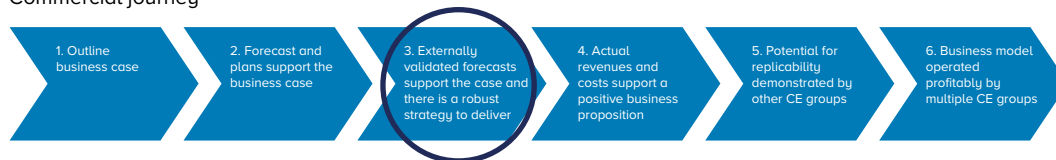
The second ‘pivot’ model was also only marginally viable for LLS and ran into delays problems because of the regulatory changes required. And, from LLS perspective, it was less of a priority than other project activities because it would only generate a small income for LLS (£20/household at most) and it would not contribute to alleviating fuel poverty in lower income households within the Lockleaze neighbourhood, being targeted at owner-occupiers.

3.9.5 Plans for the future

LLS have been active in sharing learning from their project (see Appendix 4). The ideas developed by the project will be explored further within Lockleaze as part of the Community Climate Action Project, led by the Bristol Green Capital Partnership, to see if the barriers to one or other of these two models can be overcome. Some members of the LLS team are hopeful that LLS experience will be useful in helping to inform successor activity, given that Bristol City Council has significant aspirations for future solar installations (96,000 roofs).

Our revised assessment against the innovation scale is shown below. The blue ellipse indicates the main area where both of the LLS models were blocked, assuming that the FCA delay on the BCU regulatory change is temporary.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.9.6 Key project learning points to date⁸

Learning about process

- Understand the non-negotiable costs.
- Model, test and adjust, with external validation of your model if possible.
- Marginal business models can still be viable, provided they have planned and prepared for all eventualities and worst-case scenarios.
- Agile planning is needed (which is challenging when you can't meet in person).
- The perfect is the enemy of the good – don't try to crack too many hard problems at once.
- When you are dealing with multiple parties with various financial interests then everything requires a contract and this adds time, complexity and/or cost.
- Never underestimate the time impact of regulatory bureaucracy.
- When buying a 'turnkey' service from a third party, the final cost of the service is often far greater than the values of the obvious parts.

Learning about this business model

- In a post-FiT landscape, you currently need to be able to access zero – or near zero-cost capital to make domestic PV work on a medium-term financial timescale.
- Without no-strings grant funding to drive the installations, financially precarious households will find it extremely difficult to adopt domestic PV without further straining their budgets for 10+ years after installation.

Learning about policy

- FCA approvals were time-consuming, as for Chester CE – delay in obtaining FCA approval for the BCU regulatory change was the final straw for the 'pivot model'.
- If the ambitions of Climate Emergency councils such as Bristol City Council are to be realized, considerable public funding will be required to put solar PV on domestic roofs across the city at scale.

3.10 Project evaluation – Nadder CE

3.10.1 About the group and their innovation project

Nadder Community Energy is based in Tisbury in rural Wiltshire and has six directors and around 130 members. The group has run several share offers and has invested in solar PV arrays and other local energy projects. It contributes about £5,000 per year to a community benefit fund which is used to support the needs of local residents (e.g. installing an air source heat pump for a resident with disabilities who cannot afford to heat their home properly).

Nadder CE is being funded by Next Generation to develop a community car club using electric vehicles (EVs). During the first year of the Next Generation programme, Nadder investigated four alternative models for the EV car club and chose to progress their own car club service, with the aim of eventually sharing services between multiple rural car clubs across the UK via a car club ‘platform Co-op’.

3.10.2 Review of progress in Year 2

During 2020, the group progressed the car club arrangements, undertaking local marketing work, purchasing two Renault Zoe EVs, installing telematic equipment, purchasing and installing charge points, and raising sponsorship. They also firmed up their business model projections and put in place measures to reduce the risk of coronavirus transmission between successive users of the vehicles. They have developed a mobile phone app which was launched in summer 2021.

While Nadder CE had hoped to launch the ‘Tisbury Electric Car Club’ (TECC) in 2020 or early 2021, COVID constraints meant that they had to undertake a ‘soft launch’ instead. At the time of the evaluation interview, in April 2021, TECC had 21 members, out of 51 expressions of interest from people potentially interested in joining the car club. The cars are now in use although they do not yet have regular users and usage rates are still low because of the effect of COVID, with most trips being 20 miles or less. The car club is currently framed as a pilot running until September 2021, with discounted use during that period. Nadder CE will review options for the future of TECC before the end of the project.

Specific challenges for this project included:

- **Fundraising** to cover the capital cost of vehicle purchase.
- **Insurance cover** being difficult to obtain.
- **Car usage being depressed** by COVID

3.10.3 Findings on process

The Nadder CE project has now reached Phase 4, the final phase of its Next Generation grant. The use of paid inputs from expert staff has helped to drive activity forward despite the constraints of COVID. The group has used creative approaches to publicise and launch the car club in spite of constraints on gatherings (e.g. creating video recordings for use in marketing; using ‘drive-bys’ across the village). It has taken an ambitious, pro-active approach to the formation of a wider ‘platform Co-op’ of rural car clubs.

3.10.4 Interim findings on impact

Impact on grantee

Next Generation funding has enabled Nadder CE to pursue the car club concept faster and more thoroughly than would otherwise have been the case. Next Generation advice and support were particularly important during the early phase of the project, when Nadder CE was choosing between different car club concepts, but Next Generation funding and learning support has continued to support the group’s activities and ambition. Nadder CE has benefited from Brighton EC’s learning about EV charge point installations and vice versa. And, through the Next Generation project, Nadder CE has raised its profile within the wider CE community.

Impact on people (e.g. volunteers, employees)

Next Generation funding has paid for inputs from one of the Directors, and from another part-time member of staff with strong expertise on climate issues, marketing and media. It has also enabled the group to pursue specialist help on certain issues and build its knowledge and expertise on EVs and rural car club operation.

Impact on place (including users in the community)

During 2020, Nadder CE commissioned a market research study on demand for the car club which involved 95 household interviews (5% of the population).⁹ The study quotes ownership statistics showing that:

- nearly 10% of households in Tisbury do not have access to a car
- more than 50% of household have access to one vehicle and could potentially benefit from access to the car club as an alternative to buying a second vehicle
- over 90% of respondents said that the car club was a good idea, with the majority supporting the project because of its potential impact on the environment, its cost effectiveness and the potential positive outcomes for the community
- over half of respondents said that they would want to join the EV car club, citing reasons such as getting access to a vehicle, reducing their transport costs and/or responding to environmental concerns.

There is little ethnic diversity in Tisbury: 2011 census statistics show 98% of respondents identifying as white British. The survey showed particular demand for the car club from retired people, who do not want the hassle of owning a car, and from women, some of whom have limited access to a car, even if their family does own one car. Nadder CE is aware that some of the potential TECC users are elderly and prefer communication face to face or by leaflet rather than online and social media. They have introduced a concessionary rate to broaden community access to the cars and have plans to establish a members group.

TECC has an automated system for tracking customer usage and estimating GHG savings. They track messages via Facebook, Twitter and their website. Nadder CE plan to present figures on customer cost savings from car club use in their final report.

Impact on marketplace

All the key assumptions relating to cost in Nadder's model have been established but assumptions around usage are not yet clarified because of COVID impact on usage rates. Key factors in viability of the financial model are:

- The purchase cost of the vehicles
- Insurance costs
- The cost of telematic services (purchased from the Mobility Factory Co-op)

Purchase of vehicles cannot currently be supported by the predicted levels of car club usage. But Nadder CE think that car clubs have an important role to play in regionalised rural transport, even if some individual locations require an element of subsidy. The car club concept would become more viable if overhead costs were shared via a 'platform Co-op'.

⁹ There may be positive bias in these responses as the respondents were self-selected, with respondents being more actively concerned about environmental issues than non-respondents

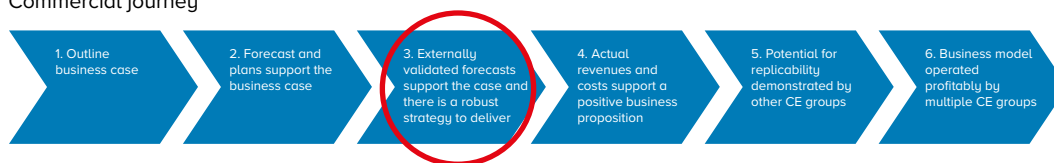
3.10.5 Plans for the future

Through active dissemination and outreach work (see Appendix 4), Nadder CE have identified a couple of firm collaboration partners interested in the ‘platform Co-op’ idea (Derwent Valley Car Club and Green Fox). These three groups have now formed a joint co-op and have submitted funding bids for the ‘platform Co-op’ concept. Nadder CE will share their business model with other groups via the ‘platform Co-op’ and is also talking to Co-Cars (a car club social enterprise) about potential longer term collaboration.

Our revised assessment of Nadder CE’s business model against the innovation scale is presented below. Different ratings would apply to TECC itself (e.g. organisational journey 3) and the umbrella group (organisational journey 1). For some members of TECC, Nadder CE advise that use of the vehicles would involve rational economic purchase.

The legal and regulatory journey has been downrated to 1 because of major issues around the insurance of car clubs were being considered by the Alliance of British Insurers (ABI) at the time of this research.. While existing insurance cover (such as that in place for TECC) is being maintained, all the major insurers had paused new policies for car clubs, subject to the ABI review.

Commercial journey



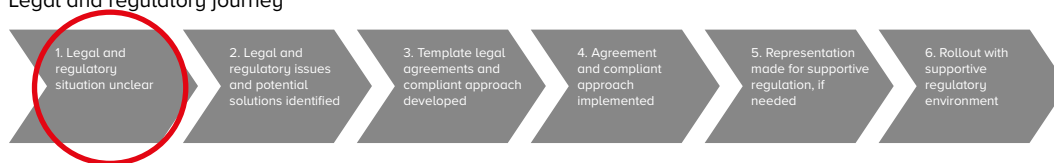
Organisational journey



Market/Technology journey



Legal and regulatory journey



3.10.6 Key project learning points to date

Learning on this business model

- There is considerable interest in rural EV car clubs across the UK, bringing social as well as environmental benefits to members of rural communities who have limited mobility.
- Rural car clubs can improve their viability by sharing infrastructure (e.g. the car club platform) with other groups.
- Using a charge point installed by another organisation (e.g. Charge My Street) is significantly simpler than installing a charge point directly, but involves higher electricity costs.

Learning on policy

- Lobbying is needed to ensure that car clubs can access insurance at reasonable rates. Power to Change should add its weight to the lobbying of the Association of British Insurers which is being led by CoMoUK, an umbrella organisation for shared transport in the UK.
- The role of rural car clubs within regional transport policy needs to be clarified. It is possible that some element of public subsidy could be justified, as a cost-effective alternative to infrequent rural bus services for some types of users.

3.11 Project evaluation – Plymouth Energy Community

3.11.1 About the group and their innovation project

Plymouth Energy Community are a well-established community energy group with strong links to, and support from, Plymouth City Council. Founded in 2013, the PEC Trust has eight trustees, around 100 members who are active within the organisation and 500 supporters, many of whom are former service users. PEC's vision is to empower their community to create a fair, affordable low-carbon energy system with local people at its heart. Their broader work includes installation of community-owned renewable energy and energy efficiency work targeted at the fuel poor and most vulnerable, working with in partnership with other community energy groups in Devon.

PEC's Next Generation project involves the development of an innovative community energy concept that offers affordable housing, heat, power and transport as a combined service for people-centred sustainable living. PEC is working with local community-led developers, PEC Homes and the Launceston Community Development Trust (LCDT). The PEC project aims to develop viable business models for these developments, including legalities, which could provide learning for other sustainable, affordable housing developments elsewhere.

3.11.2 Review of progress in Year 2

During the past year, this project has evolved through several iterations in response to PEC's findings on the viability of different options and in response to external factors (e.g. COVID; decisions taken by partner organisations). PEC advertised locally for organisations interested in modelling support and selected the LCDT as the most appropriate partner. At one stage it appeared that a joint approach over several housing developments would be needed, since economies of scale could justify establishment of an Energy Services Company (ESCO). But it then transpired that it was possible to approach the PEC and LCDT housing developments separately, giving more flexibility to respond to the needs and aspirations of each development.

Having considered various options that did not appear viable, PEC are now modelling two promising approaches, one with LCDT and one with PEC. One of these approaches (working with PEC Homes) makes use of the ‘energiesprong’ model¹⁰, as used in the Netherlands, by which residents pay a ‘comfort charge’ rather than paying directly for heat or power. The approach used with LCDT is a more conventional grid-connected microgrid ESCO model. The two approaches are:

- **Working with community-led developers who are already committed to developing low carbon housing:** PEC has undertaken modelling on an ‘open-book’ basis to help LCDT identify the best option for their development of 28 affordable homes. The current plan is that this should be mechanical ventilation with heat recovery (MVHR) with a built-in heat pump. Residents would be charged either for their use of electricity or could be charged a ‘comfort charge’. The comfort charge model provides an opportunity to avoid the need to establish a separate Energy Services Company’ (ESCO), with payments simply collected by the landlord and the landlord commissioning support to manage the energy flows on site.
- **Supporting development of a microgrid in the proposed PEC Homes development.** PEC Homes have secured funding to bring forward England’s first new homes built through the ‘energiesprong’ approach. Companies seeking to build these homes will enter into an agreement to design, build and guarantee homes that will deliver an outcomes-based performance specification for a period of decades (i.e. net zero in use energy consumption, import electricity less than x, Internal temperatures of 21). This procurement method forces the market to use high quality components, offsite manufacture and well considered, integrated low carbon technologies. For PEC Homes, the higher build cost is offset by guaranteed lower maintenance costs and guaranteed low tenant bills, allowing for the introduction of a comfort charge. PEC’s analysis through the Next Generation programme demonstrates a number of technical and business model advantages to delivering a microgrid solution on these sites and PEC will work with those companies procured to explore how this can be designed in. This could allow for a flexible ownership approach if PEC Homes found it difficult to raise finance for a more complex housing business model, where an ESCO can be established to own the heating and electrical systems and handle this complex part of the business model. This model could be repeated by other community energy groups working with community housing groups through an Energiesprong approach.

Next Generation funding is covering development of techno-financial models for both of these sites, including investigation of legal and regulatory issues. Particular challenges for this project include:

- **The complexity and novelty** of the proposed business model
- **The need to keep partners actively engaged** with the project
- **Potential legal and risk sharing arrangements** between the various partners.

10 <https://energiesprong.org/about/>

3.11.3 Findings on process

PEC's project is currently in Phase 2 of its four-phase Next Generation grant. Progress has been slower than for some of the other Round 2 projects, partly because the COVID situation caused some of PEC's resources to be diverted to fuel poverty work during the winter of 2020/21.

PEC has been able to redefine the most viable options in a fluid and responsive way as improved information about viability has become available. This has required flexibility on the part of the Next Generation programme management.

The project has benefited from complementary inputs from other resources within PEC. For example, legal advice was provided on a voluntary basis by one of PEC's Directors who is an associate solicitor and support was provided by the Active Building Centre. The project has also benefited from information provided by a separate ERDF funded PEC/PCC project which has been investigating the business case for 'Energy Service Company' (ESCO) approaches to heat pumps and solar.

3.11.4 Interim findings on impact

Impact on grantee

The Next Generation project has provided a source of specific project funds but represents less of a 'step-change' for PEC than for some of the smaller CEBs in the Next Generation portfolio. PEC is experienced at raising funds from a range of sources, pursues a range of activities and has a considerable national profile.

Impact on people (e.g. volunteers, employees)

Some PEC staff are employed through Plymouth City Council. PEC employs a membership engagement officer to ensure that PEC members are aware of opportunities across the organisation and the group's 'PEC Pals'¹¹ training programme encourages individuals to get involved. It is not clear whether the Next Generation project has enabled people within PEC to develop skills. But engagement with PEC on the modelling work has developed the skills and understanding of LCDT staff on renewable energy issues.

Impact on place (including users in the community)

The project is all about developing viable models for sustainable, affordable housing rather than delivering on the ground, so there will not be 'users' in the conventional sense. If successful, these models could lead to: lower carbon emissions from new housing; lower bills and increased comfort for those living in new housing; and local employment from putting in and maintaining extra kit. Essentially, there would be local economic and social benefits from generating and providing energy locally, but this evidence will come from successor projects, not this modelling project.

11 PEC Pals is a training programme which aims to upskill members of the community on PEC's role, on energy and climate change issues in Plymouth and on how they can contribute to action on energy and climate issues within their community.

Impact on marketplace

This project is at too early a stage to assess impact on the CE marketplace.

3.11.5 Plans for the future

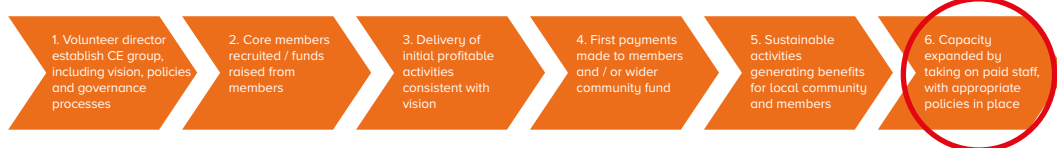
The outputs from this project are expected to be modelling work; legal guidance on the different approaches; and a business case for the low carbon proposals for LCDT and PEC Homes. PEC’s dissemination activities are set out in Appendix 4. The business case is currently marginal and high risk: further access to electricity demand data is required to reduce uncertainty about viability of the microgrid, particularly in relation to time of use tariffs or load shifting.

Our assessment of PEC’s project against the innovation scale is shown below.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



3.11.6 Key project learning points to date

Learning about process

- LCDT became much more engaged with the modelling work when PEC included some of LCDT's ideas in the options modelling. This increased LCDT's sense of ownership of the modelling work. Similarly, for work on new developments, it's important to engage with the architects at an early stage.

Learning about this business model

- There are currently three broad options for low-carbon housing (in addition to insulation) which can potentially be combined: (1) solar PV; (2) renewable heat (e.g. heat pumps); (3) microgrids with batteries. Energy storage can enable the development to provide flexibility services and/or overcome grid constraints for the local DNO.
- The problematic bit is 'who pays for what', particularly in discussions with developers. Developers don't need to establish viability until they submit a planning application so this can come some way down the line.
- Setting up an ESCO, and potentially a 'Special Purpose Vehicle' to run the ESCO, adds additional costs. There are savings if this can be avoided.
- One advantage of the 'energiesprong' approach is that there is currently less regulation around 'comfort charges' than around local sales of heat and power, and cost savings in energy provision can be fed back into the energy project.
- Access to meter data is problematic and hence difficult to accurately model residents' electricity use at different times of day. The lack of data contributes to risk in the business model when assessing the potential use of time of use tariffs and/or demand side response (i.e. load shifting).
- There are also risks about residents refusing to pay the 'comfort' charges, and how non-payment would be managed.

Learning about policy

- The Government needs to be clear about when zero carbon housing will be expected. Without this, it is hard to justify the additional upfront costs of a zero carbon development to finance providers, despite the fact that designing new zero carbon housing upfront is more cost-effective than building to lower standards and then retrofitting to reach zero carbon standards in future.
- Access to good data for modelling flexibility services is problematic. It would be helpful if CE groups could access open-source half-hourly meter data.
- The 'energiesprong process', used in the Netherlands, specifies payments and performance in terms of the comfort provided to residents rather than the amount or cost of energy provided (e.g. target temperature; maximum energy cost per year). While the 'energiesprong' approach sits outside current regulation for heat and power, it could be enabled by forward-thinking Government policy.

While this chapter has examined each of the 11 innovation projects in turn, the next chapter evaluates the overall management of the innovation programme.

4. Evaluation of programme management and dissemination

This chapter presents our findings on programme management and programme-level dissemination activities for the Next Generation programme. An overview of how the innovation programme worked is presented in Appendix 2.

4.1 Evaluation of overall management of innovation programme

The Year 1 evaluation report made a number of recommendations to improve overall management of the innovation programme. Power to Change, the CSE consortium and CAG Consultants have worked together to implement these recommendations, as set out in Appendix 3.

Changes made to the internal management of the innovation support programme during 2020 appear to have been beneficial. For example, innovation groups and programme stakeholders reported that the introduction of monthly or bi-monthly ‘huddles’ and follow-up support was useful, although some flexibility was needed in the frequency of these calls.

Most innovation groups were pleased with the support they had received from the CSE consortium. This reflected the fact that CSE staff and their ‘technical lead’ within the consortium had the right skills and knowledge to support their project. All three technical leads for the innovation programme were cited as being helpful by some of their projects.

A small number of Round 2 project leads reported that they had expected slightly more pro-active support (e.g. more of a ‘mentoring’ role; or sharing of information on new funding opportunities that became available to CE groups).

Programme stakeholders were conscious that some of the Round 2 projects required technical expertise that was beyond the scope of the CSE consortium. This view, shared by a few of the Round 2 projects, reflected the fact that Round 2 projects were generally more innovative and complex than Round 1 projects. With these projects, the role of the CSE consortium was primarily to support project management, making sure that projects were on track and meeting Power to Change’s objectives, rather than providing detailed technical advice. In practice, these projects sourced technical advice from other advisers as needed, funded from within or outside their Next Generation grant funding.

A number of changes were made to Grant Committee processes and responsibilities within the CSE consortium during Year 2, as explained in Appendix 2. These changes seem to have worked well. Additional capacity has been brought into the core CSE liaison team in recent months to assist with the workload generated by 11 groups. Only a few of the projects are so far delivering services on the ground, but all projects have received guidance on monitoring arrangements from CAG Consultants.

The innovation projects welcomed CSE/Power to Change's flexibility in extending programme timing and allowing flexible changes to the use of their grants, particularly given the challenges posed by COVID. They reported that Power to Change had been more flexible than some other funders, that monitoring requirements were reasonable and that it was helpful that grants were paid in advance (albeit in 4 Phases) rather than in arrears. The withdrawal of three projects during summer/autumn 2021 appeared to have been well handled, with this being mutually agreed between the projects and members of the Next Generation grant committee.

A few other management issues were flagged by interviewees, applying to some but not all projects.

- Some of the innovation groups have multiple sources of funding for their activities. The detailed project findings include examples of activities that are funded from another source adding value to the Next Generation project. There are also examples of Next Generation projects providing learning or insights which then formed the basis of further funding bids. Projects were required to submit receipts and invoices for Next Generation funding so that it was clear what the grant had been spent on. For one software development project, the technical lead within the CSE Consortium asked to see software development records to ensure accountability; there was a difference of opinion with the project lead as to whether this level of detailed reporting was appropriate.
- Over time, some inconsistency developed around the extent to which projects were authorised to spend their grant on capital costs. The original intention had been that capital spend should not be subsidised, because this would undermine efforts to test self-supporting business models. However, practice changed slightly over time and capital spend was allowed for some groups, particularly during Round 2. A clearer and more consistent approach might have been desirable.
- There was some indication of conflict of interest issues on two projects. Conflicts of interest can affect trust amongst project partners, so they need to be flagged at an early stage and then monitored and mitigated. The CSE Consortium helped groups to manage any conflicts of which they were aware, as soon as these issues arose.

4.2 Evaluation of programme-level dissemination activities

A wide range of dissemination activities have been used during Year 2 to share knowledge and learning within and beyond the Next Generation programme. Several of these activities were planned to be introduced during Year 2. Most of the activities were led by the CSE Consortium but others led by CAG Consultants. While we are not able to present a fully independent assessment of our own dissemination activities, we present a review of all the dissemination activities in Appendix 4.

The Year 1 report recommended that more should be done to disseminate learning from the innovation programme. This has been achieved during Year 2, not least through planned activity such as the CSE-led innovation lab webinars and internal webinars. But despite these activities, the annual events in 2019 and 2020, and the publication of initial case studies and videos on the Next Generation microsite during 2020, our autumn 2020 research found relatively little awareness about the innovation programme amongst key stakeholders (e.g. BEIS, DNOs, local authorities) except amongst stakeholders who were closely involved with Community Energy England.

In response to this finding, the evaluation team worked with the CSE, Power to Change and CEE communications teams to disseminate the latest round of case studies and videos more widely. As outlined in Appendix 4, this included direct emails to external stakeholders outside the CE sector as well as multiple tweets and LinkedIn posts. The results of this communications activity have yet to be analysed in detail. CEE report that the Next Generation programme is ‘beginning to be on people’s radar’ within the CE sector. However, one external stakeholder suggested that it was important to communicate the findings of the programme beyond the CE sector as well.

Key learning points from the Year 2 dissemination activities are:

- It is not enough to produce outputs and put them online. Active communications campaigns and/or dissemination activity is required to get the messages out there.
- It is important to communicate the messages from the innovation programme beyond, as well as within, the CE sector (e.g. to policy makers, to other actors in the energy system and to potential institutional investors and funders and to non-CE groups that may be interested in developing energy-related activities).
- It will be important to ensure the longevity of the Next Generation microsite, which is the main repository for information about the innovation programme. While it has been expedient to use the microsite, which is within the programme’s control, rather than be dependent on materials being uploaded to other organisations’ websites (e.g. CEE, Power to Change), it may be necessary to copy or transfer materials to other websites when the Next Generation microsite is eventually retired.

5. Summary of findings against Power to Change research questions, theory of change and systems map

This chapter summarises our findings from the innovation programme as a whole. The findings are summarised against:

- The high-level research questions posed for the evaluation by Power to Change.
- The theory of change for the innovation programme.
- The systems map for community energy.

5.1 Overall assessment of programme impact against Power to Change research questions

5.1.1 Overall impact on grantees

The Next Generation programme has enabled Community Energy Businesses (CEBs) to take risks in developing new business models. Many of the Next Generation CEBs are Community Benefit Societies that cannot normally take high levels of risk with funding provided by community shareholders, because of their responsibility to repay capital over time and provide a return to shareholders. The value of innovation funding is that it can allow failure without significant penalty. Next Generation innovation funding has enabled CEBs to innovate, not so much in terms of technology but in terms of their business models and the services they offer. Grantee groups commented favourably on Power to Change's flexibility in allowing changes to the detail and timescale of grant spending. This helped the groups to respond to changes in the evolution of their specific projects and the wider context (including COVID-19).

Innovation funding for CEB activities was not readily accessible from other sources on the scale provided by the Next Generation programme. Most Community Energy (CE) specific funds, such as the Rural Community Energy Fund, were not focused on innovation and provided smaller scale grants. While the Energy Systems Catapult, Innovate UK and UKRI do provide innovation funding, few CE groups have the capacity to write successful bids for this funding. Similarly, innovation funds offered by Distribution Network Operators (DNOs) such as the Network Innovation Allowance provide large-scale funding for some energy innovation projects but are primarily designed for engineering-orientated projects and have not hitherto been accessible to many CE groups.

For some of the smaller groups, particularly those in remote locations within England, participation in the Next Generation programme has helped to raise their profile, build their capacity and network more widely. For example, Burnside CE has been able to gain a wider perspective through networking with other Next Generation partners, while Nadder CE was able to take on a part-time project manager who increased their capacity to implement project activities. However, the larger groups involved in the programme already had considerable organisational capacity and were already well-networked, so this benefit was less evident for them.

5.1.2 Overall impact on people (primarily volunteers, employees)

The innovation programme has built the skills and knowledge of directors and staff within the 11 innovation groups, helping them to get to grips with potential new areas of work (e.g. EV charge points, LED lighting, heat pumps, flexibility services etc). We found that the programme has done this in five different ways, by:

- Funding time for CEB staff or directors to spend time investigating these areas.
- Funding external expert advice on specific issues.
- Providing a forum for the innovation projects to learn from each other and share expertise on common issues.
- Providing access to support and advice from CSE consortium members.
- Helping some projects to structure and clarify their thinking about their projects.

For certain groups, the innovation programme has also provided funding for paid management inputs by part-time consultants, directors or employed staff, with some positive impact reported in terms of the employability of these individuals.

5.1.3 Overall impact on place (including users and their communities)

Most of the new business models explored through the Next Generation programme aim to deliver community benefit directly (e.g. through low carbon heat or transport interventions) but they currently appear likely to generate less surplus for CEBs than earlier business models, where subsidised renewable energy investment generated significant surplus funds that CEBs could reinvest or distribute for community benefit.

The innovation programme's impact on users and their communities has been very limited so far, as might be expected for an innovation programme which primarily aims to trial new approaches rather than create local impact. Impact on local communities has also been constrained by:

- The time it has taken to develop financially viable business models;
- The challenges of operating in the context of the COVID pandemic; and
- The fact that most of the business models are still marginal.

There has also been tension between the objective of progressing innovative, risky work on marginal business models and the objective of generating social benefits for local communities, including disadvantaged and vulnerable people. For example, Bath & West Community Energy found that it was not appropriate to include fuel poor or vulnerable individuals in their 'Flex Community' trials because of the (small) risk of equipment failing, leaving people without heating or hot water.

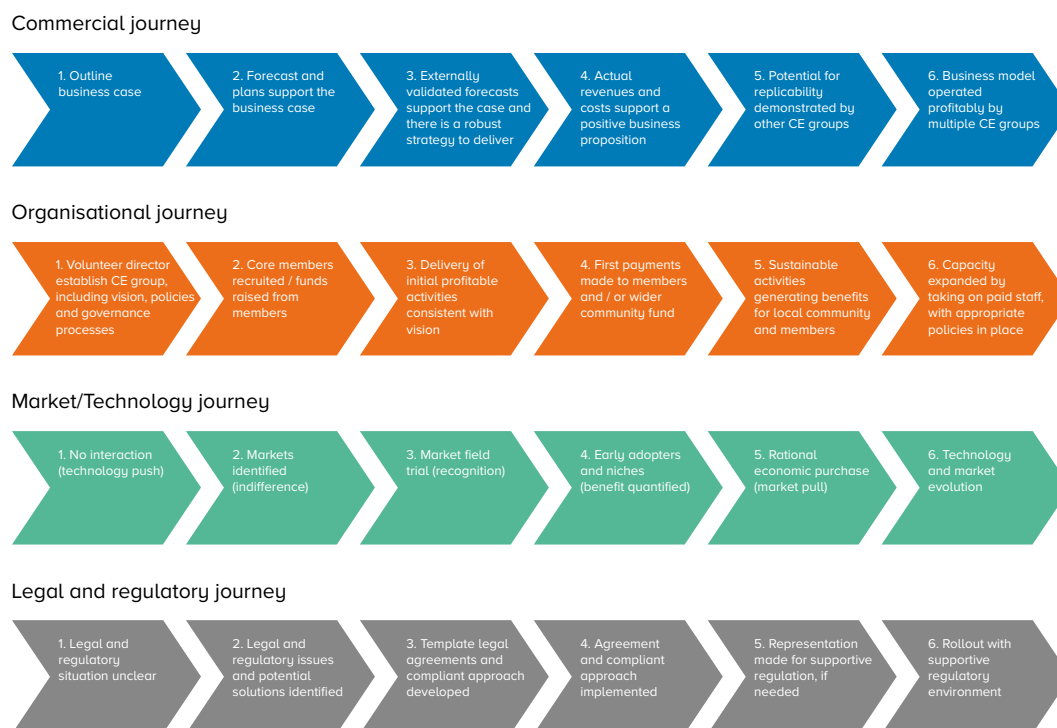
However, there are some emerging examples of projects pursuing both innovation and social benefit objectives, generally led by groups that work particularly closely with their local community (e.g. Nadder Community Energy, CREW). For example, the EV car club being developed by Nadder brings social benefits to users, such as increased mobility and lower transport costs. The viability of this model is described further below.

5.1.4 Overall impact on marketplace

The innovative business models supported by the Next Generation programme involve more complexity and risk than earlier CEB investments in subsidised renewable energy. Significant regulatory and policy barriers remain for the new business models.

We have used an 'innovation journeys' model (adapted from the Carbon Trust's 'four journeys' model, as shown below) to assess the progress made on emerging business models. When assessed against the 'commercial journey' model, the most advanced business models in the Next Generation programme have reached stage 4 ('actual revenues and costs support a positive business proposition') but most are at stage 2 ('forecasts and plans support the business case') or stage 3 ('externally validated forecasts support the business case and there is a robust strategy to deliver').

Figure 1: Innovation journeys model for CE groups¹²



None of the projects has yet reached stage 5 ('potential for replicability demonstrated'). While an innovation programme is about taking risks, and some project failures would be expected, this means that the Next Generation innovation programme has not yet fulfilled its overall objective of developing some replicable, financially viable post-subsidy business models for CE. Some of the business models may yet bear fruit, but further work is needed to resolve uncertainties in the business models and assess their viability in more detail.

While there are as yet no clear 'winners' within the Next Generation innovation programme, CE groups in the programme have reported that there are other viable non-subsidy models outside the programme. Learning about these opportunities is also summarised in the table below.

The innovation programme has generated and shared a considerable amount of learning about the successes and failures of the different business models. To date, this learning has primarily been shared between CE groups and within the CE sector, but this report aims to share these lessons more widely with policy makers and external stakeholders (e.g. DNOs, local authorities, other funders and institutional investors). The aim is to help these audiences understand the benefits that new CE models can potentially generate and how emerging models could be further enabled and supported in future.

¹² Adapted from the Carbon Trust's 'four journeys' model (2009).

5.2 Review of Theory of Change for the innovation programme

A Theory of Change (ToC) describes, in diagrammatic form, how an intervention (in this case the Next Generation innovation programme) is intended to lead to its desired outcomes. A ToC diagram should describe programme inputs and then highlight the key activities and behaviours, and the links between them, that lead to the delivery of a defined target outcome, or outcomes. The innovation ToC provides a model which describes how the programme was intended to work, against which we can compare how the programme is found to work in practice.

A baseline ToC was prepared for the innovation programme during summer 2019, in consultation with Next Generation programme stakeholders. This is shown in Appendix 7. The baseline was then reviewed in summer 2020 and in January 2021. The review below is the third review of the baseline ToC.

We have reviewed the ToC in the light of evidence gathered during Years 1 and 2 of the evaluation. Each element of the ToC is assessed using the symbols below, with our reasoning captured on 'pink stickies'. In particular, we have assessed whether the assumptions that underlie the design of the programme appear to hold. These assumptions are shown as 'clouds' linking the different steps in the logic chain, which lead upwards from the rationale at the bottom of the diagram to the target outcomes at the top.



Theory working
as expected



Mixed evidence
or progress
hindered.
Unclear whether
theory works or
not



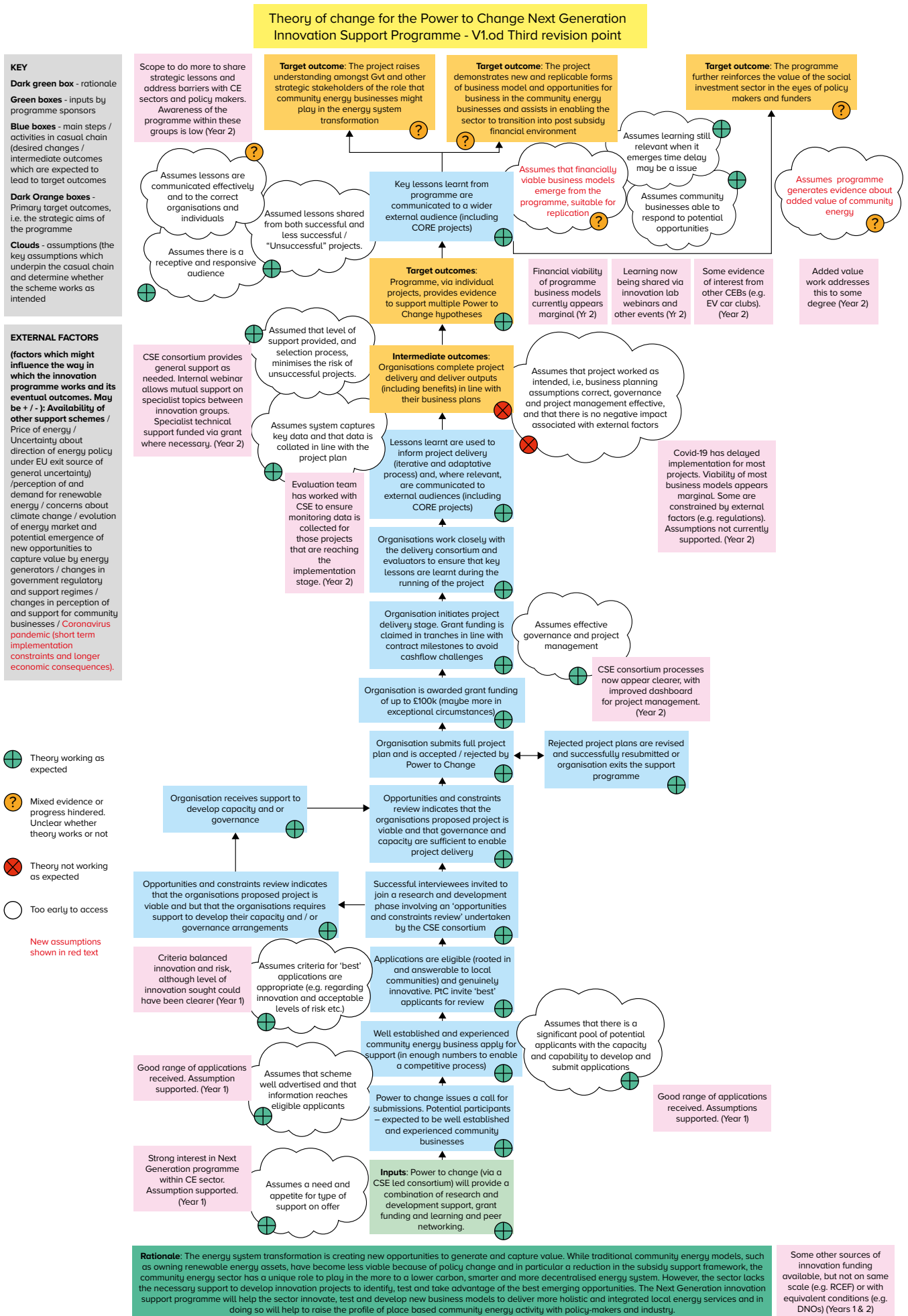
Theory not
working as
expected



Too early to
access

In this review we have identified two new assumptions, relating to the strategic target outcomes, and have shown these in red text. A commentary on our assessment is provided after the diagram. If the small text on the diagram is not readable, please zoom in to view the diagram more clearly.

Figure 2: Theory of Change for innovation programme (revised)



Our summary assessment of the Theory of Change is provided below, starting at the bottom of the diagram and working up.

Rationale

The rationale for the innovation programme is still valid: innovation funding at the scale offered by Next Generation is difficult for all but the most established and professional CE groups to access. While a number of innovation funding schemes are available (e.g. Energy Systems Catapult and Innovate UK), these are mainly intended to be accessed by businesses. There is still a need for innovation in the CE sector because of climate change and the energy transition, changes in funding and subsidy schemes (e.g. the end of the Feed in Tariff and Renewable Heat Incentive) and the opportunity for CE sector to transition towards ‘energy services’ rather than just generation.

Logic chain and assumptions

Most of the steps in the logic chain have worked fairly smoothly, with support for most of the assumptions required to move upwards from one step to the next. However, the assumption that ‘the projects work as intended’ is not currently supported. Most of the projects have been delayed by COVID and some have been severely constrained by external factors (e.g. regulation or changes in partner commitments). Business planning assumptions have not worked as expected and the financial viability of most of the business models appears marginal.

Intermediate outcome

The failure of the assumption that ‘the projects work as intended’ means that the intermediate outcome is not realised: organisations have not yet completed project delivery and outputs (including benefits) in line with their business plans. However, it is possible that the situation may improve between now and the end of the programme.

Strategic target outcomes

Despite the issues around the intermediate outcome, there is still considerable learning to be drawn from the programme and key lessons learnt from the programme can still be communicated to wider external audiences. However, there is still some way to go to achieve the strategic target outcomes of the programme, as shown in the table below.

Table 3: Status of strategic target outcomes

Strategic target outcome	Status
<p>The project raises understanding amongst Government and other strategic stakeholders of the role that community energy businesses might play in the energy system transition.</p>	<p>Some preliminary work has been done on this but there is scope to do much more. Communicating lessons to Government and other strategic stakeholders is a priority for Year 3.</p>
<p>The project demonstrates new and replicable forms of business model and opportunities for businesses in the community energy sector and assists in enabling the sector to transition into a post subsidy financial environment.</p>	<p>This is dependent on a new assumption: the emergence of financially viable business models from the programme that are suitable for replication. Further work is needed to identify viable models, as far as possible, during Year 3. A fallback option would be to disseminate information on other viable business models that can be identified outside the programme.</p>
<p>The programme further reinforces the value of the social investment sector in the eyes of policy makers and funders.</p>	<p>This is dependent on a new assumption: that the programme generates evidence about the added value of community energy. This is partly supported through work on added value already undertaken during Years 1 and 2 but needs to be considered further during Year 3.</p>

External factors

A number of external factors have played an important role during Year 2 of the programme. Most of these are already represented within the diagram text, but they are listed here for clarity:

- **COVID** (mainly negative impact, arising from deferred delivery and lower usage of EV charge points; some positive impact because more use of online meetings has enabled fuller participation in dissemination and learning events by people from different parts of the country).
- **Changes to the policy and funding environment** (e.g. RHI, GHG, PSDS, RCEF, Lottery funding; Government’s upcoming Net Zero strategy) (mixed impact: the end of the Renewable Heat Incentive and Rural Community Energy Fund will have negative impact on business models; but the Green Homes Grant voucher scheme, Local Authority Delivery scheme, the Public Sector Decarbonisation Scheme and climate-related Lottery funding have offered additional opportunities at some points). It is currently too early to assess the impact of the Government’s Net Zero strategy which may include policies relating to community energy.
- **Brexit** (mainly a negative impact e.g. difficulty importing parts from EU)
- **Increasing concern about climate change and ‘Environmental Social & Governance’ goals** within companies, local authorities and other stakeholders (positive impact – including the opportunity for influence provided by COP26).

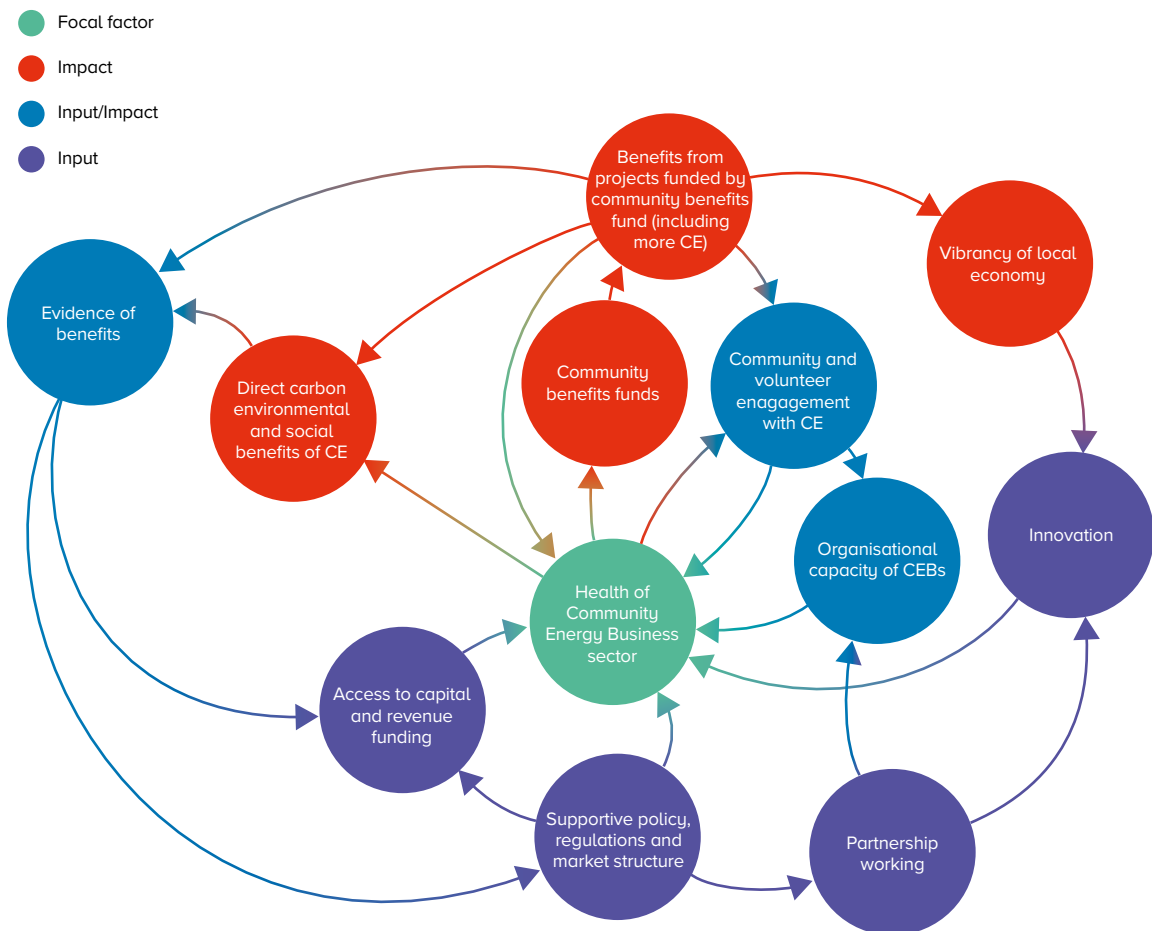
Possible unintended consequences

Some programme stakeholders commented that the innovation programme may contribute slightly to an increasing gap between ‘haves’ and ‘have nots’ in terms of CE groups. This is partly because some of the more well-established groups already have access to higher FITs revenue streams and this gives them more capacity to obtain further funding, including from Next Generation. Also, to the extent that the innovation programme succeeds in contributing to the development of financially viable business models for CE groups, the groups that have received Next Generation support will be well-placed to take up and profit from the new models. This could be countered by identifying simple, viable business models, where they exist, and disseminating learning about these with smaller and less experienced community groups.

5.3 Implications for systems map for Community Energy

In this section, we relate the evidence from Years 1 and 2 of the innovation programme to the systems map that was created during the first year of the evaluation. The purpose of reviewing the systems map is partly to check the accuracy of the systems map in relation to the real-world community energy system and partly to consider where the innovation programme has intervened in the community energy system. This is a precursor to thinking about how future interventions could best interact with the system (see chapter 6).

Figure 3: Simple systems map for community energy



Key points in relation to the systems map are that:

- The innovation programme acts mainly on the ‘innovation node’.
- The evidence to date confirms that complex innovation models are highly dependent on partnership working (i.e. indicates that this causal linkage is strong)
- The evidence to date also suggests that the success of innovation projects is highly dependent on two other purple input nodes (‘access to capital and revenue funding’ and ‘supportive policy, regulations and market structure’) and one blue input/impact node (‘organisational capacity’).
- But the relationship between ‘organisational capacity’ and ‘innovation’ is two way, since innovation support also has a positive influence on the capacity of groups in terms of knowledge and skills.
- The systems map could be amended to show the inter-dependency of innovation success on these other factors.

For the innovation models in this programme there is, as yet, little evidence of the innovation activities making a significant contribution to health of community energy businesses (central green node) or the surpluses that they generate (red nodes). It is possible that some further evidence on these points will be generated in Year 3.

6. Learning and recommendations

This chapter draws together learning from the evaluation findings and sets out recommendations arising from this learning. The learning is set out under four headings:

- Learning about the viability of specific business models
- Learning about specific policy barriers for innovative CE business models
- Learning about designing and running a potential future innovation programme
- Wider learning for community businesses

6.1 Learning about the viability of specific business models

6.1.1 Learning

There are a number of emerging business models that are potentially viable for CE groups, both within and beyond the Next Generation programme, but many require further support to achieve viability. We have made a preliminary assessment of the current viability of the business models examined by the innovation programme using evidence from the evaluation as a whole. This is presented in Table 4 below, as a starting point for discussion with the wider CE sector and stakeholders concerned with the sector. This table includes potentially viable models outside the innovation programme, on the grounds that the context has changed (e.g. solar PV costs have come down and climate issues now have a higher public profile) and that there may now be some relatively simple, viable business models for CE groups that were not included within the innovation programme.

Table 4: Overall RAG recommendation on business models

Key: Red = not a priority unless context changes; Amber = some uncertainties and limitations but worth investigating further; Green = at least some aspects are ready for replication, while others may require further work.

Model / projects	Rationale	RAG rating
<p>Mid-scale renewable generation for self-use or private wire</p> <p>(not tested by NG but taken forward by numerous CE groups)</p>	<p>Carbon benefits can be realised by installing subsidy-free PV on commercial-scale roofs above 50-100 kW. This is viable for CE groups because of reductions in solar installation costs in recent years, although groups may find it challenging to secure suitable sites.</p> <p>Evidence from Next Generation groups suggests that these projects are currently viable if electricity is sold for around 10p/kWh via a Power Purchase Agreement. Depending on the details of the scheme, these schemes can currently support returns to shareholders of around 3%. The key here is that electricity is sold to the organisation that owns/occupies the building or site at a rate that supports CE investment but is competitive compared to grid electricity (e.g. because there are no distribution or transmission charges for electricity sold ‘behind the meter’). This model can also work for wind power and hydro power, depending on the location. These schemes can generate social, as well as carbon, benefits if the surplus is reinvested in other CE activities or in a Community Benefit Fund (CBF).</p>	<p>Green</p>
<p>Large-scale renewable generation</p> <p>(not tested by NG but taken forward by a few CE groups)</p>	<p>If suitable large sites can be accessed, for example with assistance from local authorities or other public bodies, CE groups can potentially develop or invest in very large-scale solar or wind power (e.g. 20-30 MW) which is financially viable without subsidy. The scale of the investment helps to cover overhead costs. Depending on the details of the scheme, large schemes can potentially provide a reasonable return to investors and to community shareholders. Examples include the proposed Bristol wind turbine, PEC’s recent solar scheme, Low Carbon Hub’s proposed developments and the potential solar investment in Devon, led by a collective of local CE groups. In practice, CE groups may find it challenging to secure good sites as they are competing with commercial developers. But there is scope to bring commercial sites into community ownership through initiatives such as CORE, Energy for All and Communities for Renewables. The scale and range of social benefits delivered by these schemes depend on surplus being generated and reinvested in other CE activities or in a CBF.</p>	<p>Green</p>
<p>Energy data co-op</p> <p>(Carbon Co-op)</p>	<p>The Carbon Co-op aim to roll out one of their software tools (the ‘Powershaper Model’) to other organisations using a social franchise model. This is a viable, but low-value product. It will primarily be of interest to technically-minded people who want to analyse their own smart meter data but may enable CE groups and their members to analyse the case for investing in low carbon technologies. Carbon Co-ops is developing other data co-op products that may also have potential for wider roll-out.</p>	<p>Green</p>

Model / projects	Rationale	RAG rating
<p>Energy efficiency retrofit</p> <p>(outside Next Generation programme)</p>	<p>Many CE groups provide energy efficiency advice to members of the public and/or supporters, via energy cafes, home visits, advice services, referral services and so on. The business model often depends on funding from Community Benefit Funds, surplus from other CE activities, or external funding from local authorities, health trusts or energy companies. This work can generate considerable social benefit, and – depending on targeting – also reduce carbon emissions. There are two potential routes to financially sustainable retrofit work: firstly, there are examples of self-sustaining models, primarily targeted at ‘able to pay’ customers (such as the ‘People Powered Retrofit’ service developed by Carbon Co-ops as part of the BEIS Retrofit Supply Chain Pilots, outside the Next Generation programme); secondly, there are examples (such as South Staffordshire CE) of energy efficiency retrofit for vulnerable, fuel poor customers being funded by public agencies, based on evidence about the financial cost savings generated for these agencies (e.g. reduced hospital re-admissions, GP referral rates or reduced care costs).</p>	
<p>Flex community</p> <p>(B&WCE, plus some insights from Burneside, PEC, Carbon Co-op and Green Fox)</p>	<p>The business model for B&WCE’s ‘Flex Community’ is complex and difficult but worth pursuing further on the grounds that it can enable CE groups to add value to the wider energy system, using their reach in the community to test/develop flexibility approaches that will help DNOs to manage grid constraints. At this stage, direct social benefits appear limited as the involvement of vulnerable households is not appropriate. But these models could in theory become commercially viable if they were to generate ‘value’ for the electricity grid, and attract sufficient payment from the local DNO or the National Grid. The B&WCE model currently appears marginal as an income generator for CE groups, not least because EV users tend to use agile tariffs which already inform the timing of their EV charging. However, this is an area that will become increasingly important in future as smart technology develops. There may be a potential niche for CE in helping to engage the community with the flexibility agenda on behalf of DNOs and helping to ensure that vulnerable members of the community are protected.</p>	
<p>PV plus EV</p> <p>(Brighton EC)</p>	<p>The Brighton Energy Coop business model involves addition of EV charge points to proposed solar PV installations. Early findings suggest that there will be locations where EV charge points add positively to the business model for PV or other renewables, and hence where combining them into a package is viable. While the revenue side of this model has yet to be tested, and the social benefits of EV ownership do not yet reach lower income households, it is worth pursuing further. Currently, it appears likely that this model will have more potential in rural population centres where transport is problematic and where there is less competition from other charge point providers. However, the commercial and technical contexts for EV charge points are evolving fast, so it is not yet clear whether and where there will be a niche for CEBs in this market in the longer run.</p>	

Model / projects	Rationale	RAG rating
EV car clubs (Nadder CE)	There is already interest in EV car clubs from other CE groups, particularly those in rural areas. They can potentially generate social as well as carbon benefits, helping to increase mobility and reduce isolation. While considerable uncertainties remain, both about the economic sustainability of the Tisbury Electric Car Club and the feasibility of the ‘platform coop’ envisaged by Nadder CE, this model is considered to be worth pursuing further. There is a role for CE groups in taking the initiative to develop EV car clubs in rural areas with insufficient population to attract larger car club operators.	
Non-domestic renewable heat (CREW)	Renewable heat initiatives in multiple occupancy buildings, such as those pursued by CREW Energy, have become much more financially challenging since the end of the non-domestic RHI. Depending on whether the buildings are on or off the gas grid, these projects may bring some benefits in terms of lower energy costs and increased comfort, in addition to carbon reduction, particularly if heat pump installation is accompanied by high levels of insulation and air tightness. There is a role for CE groups as ‘trusted intermediaries’, engaging with the community and communicating the benefits of renewable heat to users, possibly as a paid service for heat network investors/operators. The model is currently worth pursuing further in cases where other sources of funding can be accessed (e.g. public sector funding such as PSDS; the Heat Networks Investment Project (HNIP) ¹³ and local authority carbon offset funding).	
Domestic renewable heat (GCEC)	Gloucester Community Energy’s project, involving installations in individual homes, is premised on domestic RHI payments. This scheme ends in March 2022 but the Government has proposed a successor policy for the domestic scheme in the form of the ‘Boiler Upgrade Scheme’. Depending on the previous heating source ¹⁴ used by a domestic property, and the level of insulation in the home, renewable heat projects may bring some benefits in terms of lower energy costs and increased comfort, as well as carbon benefit. As in the CREW model, there is a role for CE groups in being ‘trusted intermediaries’, engaging with the community, communicating the benefits of renewable heat to users and helping users to understand heat pump systems. This could be provided as some form of paid service, as currently offered by Carbon Co-op, outside the Next Generation programme. Depending on the details of the Boiler Upgrade Scheme and other policies, this model may be worth pursuing.	

13 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/970565/green-gas-levy-future-support-low-carbon-heat-govt-response.pdf

14 The benefits of installing a heat pump tend to be more significant for properties off the gas grid that previously used electric storage or oil heating.

Model / projects	Rationale	RAG rating
<p>Domestic roof-top solar</p> <p>(LLS)</p>	<p>While the business model that Lockleaze Loves Solar was striving to develop is not currently feasible, there are circumstances in which domestic roof-top solar schemes can be financially viable for CE groups. These include:</p> <ul style="list-style-type: none"> – Working in partnership with a social housing provider to put solar on flats or individual homes (generating both carbon and social benefit if householders’ energy bills are reduced, with a potential engagement role for CE groups). – Offering a signposting or group purchase service to owner-occupiers (again, generating both carbon and bill savings, for higher income households who can afford to install solar PV). <p>If regulations change on peer to peer trading, this would improve the viability of domestic roof-top solar models.</p>	
<p>Community-owned and operated low carbon energy systems in new housing developments</p> <p>(PEC and Burnside CE)</p>	<p>Community-owned energy systems for new housing developments are highly challenging in terms of technical options, feasibility and risk management. The scheme pursued by Burnside CE was particularly challenging as it potentially included an energy storage system that had not previously been implemented in the UK. While some CE groups may be successful in progressing such projects, they are less likely to be within the reach of most CE groups. We think this is currently a lower priority for further work until the regulations change (e.g. peer to peer trading being allowed). In the meantime, CE sector resources could be dedicated to equipping CE groups to lobby their local planners and developers to ensure that new developments in their areas are low or zero carbon.</p>	
<p>Loan scheme for LED replacement or other energy efficiency work</p> <p>(Chester CE)</p>	<p>Until the FCA situation is resolved, loan-based funding for LED lighting replacement in community buildings does not appear to be feasible. This model is financially viable for LED lighting but might also be applicable to other energy efficiency measures. We think this is a lower priority for further work by Power to Change, until the FCA situation is clarified. If and when the situation changes, this would be rated ‘green’ and is worth pursuing, as loan-based funding for non-domestic or domestic LED lighting and other energy efficiency measures could be financially viable and bring social benefits. However, it would be important to check this model against low or zero interest loan schemes such as those run by the Carbon Trust in Northern Ireland and similar schemes in Scotland and Wales.</p>	

Model / projects	Rationale	RAG rating
<p>ESCOs for Zero Carbon Schools (Green Fox)</p>	<p>CE group work with schools has been problematic in recent years because of issues with ESFA/Secretary of State approval for solar PV, with solar PV being currently one of the most profitable elements of a low/zero carbon package. There is potentially a role for CE groups as ‘trusted intermediaries’ with local schools and the communities that they serve, but – given the scale of the investment required – this will need to be in the context of public sector engagement and wider funding of low or zero carbon schools to complement the funds that can be raised via community share offers. While various projects, including Green Fox and Low Carbon Hub, have worked to develop ESCO¹⁵ models for public sector organisations, Multi-Academy Trusts may prefer to use one of the existing commercial ESCO providers or invest in ‘zero carbon school’ technology themselves, thereby avoiding sharing the benefits with an ESCO. If ESCOs are not feasible, the alternative way forward would be for CE groups to provide consultancy support to schools, where they have the technical skills to do this. Given the challenges of work in this field, and the level of competition from commercial providers, ESCO and consultancy work with schools does not seem to be a priority at present. .</p>	

Fuller learning on each of the Next Generation business models will be made available to the wider CEB and CB sector through final programme outputs including final reports, case studies and templates.

6.1.2 Recommendations

Power to Change should develop the table above into a ‘viability map’ of different business models/approaches, as a guide for CE groups, drawing on learning from the Next Generation programme and other CE sources¹⁶. This could highlight the level and types of technical and organisational capacity required for different models, flagging those that would be more feasible for smaller, less experienced community groups. A viability map could set out:

- A high-level description of each business model and the benefits that it might generate for different stakeholder groups
- Options for different approaches to each broad ‘model’, with an assessment of their current pros and cons for CE groups
- The requirements for each model, in terms of technical, commercial and legal expertise and organisational capacity
- Potential risks to viability and approaches to mitigating these
- Signposting to sources of current information on how to implement each model
- An overall assessment of the level of challenge involved in each broad business model being implemented by a CE group.

A viability map of this nature would inevitably become out of date over time, as the policy and funding context changed. It could be set up as an online resource, designed to be updated periodically.

6.2 Learning about specific policy barriers for innovative CE business models

6.2.1 Learning

Specific barriers to the innovation business models were identified through the evaluation research. These included:

- **End of subsidies for renewable heat via the RHI scheme** – The end of domestic RHI scheme at end March 2021 and the upcoming end of the non-domestic RHI scheme in March 2022 make renewable heat schemes less financially viable. The Government has recently announced successor policies¹⁷ including the Boiler Upgrade Scheme, previously referred to as the Clean Heat Grant, alongside the Social Housing Decarbonisation Fund and Home Upgrade Fund. But there is still a lack of clarity in the renewable heat market: key issues for CREW Energy are whether funding will be available for multiple properties sharing a common heat pump or for multi-occupancy buildings.

16 For example, a recent report prepared by CSE for Kent Community Energy, under the CORE programme, could provide useful insights on some of the models outlined here, including energy efficiency retrofit models.

17 The Government launched its plans for successor policies to the RHI on 18th October 2021 as part of its Net Zero Strategy (see <https://www.gov.uk/government/news/plan-to-drive-down-the-cost-of-clean-heat>)

- **FCA regulation issues for CE groups setting up credit or loan schemes** – there seems to be a need for a scaled-down version of accreditation for small community groups. Chester CE are currently attempting to obtain ‘limited permission’ from FCA, with help from a compliance consultancy, which may yet resolve this issue.
- **Issues about cumbersome approval processes for solar PV on school roofs** – this issue is already being progressed with the Department for Education by CEE and appears to have been partly resolved, with DfE expressing broad support for renewable energy in schools.¹⁸
- **Restrictions on peer to peer trading of electricity** – changes to current regulations could facilitate solar PV installations, if surplus electricity could be sold to neighbouring properties and businesses, as allowed in some other countries. At present, surplus electricity not used onsite has to be sold to a licensed energy supplier at a wholesale price and then bought back by the neighbouring property/business at a retail price. The Local Electricity Bill attempted to tackle this problem but failed to get through Parliament.
- **More open access to data** (e.g. anonymised half-hourly meter data, API data) would facilitate the development of innovative energy models by CEBs.
- **Distribution and transmission charges** – Ofgem’s targeted charges review will have important implications for CE groups the viability of their investments (e.g. by affecting the details of electricity pricing in different contexts).
- **Social value** – some public bodies already use social value as an important criterion in assessing suppliers or applicants. For example, Bristol City Council give 20% weighting to social value in their scoring criteria. There is scope for other energy system decision-making processes to take social value into account (e.g. including social value within applications for grid connections in constraint management zones would help to support CEB generation schemes, where these would generate greater social benefits than commercial schemes). The Energy Network Association’s Open Network forum might provide an avenue to raise this, if it is not already being considered.

Power to Change has been discussing ‘task and finish group’ approach with CEE to take forward lobbying on specific barriers faced by innovative business models.

18 CEE’s July newsletter states that CEE have been advised that the proposed Central Procurement Framework approach is being reviewed and that there is no longer a block on groups being able to apply for permission to progress projects with schools. CEE were also assured that the DfE sees the value of community energy and is working to address the long delays previously experienced by groups when applying for permission from the DfE to work with schools.

6.2.2 Recommendations

Power to Change should fund ‘task and finish groups’ to tackle specific regulatory issues and barriers. This could include lobbying of BEIS, DfE, Ofgem and other energy system stakeholders on the issues above:

- Future Government policy on Renewable heat
- FCA accreditation route for small community groups
- Faster, clearer route for approval of CE-owned solar PV installations on schools
- Change in regulations to enable local peer to peer trading of electricity
- Encouraging more open access to energy data to facilitate innovation
- Contributing to the targeted charges review, to ensure that CE groups are not disadvantaged
- Encouraging wider use of social value in grid connection applications and other procurement, both public sector and private sector.

6.3 Learning about designing and running a potential future innovation programme

6.3.1 Learning

There is still a demand for further support for energy innovations by community groups. In designing a future innovation programme, stakeholders would need to be clear about what a future programme (or programmes) intended to do. Development of high-level Theory of Change could help to refine intentions for future programme(s). Use of an innovation scale would also be helpful in defining the level and type of innovation that is sought (e.g. technical, business model-related, social).

Future support programmes in this area could pursue one or more of four possible future options:

- Further work to progress and clarify the viability of ‘amber’ models in the table above.
- Replication support for financially viable models flagged as ‘green’ in the table above (e.g. toolkits, support, webinars etc).
- Support for emerging CE groups (and non-CE community groups that want to do stuff on energy/climate) on the simpler, viable models.
- Further innovation support for models that will be important in future but are not yet viable without external funding (e.g. retrofit, flexibility, heat, EVs, PV, heat or electricity storage).

In designing future support, it will be important for funders to shape their offer in a way that complements rather than duplicates support from other funders. This may involve coordination with other funders in the energy, climate and/or community business space.

6.3.2 Recommendations

Power to Change and other funding bodies, including BEIS, Ofgem, the DNOs, innovation agencies and charitable funds, should use the learning from the Next Generation programme to inform the design of future innovation support for community groups seeking to take action on energy and climate issues.

6.4 Wider learning for Power to Change's work with community businesses

6.4.1 Learning

The Next Generation programme highlights the important role that community businesses can play in responding to local needs. Nadder CE's concept of focusing on a transport project emerged from the bottom-up, via a local 'Green Drinks' session. This project has perhaps been more successful than some of the other Next Generation projects, and is generating interest from other CE groups, because it responds to a real local need that is also experienced by many other rural communities.

But it is worth noting that there is a difference between maximising global climate benefits and maximising local benefits within communities. A group such as BEC generates social community benefit via its community benefit fund and the return it pays to local members, but its strategic priorities for project activity are driven by carbon reduction objectives rather than local priorities.

Key learning points about the role of Community Businesses in innovative projects, within and beyond the energy sector, can be summarised as follows:

- **In new and evolving markets**, CBs need to identify niches where they can further their objectives while operating financially viable business models.
- It is often useful to model, test and adjust an **emerging business model** in response to potential changing circumstances, to ensure it is robust.
- **CBs need to be viable as businesses and can learn from mainstream business approaches** (e.g. risk management, business development processes, software development).
- **Smaller CBs** with limited capacity may need external support to keep abreast of the changing funding landscape in their area.
- **Small CB groups** can access additional capacity and skills by collaborating with other local charities or groups (e.g. their local voluntary action council, community council or credit union).
- **Using services provided by a third party** can simplify delivery of a new project and fill any gaps in the expertise of a CB team but they generally push up project costs.
- **The core offer** of many CBs to their external partners and stakeholders is their engagement with people in the local community.
- **Engaging the wider community** is important, so that they understand how a project connects with their local area and issues.
- **Treating clients as partners** rather than customers can help to ensure high quality delivery.
- **Credibility and reputation** are important to CBs that are offering services to people within their community, particularly where CBs are involved in providing essential services (e.g. access to heating, hot water or mobility).

- **Share offers** are time-consuming to organise and publicise, so larger share offers are more cost-effective.
- There are limits to the **level of complexity and risk** that CBs structured as Community Benefit Societies (CBS) can take on behalf of their members. This constrains the type of projects that can be funded via community shares.
- **Negotiation of legal agreements** is one of the main challenges for CBs when implementing complex, risky projects. The cost and time delays involved in setting up agreements can be significant.
- **Writing things down** (e.g. in a draft contract or heads of agreement) can help to clarify issues between different stakeholders, to ensure that – at an early stage – they really understand each other’s positions.
- **The number of partners** involved in a project affects its complexity and viability, particularly where each partner would take a slice of revenue from the project. Where projects involve a large number of partners, getting to viability may be more challenging. Dependency on partner involvement also increases a project’s vulnerability to external factors beyond its control.
- **Keeping partners and stakeholders fully engaged** is important, particularly through long and complex projects.
- In partnerships with local authorities, **the support of senior management** and/or elected members is crucial to progressing a project.
- **Software development projects** require specific project management skills and monitoring arrangements. Rapid ‘project development cycles’ can be helpful in getting to a ‘Minimum Viable Product’.

6.4.2 Recommendations

These wider findings from the Next Generation innovation programme should be communicated within and beyond Power to Change, in combination with insights from Power to Change’s other programmes.

6.5 Conclusions

The Next Generation innovation programme has generated significant learning about the viability of different business models for CE, despite making less progress than originally anticipated as a result of the COVID-19 pandemic. A number of specific policy and regulatory barriers have been identified which, if tackled, could increase the scope for community groups to contribute to progressing energy projects, thereby helping them to tackle the climate emergency while generating wider social benefits.

While only a small number of business models are currently viable for CE groups without external funding or subsidy (e.g. commercial-scale renewable energy generation), there are a number of other emerging models that could enable community groups to be viable, while helping to tackle wider issues within the energy system. For example, CE groups can potentially act as trusted intermediaries for initiatives that engage community members in helping to provide flexibility of demand within a low carbon electricity grid. Further support is needed, both to encourage replication of viable models and to enable further innovation and development of emerging and future business models for community energy.

Some CE models that are not commercially viable may still be worth replicating if they generate added social value for other stakeholders (e.g. health service providers, DNOs, local authorities), particularly where this value can be translated into payments for the carbon savings, flexibility services, health improvements, community engagement and other ‘social value’ services that they generate.

Appendices

Appendix 1. Evaluation approach and methodology

Systems map and Theory of Change

In the early stages of the evaluation, we worked with community energy stakeholders to develop a systems map for the community energy system. This has been used by the evaluation to highlight the elements of the system targeted by the innovation programme, and to review the key factors that influence successful outcomes from the innovation programme.

Development of the systems map was followed by development of a Theory of Change, in consultation with key stakeholders in the programme. The Theory of Change sets out the strategic goals of the innovation programme and how it aimed to achieve these goals.

The systems map and Theory of Change are presented and reviewed in chapter 5, taking into account evidence emerging from Years 1 and 2 of the evaluation.

Approach to evaluation

The aims of the evaluation, as defined by Power to Change, are:

- 1) To test the relevant Power to Change hypotheses for Community Energy Businesses (CEB), and develop, test and refine additional hypotheses or theories specific to the Next Generation programme.
- 2) To develop understanding of the outcomes and impacts generated by the CEBs supported by Next Generation and the role of the Next Generation programme in facilitating this. This will provide both a formative assessment and summative assessment of programme impacts.
- 3) To evaluate the processes of the administration, management and delivery for the Next Generation programme.
- 4) To generate insights on Next Generation processes and practise through continuous learning, and support delivery of a proactive learning strategy for the programme, so as to:
 - a. influence the programme and grantees
 - b. inform Power to Change's future programmes

5) To connect and disseminate the insights that emerge from the programme with the external policy environment and wider community energy marketplace, as the programme proceeds.

The Power to Change hypotheses referred to in aim (1) have now been retired and will shortly be superseded by a high-level Theory of Change for all of Power to Change's work. For the purposes of this Year 2 report, we have still undertaken an assessment of evidence against the original Power to Change hypotheses, as set out in Appendix 5. The learning framework will be reviewed against the new overarching Power to Change Theory of Change, when this becomes available, so that future assessments can be made against the Theory of Change rather than these hypotheses.

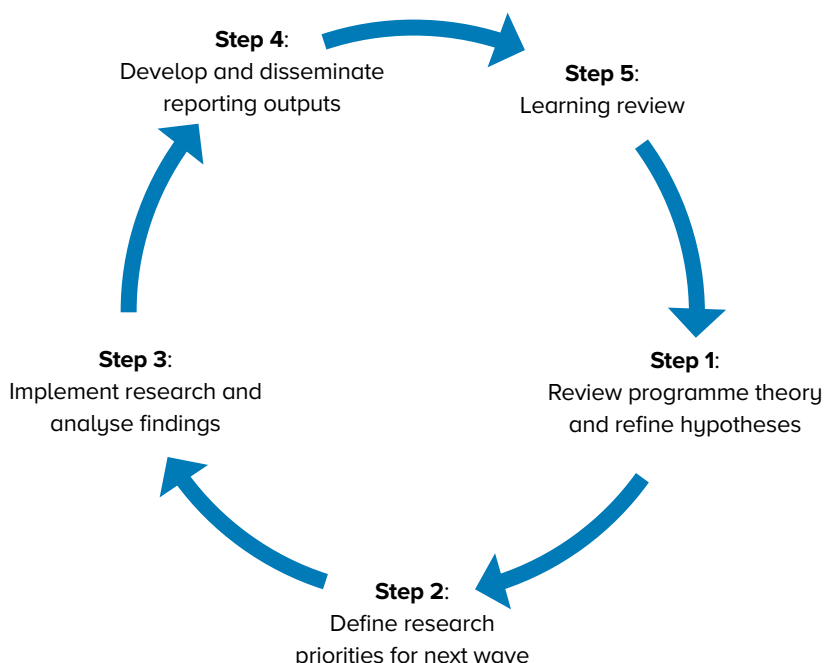
The outcomes and impacts referred to in aim (2) are defined by a set of research questions posed by Power to Change, presented in Appendix 6. We have used these research questions to structure our main evaluation findings in chapters 3 and 5:

- Impact on grantees (i.e. the CE organisations receiving funding and support)
- Impact on people (i.e. volunteers and employees involved in the CE organisations)
- Impact on place (i.e. the wider community served by each CE organisation, including users)
- Impact on the marketplace (i.e. learning for the wider CE sector).

To achieve the evaluation aims, we approach this as a 'developmental evaluation'. Our approach is highly collaborative and flexible to allow us to respond to the initial needs of the programme, any issues arising during implementation and any emerging lessons for Power to Change and the wider stakeholder community.

At the heart of our approach is a learning cycle (see Figure 1.1). On a six-monthly basis, we work with programme representatives to review evaluation findings, to assess any implications for hypotheses being tested, to refine or extend these hypotheses, to identify lessons and messages that should be communicated to different audiences, and to identify the priorities for research in the next cycle.

Figure 1.1: Evaluation learning cycle



Evaluation and research methodology

Our methodology is structured around a ‘learning framework’ which sets out our approach and the ways in which we plan to gather evidence to test hypotheses and generate learning. The learning framework includes a broad-ranging suite of indicators and is reviewed at the start of each learning cycle. The learning framework for this evaluation includes a broad-ranging suite of indicators and is reviewed at the start of each learning cycle. This allows successive layers of evaluation evidence to be compiled, tracking progress during the programme and focusing on those issues of most interest and relevance at the time.

Our research activities in the second year of the evaluation have been designed to gather evidence against the current learning framework. The information that we have looked for in our review of documents, and the questions that we have asked in interviews, have been informed by the learning framework. The research activities that we have undertaken in Year 2 of the evaluation include:

- Two online interviews with the project lead from each of 11 innovation projects (one in autumn 2020 and the second in spring 2021).
- One online interview with each of the key programme stakeholders including Power to Change, the programme delivery body (the Centre for Sustainable Energy (CSE)) and other members of CSE’s consortium (spread across autumn 2020 and spring 2021).
- One online interview with each of five external stakeholders (Community Energy England (CEE), the Department for Business Energy and Industrial Strategy (BEIS), two Distribution Network Operators (DNOs) and one local authority).

- Review of programme and project documentation, including end of Phase reports, final reports (where available) and the CSE’s progress dashboard for innovation projects.
- Insights from attendance at internal webinars, led by CSE, involving representatives from the innovation projects.
- Insights from preparation for and discussion at an online annual learning event, led by Community Energy England.
- Insights from member surveys by two innovation groups (Chester Community Energy (CE) and Brighton Energy Co-op (BEC), which were undertaken with support from the evaluation team.
- Insights from case studies and videos prepared by the evaluation team in collaboration with the Round 2 groups.

The topic guides that we used for the interviews were agreed with Power to Change in advance and are available on request.

Method for assessing innovation

As part of our Year 1 evaluation work on the innovation workstream, we reviewed existing scales that are used to assess innovation projects. These include the widely-used nine-point scale for ‘Technology Readiness Level’ (TRL)¹⁹ and the six-point scale in the Carbon Trust’s ‘four journeys’ model²⁰.

We adapted the ‘four journeys’ model so that it can be used to track progress of innovation projects within the Next Generation programme. We have not used the TRL scale because it is primarily technology focused, and does not cover business model, market, regulatory or organisational issues. We have adapted to Carbon Trust’s four journeys (technology journey, company journey, market journey and regulatory journey) to become the commercial journey, organisational journey, market/technology journey and legal/regulatory journey for CE groups, with only the ‘market/technology journey’ being unchanged from CT’s model. The suggested model is presented below and is used to assess the projects in chapter 3.

Commercial journey



Organisational journey



Market/Technology journey



Legal and regulatory journey



19 The TRL scale was originally developed by NASA and can be viewed at: https://www.nasa.gov/directorates/heo/scan/engineering/technology/txt_accordion1.html

20 Carbon Trust, 2009.

Limitations

This report can only present limited findings on programme outcomes and impacts, partly because of delays in implementation of the innovation projects (with some impacts not yet being evident), partly because of the limits of Power to Change's evaluation budget and partly because of the research burden on the community volunteers that run and benefit from Next Generation projects.

This report presents both favourable and unfavourable findings on the Next Generation programme. We have named specific groups but have protected the anonymity of respondents as far as we can. It may be possible for those close to the programme to work out the source of certain views.

Finally, this report presents an assessment of some dissemination activities that we led ourselves. It is impossible for us to present these assessments as fully objective. But we have attempted to achieve some objectivity by triangulating our own views against evidence from stakeholder and project interviews and presenting objective statistics where possible.

Appendix 2. How did the Next Generation programme work?

Application process for Round 1 and Round 2 groups

Each group submitted an Expression of Interest (EOI) during the initial application process. Groups that submitted a successful EOI then received some support and funding during their ‘Research and Development (R&D) Phase’ to work up a full grant application. The full grant had to be confirmed by the Next Generation grant management committee. All of the groups that submitted successful EOIs passed the ‘R&D Phase’ and were accepted onto the main programme. The Round 1 grants were confirmed in summer 2019 while the Round 2 grants were confirmed in spring/summer 2020. There were some variations in the timing of grant approvals between different groups because varying amounts of work were required during the ‘Research and Development Phase’. In a few cases, there was significant change of project proposals between the EOI and final grant application, owing to the groups developing a fuller understanding of project feasibility during the R&D Phase.

Project timescales

The timetable of the project was extended because of COVID impacts on project delivery. While it was originally anticipated that projects would run to spring 2021, this was extended first to end September 2021 and then – for some projects – to end December 2021. Three projects were in the process of withdrawing from the programme during summer 2021, because their proposed projects and/or business models had encountered obstacles that could not realistically be overcome by end December 2021.

Provision of support by CSE Consortium

One overall programme manager within CSE liaised with all of the 11 groups. (A second CSE staff member has recently been recruited to help with this process). CSE reorganised the responsibilities of the wider CSE Consortium during 2020 so that:

- One member of the wider CSE Consortium, drawn from Everoze, Low Carbon Hub or Co-operatives UK, was identified as the technical support lead for each project (based on matching – as far as possible – the support needs of the group with the experience and skill set of the consortium member).
- Monthly or bi-monthly ‘huddle’ meetings were held for each innovation project, involving the project lead, CSE’s programme staff member and the technical support lead.
- Issues, follow-up actions and learning points arising from the huddle meetings were logged on a dashboard that was accessible to the CSE Consortium, Power to Change and the evaluation team.

Release of each major phase of grant funding to each project required approval from the Next Generation grant committee, as described below. Grants were released in advance of each phase of expenditure and were justified retrospectively by submission of receipts. The projects were held accountable for grant expenditure by CSE, with advice and support from the technical support lead for each project.

Grant approval processes within the programme

The Next Generation grant was divided into four Phases with around £25,000 of grant support being provided in each phase. Projects were required to meet 'stage gates' at the end of each Phase, based on completion of activities set out in their final grant application. Approvals were made by the grant committee, which included representatives from Power to Change, CSE and the wider CSE consortium.

Owing to the variety of projects, and the different contexts they faced, the eleven different projects reached their 'stage gate' milestones at different times. Since early 2020, the grant committee has been scheduled to meet once a month, with groups being well-briefed on the deadline for submitting 'stage gate' documents before this meeting. In months when there were no submissions, the grant committee meeting was cancelled.

Programme stakeholders reported that grant committee decision making had improved since Year 1, with projects being assessed at an early stage to check whether they were on track, so that they 'failed early' if they had little prospect of meeting their objectives.

While most programme participants were satisfied with grant committee arrangements, one project lead commented that they had to wait a long time for approval for each 'stage gate' (e.g. nearly 2 months from the document submission date) while another reported that 'stage gate' submissions were quite onerous. A Power to Change representative commented that the number of 'stage gate' reviews for each project could perhaps have been reduced, saving programme resources.

Appendix 3. Response to Year 1 evaluation report recommendations for innovation programme

This note summarises the key recommendations from the Next Gen year 1 evaluation and actions completed or in progress to address them in spring 2021. It covers actions agreed between Power to Change and lead delivery partners, CSE, and then reviewed by programme evaluators, CAG Consultants.

Recommendations for any future innovation competitions run by Power to Change (F= future):	
F1. An innovation scale should be used in future innovation competitions, to clarify the level of innovation sought.	Complete. This will be addressed in any future rounds of Next Gen or wider Power to Change innovation competitions. This recommendation has been fed in to Power to Change’s Research Institute as a ‘lesson learnt’ on process evaluation and to inform future programme design
F2. The application form should be reviewed to avoid asking for excessive ‘due diligence’ information at the EoI stage.	Complete. This will be addressed in any future rounds of Next Gen. This recommendation has been fed in to Power to Change’s Research Institute as a ‘lesson learnt’ on process evaluation and to inform future programme design
F3. In future competitions of this nature, Power to Change should consider providing more funding to CBs for the R&D phase, or incorporating it as a grant phase within the programme.	Complete. This will be addressed in any future rounds of Next Gen or wider Power to Change competitions of similar nature. This recommendation has been fed in to Power to Change’s Research Institute as a ‘lesson learnt’ on process evaluation and to inform future programme design
F4. Power to Change should review, during Year 2, whether the £100k grants offered by the programme, and the two-year timescale, were sufficient to support the development of new, post-subsidy business models for CE.	CAG to integrate appropriate question(s) into the next round of research with groups to capture views. Power to Change review to consider the views of grantees as well as delivery partners, to inform activity beyond Next Gen (see section B below)
Recommendations for management of the innovation programme (M = management):	

<p>M1. The CSE consortium should make their support offer clearer to innovation groups.</p>	<p>In progress. More structured communications have been developed in the form of a monthly ‘huddle’ with the CEB’s, CSE and consortium partner all attending to discuss the project progress and offer support. Notes are recorded on the dashboard. Currently developing ‘Principles of engagement’ for CSE, CEB’s and consortium member to clarify roles and responsibilities.</p> <p>CAG suggested that where groups require specialist support (e.g. technical), which cannot be provided by CSE consortium, they could transfer some of the ‘capacity building’ programme budget to procure third-party specialists i.e. over and above £100k grant. Power to Change not aware that this is an issue but remain flexible and accommodating as possible should grant variations be proposed, including for small increases to grant totals where there is clear case to do so</p>
<p>M2. CSE and the consortium should consider providing more support on strategic issues that are common to several projects (e.g. negotiation of PPAs; negotiation with energy suppliers).</p>	<p>In progress. An internal networking webinar series has now been developed to bring Next Gen Innovation Fund CEB’s together once a month. They are asked to contribute over-arching issues as topics for discussion with each other. Issues which are affecting the community energy sector are highlighted to CEE by CSE. Strategic issues are also partially addressed as part of the Innovation Lab webinar series where projects are presented, and the audience participate in a Q&A.</p>
<p>M3. Power to Change and CSE should review the operation of grants committee reporting and decision-making processes in order to reduce burden and delays, while retaining accountability for funding. Use of the ‘Business Model Canvas’ or a similar template might be considered, to provide a convenient summary of progress on each business model for the grant committee.</p>	<p>Complete. The grant committee meetings are now scheduled for once a month and there is a monthly deadline for the groups to submit documents to end their current phase and release funding for the next one. CSE and the consortium member working with each group are then responsible for completing the reporting template and circulating this summary of the submission to the rest of the committee before the committee meeting.</p>
<p>M4. As the delivery of innovation project starts, the evaluation team should work with CSE and innovation projects to set up monitoring systems for project delivery.</p>	<p>Complete. CAG developed generic monitoring guidance, in consultation with CSE and Power to Change, which was shared with the groups. Monitoring arrangements were discussed as part of the spring interviews during 2021 – the groups vary as to how far advanced they are towards delivery and whether monitoring is yet required.</p>

<p>M5. Power to Change and the Next Generation programme should remain responsive to the potential need for changes to the programme in response to the coronavirus pandemic.</p>	<p>In progress. Power to Change remains responsive and flexible to changes to project and programme delivery as a result of coronavirus. All innovation grantees have been invited to review and amend their grant delivery plans as appropriate. An initial 3 month extension was offered to all grantees to allow for coronavirus delays and challenges. There is an ongoing commitment to keep this under review and, where necessary, groups can request a further extension.</p>
<p>Recommendations for sharing learning outside the programme: (S = Sharing)</p>	
<p>S1. Power to Change, CSE and the evaluation team should work with the projects to identify and communicate strategic lessons during the next learning cycle. This should include work with the FCA on authorisation issues, in partnership with CEE.</p>	<p>Completed. CAG action to progress learning on four levels identified below on specific barriers and set out the learning to date on these points in the Year 2 report.</p> <p>1. Learning about specific barriers for CE groups (e.g. How can the FCA accreditation barrier best be overcome? How could policy/regulation be changed to enable CE groups? What target audiences need to be influenced to achieve change?)</p> <p>2. Learning about viability of specific business models (e.g. Which new business models are the most viable and replicable? What is the learning from less successful business models? Can tools/models be developed as outputs from the Next Gen programme? What policy/regulatory changes would support the viability of these business models? What target audiences need to be influenced to achieve change?)</p> <p>3. Learning about theory of change (ToC) (e.g. e.g. Does the rationale still hold? Did the assumptions hold?)</p> <p>4. Learning about designing and running potential future programmes (e.g. Would there be a rationale for a successor programme and, if so, which funders might take this forward? What could/should be done differently?)</p>

<p>S2. Quarterly calls between CSE, Power to Change, CEE and the evaluation team should be considered to improve planning about the communication of lessons to external audiences.</p>	<p>Completed. Power to Change’s quarterly coordination meetings with CEE now include CSE and/or CAG for relevant items.</p>
<p>S3. Where possible Next Generation should share templates and materials from emerging business models, but take care not to share commercial details that could undermine the negotiating position of other CE groups.</p>	<p>In progress (via final outputs from innovation groups).</p>
<p>S4. Power to Change, CSE and the evaluation team should continue to share learning from unsuccessful as well as successful projects, via dissemination activities.</p>	<p>Ongoing (via learning and dissemination activities).</p>
<p>Recommendations beyond the Next Gen programme: (B= Beyond)</p>	
<p>B1. Power to Change should consider, with CEE, whether any support is likely to be needed by other CE groups seeking to take forward business models emerging from the innovation workstream. This might include co-operative working between CE groups (to share overhead services and costs) and/or peer to peer support at a regional level, possibly via the existing regional CE bodies. If this does not fall within Power to Change’s own remit or timescale, it should consider approaching the types of funders that might be interested in taking this forward, to increase the eventual impact of Next Generation innovation work.</p>	<p>In progress. All parties agreed that communicating external lessons should be a key focus of the remaining programme (both in terms of outcomes of the programme and projects it supports, as well as the wider narrative on need for these sorts of interventions to accelerate local zero carbon activities) and planning for this (key messages, target audience etc) needs to happen sooner rather than later for it to be effective. This will help inform Power to Change’s next phase and potential approaches to other partners/ funders on theme of CB climate/energy/nature models. There is also a potential role for CSE Consortium to help promote the benefits of this type of innovation programme with wider industry (e.g. Ofgem, DNOs).</p> <p>CSE and CAG have developed a schedule of final outputs from the NG groups and evaluation and are putting place communications activities around these.</p>
<p>B2. Power to Change should consider whether, through the work of the Next Generation programme or other initiatives, there is scope to address gaps in the current Next Generation innovation programme (e.g. supporting CE work on domestic energy efficiency retrofit, on Power Purchasing Agreements involving social impact or on digitisation of governance for CBs).</p>	<p>In progress. CAG action – see response to S1 above.</p>

Appendix 4. Dissemination activities

This appendix documents the dissemination activities that have been undertaken during Year 2. These are presented in two tables, the first showing programme-level dissemination activities and the second project-level activities.

Table 4.1: Programme level dissemination activities in Year 2 – internal and external

Activity	Led by	Description/audience	Assessment
Basecamp	CSE	Internal file sharing platform for innovation projects and CSE Consortium	Useful as a document repository; limited use of discussion threads (e.g. to identify topics for internal webinars; to flag upcoming events; to identify issues about batteries)
Internal webinars	CSE	Internal monthly webinar for innovation projects, led by CSE with notes prepared by CAG. Normally run in flexible, open format, allowing groups to bring their own issues. Some use of themed sessions.	Typically attended by 5-7 representatives from the 11 innovation projects, with higher attendance in 2021 (7-10) than 2021 (3-6). CSE wanted these sessions to feel 'owned' by the projects and was therefore cautious about imposing too much structure. Feedback indicates that, for some project representatives, this was one of the best aspects of the programme, allowing a platform for informal peer to peer learning, focused on the issues concerning them at the time. Others felt that more structure would have been helpful (e.g. themed sessions) so that people could decide which sessions to attend. The most recent sessions were themed, focusing on different types of partnership working.

Activity	Led by	Description/audience	Assessment
Innovation lab webinars	CSE	<p>External monthly webinars, lasting 1.5 hours, showcasing Next Generation or other innovative CE business models (e.g. Energy Local, Low Carbon Hub)</p> <p>Nine webinars held between June 2020 and July 2019, inclusive.</p> <p>Webinar recording made available via the Next Generation microsite.</p>	<p>The innovation lab webinars were well-attended with an average of 78 people signing up and 42 people attending each session. The sessions themselves, and the recordings, were free and open to anyone who was interested.</p> <p>Views of the innovation lab recordings on Youtube (as at end July) range from 22 for Nadder and 42 for Green Fox to 156 for Brighton Energy Co-op and 124 for CREW.</p> <p>Informal feedback via the chat function during these webinars was positive, but our understanding is that formal feedback has not been collected from these sessions.</p> <p>While the recordings have been made available online, they are difficult to find on the Next Generation microsite and do not readily appear in online searches. As part of recent communications work, links to the webinars have now been included within the relevant project descriptions on the ‘innovation’ page of the Next Generation microsite, to improve access.</p>
Next Generation microsite	CSE	<p>Website specific to the Next Generation programme, which can be reached directly or via links on the Power to Change, CSE and CEE websites.</p>	<p>The total number of website users since October 2018 averages about 150-200 per month, with users typically viewing 2.4 pages per month. Usage was highest during the application periods, in November/December 2018 and July 2019. These statistics omit the months of March 2021 and April 2021 which show high usage which may be consistent with bot activity or might be related to preparation of the communications campaign.</p>

Activity	Led by	Description/audience	Assessment
Case studies and videos for Round 2 groups	CAG	External – early learning from Round 2 projects shared with other CE groups and external stakeholders via a 2-page case study, including a business model diagram, plus a 2 minute video.	The case studies and videos were prepared with the assistance of the Round 2 innovation groups. With the exception of the Burnside outputs, which need to be updated to reflect the end of that project, these outputs have been made available via the Next Generation microsite and publicised by communications activity during Community Energy Fortnight. Some of the Round 2 groups commented positively on these outputs during recent interviews.
Communications activity during Community Energy Fortnight	Power to Change/ CEE/	External – communications plan developed and implemented, in partnership with Power to Change, Community Energy England and CSE, to share Round 2 outputs with other CE groups and key contacts within external stakeholder organisations (e.g. BEIS, DNOs, other funders).	<p>The communications plan included:</p> <ul style="list-style-type: none"> – Uploading of Round 2 outputs to the Next Generation microsite and uploading of case studies as ‘Research Institute’ working papers on Power to Change website – Signposting to the NG microsite from the ‘how to’ section of the Community Energy England website – Identification of key contacts within external stakeholder organisations and emailing of materials to them – Repeated tweeting and Linked In posts, highlighting one project on each day <p>Youtube statistics show some impact from this campaign. For example, the Round 2 videos published in May had over 30 views by 4 August, with CREW receiving 69 views. Some of these views will be attributable to CAG and CSE’s own activity – for comparison, the Burnside video (which has not been published) has had only 11 views. The Innovation lab recordings and Round 1 videos also showed some increase in viewings between 1 April and 4 August. Further viewings may have been made if groups have uploaded the videos to their own websites.</p>

Activity	Led by	Description/audience	Assessment
Year 1 report	CAG	External (Executive Summary); Internal (main report)	The main report contained internally-focused material and was therefore not published by Power to Change. The Executive Summary was published as a research paper on Power to Change’s website. There were 153 direct downloads of this document between June 2020 and August 2021.
Evaluation Advisory Panel	CAG	External/internal – presentation to key stakeholders on the panel, including BEIS, the Energy Networks Association and University	Despite presentation of findings at the Evaluation Advisory Panel at the end of each learning cycle, and publication of the Year 1 report summary in summer 2020, interviews with key stakeholders (e.g. BEIS, two DNOs and a major City Council) found relatively little awareness of the Next Generation programme.
Annual event	CAG	External – online event held on 9 November 2020 in partnership with Community Energy England. This showcased learning from the Bristol Energy Network and several innovation groups (Lockleaze Loves Solar, Burneside CE, Nadder CE, Brighton EC and Carbon Co-op).	<p>This event was held online because of COVID restrictions. 114 participants signed up for this event and more than 70 people attended on the day, primarily those involved in the CE sector. The event presented learning around themes identified via the internal webinars, with panel discussions around these themes.</p> <p>Of the 33 respondents who responded to an online feedback poll during the event, 32 agreed that the event had met its goal of sharing learning on practical issues and opportunities from emerging post-FITS business models for community energy groups, with only 1 person saying ‘not sure’ about this statement, and none disagreeing with the statement. Similarly, 32 respondents agreed that the event had helped them with new learning or knowledge, with no-one disagreeing with this statement.</p>

Activity	Led by	Description/audience	Assessment
Final reports and outputs from NG groups	Groups	External learning report and internal final report to be prepared by each group, when their grant support ends.	During 2021, CSE consulted with CAG and Power to Change about the format of the final reports from each project. Only one final report has yet been submitted (by Lockleaze Loves Solar), with two further reports expected shortly from Green Fox and Chester CE. The intention is that the external learning reports and business model templates should be shared with the wider CE sector. A 2-page case study will be prepared by CAG during Year 3, highlighting key learning on each business model for other CE groups and for wider stakeholders and policy-makers. These outputs will draw lessons from both successful and less successful projects.
Wider networking by NG groups	NG groups	External – informal networking and presentations by innovation projects to other CE groups and partners	Interview evidence suggests that most of the innovation groups undertake some networking and dissemination work beyond the activities listed above. Those groups with paid staff tend to be better networked within the national CE sector (e.g. making presentations to regional CE bodies or other CE groups). Those innovation groups with lower organisational capacity (e.g. those without paid staff) tended to focus on networking more locally (e.g. networking with other local stakeholders and community groups in their localities).
Mentoring	CSE/ Co-operatives UK	External – mentoring programme for less experienced CE groups	This programme has just started, involving 10 experienced CE practitioners and around 30 less experienced practitioners. It will be evaluated during Year 3.

Activity	Led by	Description/audience	Assessment
Other outputs	CAG	External – updating of Year 1 outputs, including the ‘added value’ framework (to communicate CE benefits to external stakeholders) and monitoring tools (to assist CE groups with monitoring and research), plus preparation of theme-based case studies based on Year 2 evidence.	<p>After completion of the Year 2 report, CAG will review the outputs from Year 1 and update them in line with further learning during Year 2. For example:</p> <ul style="list-style-type: none"> – the draft member survey prepared during Year 1 has been used by three groups during the past year and will be updated. – Further insights into the ‘added value’ generated by community energy have been gathered through interviews with external stakeholders (e.g. BEIS, DNOs, local authorities) and will be incorporated into the added value framework. <p>CAG will also prepare further outputs for use in wider dissemination work, including:</p> <ul style="list-style-type: none"> – Five theme-based case studies on partnership working and practical/ legal issues faced by the innovation projects, drawing on learning from Year 2. – A video showcasing Nadder CE’s project, including its impact on car club users, to be shared with CEE before COP26 as part of the evidence base on community energy.

Table 4.2: Project-level dissemination activities during Year 2 – external

Project	Dissemination activities
Bath & West Community Energy	B&WCE are already disseminating their learning informally through direct liaison with other CE groups. When more people have signed up to the 'Flex Community', B&WCE has ambitions to use case studies and a user video to disseminate learning from the project. The group also plans to share learning at an innovation lab webinar, hosted by CSE, in November 2021.
Brighton Energy Co-op	<p>BEC's dissemination activities have included an innovation lab webinar run by CSE, a presentation to the CEE autumn event 2021 and direct contact with specific CE groups and the Energy Systems Catapult's community energy EV group.</p> <p>BEC expect to make various outputs available to other CE groups towards the end of the Next Generation programme, including a lease and licence templates for EV charge points, communications materials, a user survey template and a template financial model for 'PV plus EV' investments by CE groups.</p>
Burnside Community Energy	While the Burnside project is not going ahead, BCE is in the process of preparing its final report, which will share learning from the project. They presented at the CEE annual event in autumn 2020 and hope to make templates available to other groups considering similar approaches.
Carbon Co-op	The Powershaper Monitor has generated interest on Twitter, and Carbon Co-op have shared their experiences via an innovation lab webinar and the autumn CEE annual event. Carbon Co-op have also communicated about the project with the co-op membership as they are considering offering some of the data services to their members, as part of an enhanced membership offer.
Chester Community Energy	CCEL has made its financial models for LED lighting replacement available for dissemination via CSE. These have been validated through their experience with funded LED replacement projects. While CCEL directors have participated actively in the internal webinars within the Next Generation programme, and they network actively within Chester, they have been less active than some groups in disseminating their model within the wider CE community owing to the problems getting FCA accreditation.

Project	Dissemination activities
CREW Energy	<p>The group is active in disseminating the interim learning from its activities, including the Next Generation programme. CREW spoke about heat pumps at London Climate Action Week, alongside the GLA. They showcased the Next Generation work at an innovation lab webinar, with the recording reportedly receiving 1000 views²¹. They are also involved in the Next Generation mentoring scheme and undertake additional mentoring funded by Community Energy London (e.g. masterclass on heatpumps and building management systems).</p> <p>By the end of the Next Generation project, they expect to be able to share their financial model for commercial-scale heat pumps, including potential demand shifting revenue, as well as ideas on how to market renewable heat to the wider community.</p>
Gloucestershire Community Energy	<p>GCEC has not had much involvement in networking and dissemination activity within the Next Generation programme, other than attending a few innovation lab webinars and some Community Energy England events. They anticipate getting more involved in networking and dissemination when their project is further advanced.</p>
Green Fox CE	<p>Green Fox shared their learning via an innovation lab webinar and submitted their draft final report in September 2021. When finalised, they plan to disseminate their final report to Leicester City Council and to Government, including the Secretary of State for Education. They are also willing to share templates and learning from the project with other CE groups on request.</p>
Lockleaze Loves Solar	<p>LLS presented at the Next Generation/CEE annual event in 2020 and have shared their learning both through a ‘Story so Far – Lessons Learnt’ report (prepared in September 2020) and their final report. They are willing to share their financial model and templates with other CE groups on request and have already shared these documents with the CSE Consortium to facilitate this.</p>
Nadder CE	<p>Nadder CE has been active in disseminating interim findings and sharing their vision of a wider ‘platform Co-op’ for rural car clubs across the UK. They have made presentations to an innovation lab webinar, to the CEE annual event in 2020, to Wessex CE and Community Energy South, and to two Wiltshire Climate Alliance meetings. They also worked with Community Energy England to put a survey to CEE members seeking interest in their ‘platform Co-op’ concept. They received three responses to this survey, all of whom they have since spoken to.</p>
Plymouth Energy Community	<p>As this project is still at an early stage, dissemination activity has so far been limited. PEC has networked with WPD, the local Distribution Network Operator and has liaised with a Totnes Renewable Energy Society which is considering installation of a solar-PV microgrid, with feasibility work funded by BEIS’s Rural Community Energy Fund. PEC plans to share learning via an innovation lab webinar at end September 2021.</p>

21 This figure appears to represent views via CREW's Youtube channel, rather than views via CSE's channel.

Appendix 5. Power to Change Hypotheses

Until 2021, Power to Change aimed to test a number of hypotheses about community businesses across all its programmes. Hypotheses 1 to 8 were common across all Power to Change programmes, providing common ‘lenses’ through which to analyse findings from this and other evaluation and research. In contrast, Hypothesis 9 was developed specifically for the evaluation of the Next Generation programme as a result of the systems mapping exercise and other evidence gathered during the first learning cycle of the evaluation.

The Power to Change hypotheses were retired during 2021 as part of the restructuring and repurposing of the organization and will be replaced by a high-level Theory of Change. However, we have provided an analysis against the former hypotheses in this report because the new Theory of Change for Power to Change was not available at the time of this research and has not been incorporated into the learning framework for this evaluation.

Table 5.1: Assessment of learning on Power to Change hypotheses

Number	Hypothesis	Assessment of learning from the innovation programme to date
H1 (Knowledge)	Community businesses have high levels of customer/service user satisfaction because they understand what people want. This is because the majority of their customers/service users are from the local area. As a result, they offer better products and services than alternative providers.	Nadder CE’s model is unusual in being able to combine a high-risk approach with social impact. A success factor here may be that Nadder CE’s project is deeply rooted in community need.
H2 (Employability)	Community businesses improve skills development amongst local people by creating jobs and providing development opportunities for those who would otherwise not actively participate in the labour market.	The innovation programme has made some contribution to skills development and a small amount of employment within CEBs, but only to a limited degree.
H3 (Volunteers)	Community businesses use local volunteers to deliver their products and services. They do this by providing formal and informal volunteering opportunities. This also helps them keep costs down. Volunteers will also report personal development and social benefits.	CEBs generate considerable volunteer engagement and involve volunteers in delivery. Some evidence of this is available from member surveys undertaken by the Next Generation evaluation.

Number	Hypothesis	Assessment of learning from the innovation programme to date
H4 (Social Capital – Members/ Shareholders)	Community businesses increase ‘bridging social capital’ by engaging members and/or shareholders in local decision-making through the development of skills and access to information.	There is evidence from some of the innovation projects that they engaged members and beneficiaries closely in the development and delivery of their projects.
H5 (Sustainability)	Community businesses are less likely to close than other, similar SMEs because they understand what local people want (H1), use local volunteers to deliver their products and services (H3) and engage local people as members and/or shareholders (H4).	This is not relevant to the innovation programme.
H6 (Infrastructure)	The provision of third-party business development support increases the productivity and resilience of community businesses.	There is evidence that support from the innovation programme has helped some of the participating CEBs to develop their business thinking and diversify their activities.
H7 (Assets)	The transfer of local physical assets from public and other bodies stimulates community business growth. This is because they contribute to financial resilience, provide a physical base for operations and generate goodwill.	This objective is not relevant to most of the innovation projects. Nadder CE is possibly an exception in that the group has purchased two EVs, funded through private finance/sponsorship, outside NG programme.
H8 (Place-based)	Community businesses collaborate with others (in different ways, at different geographical levels and not just with other community businesses. This brings more benefits to their community (compared to areas where community businesses don’t collaborate with others). This is because they are able to be more financially independent (i.e. not dependent on grants from third parties) and are able to share skills and resources.	There is strong evidence of an open culture within the CE sector, with groups sharing skills, supporting each other and working partnership with local councils and other community groups. There is scope for outreach from the CE sector to go further, encouraging and enabling energy activities by non-energy community groups such as community land trusts, parish councils and so on.
H9 (Climate Emergency)	Community energy businesses are led by people who are concerned about the Climate Emergency. The actions of CEBs help to raise awareness of climate change issues and increase the sense of agency within their communities, and motivate community members to reduce their climate impacts.	There is strong evidence from member surveys and CEB interviews that the innovation groups are primarily motivated by climate change issues. For some groups, fuel poverty issues are cited as a parallel and inter-related concern.

Appendix 6. Research questions for Next Generation programme

In the invitation to tender for this evaluation, Power to Change specified a set of research questions that the evaluation should aim to answer. These focus primarily on the impact of the programme and should be read in conjunction with the ‘aims’ of the evaluation (as presented in the main report) which include consideration of process and learning for the future. These research questions have been used to structure our findings on outcomes and impacts in the main report.

The impacts Power to Change and delivery partners have on grantees

- Who are the community energy businesses supported by the programme (i.e. how are they structure, how do they describe themselves, what activities to they delivery, which localities to they operate in etc)?
- What is the impact of the programme on participating community energy businesses? How is this impact achieved? What are the factors which influence these outcomes (e.g. the local economies and geographies in which they are situated, existing and available skills and resources etc)?
- Where are the opportunities to improve the programme?

The impacts Power to Change and delivery partners have on the marketplace

- What impact does the programme have on the wider sector and marketplace, if any (i.e. community energy)?
- What lessons are there for other practitioners and stakeholders about community-led innovation and delivery?
- Is the right infrastructure and support in place for CEBs to be successful? If not, what additional support is required, by Power to Change, by policymakers and the wider market?

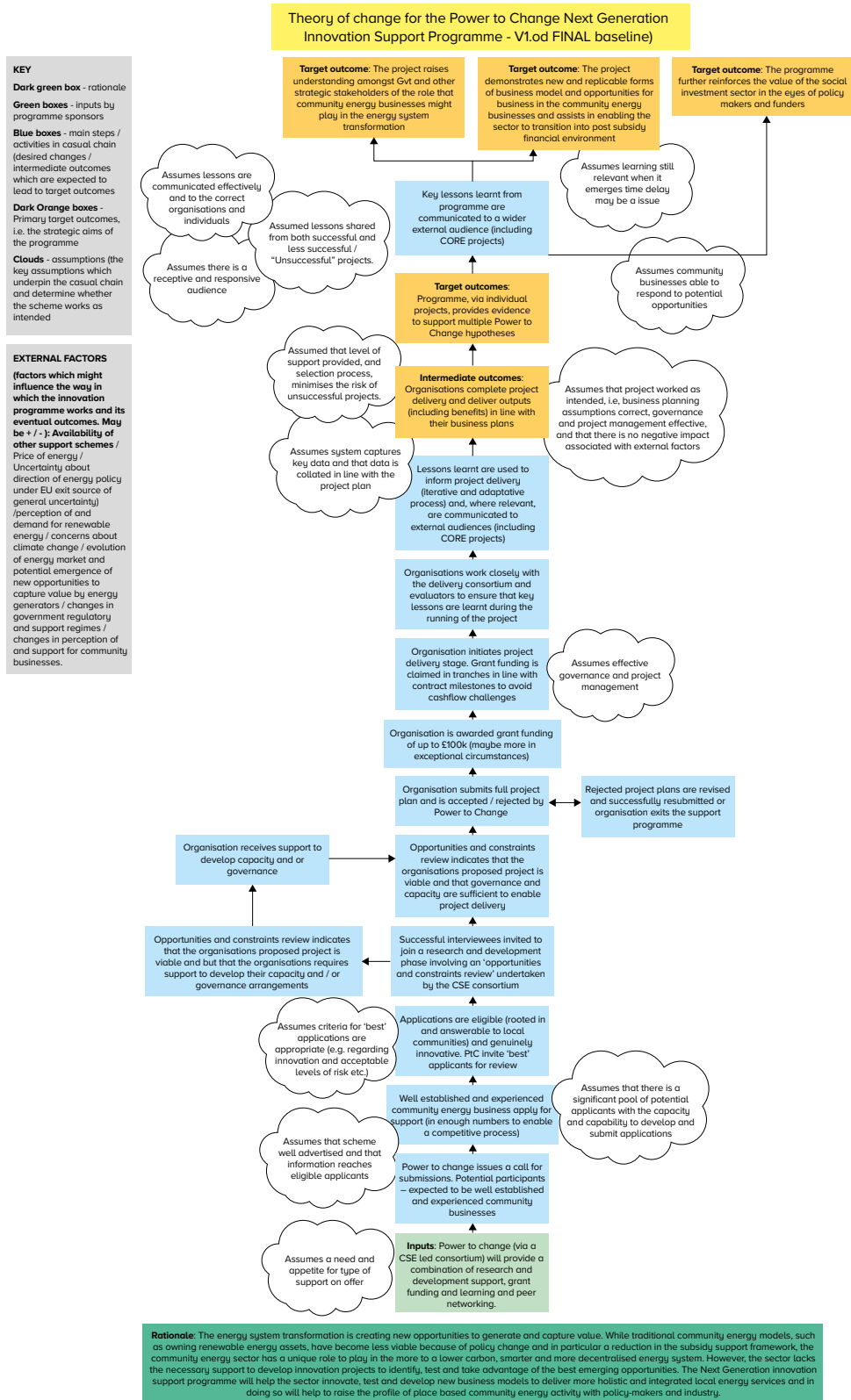
The impacts CEBs have on people

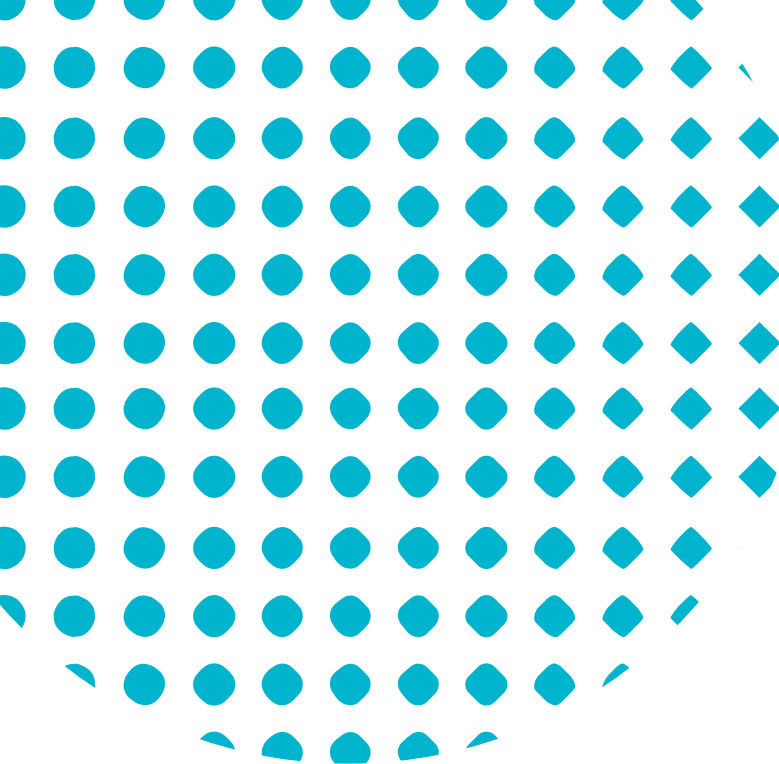
- What is the impact of these community businesses on:
 - Their beneficiaries, customers and members?
 - Their staff and volunteers
- How are these impacts achieved?

The impacts that grantees have on places

- What social impact do community energy businesses create, particularly in relation to our seven priority areas? These are:
 - Reduced social isolation
 - Improved health and wellbeing
 - Increased employability
 - Better access to services
 - Greater community pride and empowerment
 - Improved local environment
 - Greater community cohesion
- How do community energy businesses collaborate with others in their local area? How does this impact on their success?

Appendix 7. Baseline Theory of Change for innovation programme





**FOR DIRECT ENQUIRIES
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