

Financing Community Energy Case Studies: Brighton and Hove Energy Services (BHESCo)



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Preface

Financing Community Energy project

Commencing in 2016, the Financing Community Energy project aims to provide the first systematic quantitative and qualitative analysis of the role of finance in the evolution of the UK community energy sector. It is led by the University of Manchester, working with the University of Strathclyde and Imperial College London, and forms part of the UK Energy Research Centre (UKERC) research programme.

The project involves a literature and data review analysing the development of community energy to date; a UK-wide survey and statistical analysis of community energy finances and business models; in-depth case studies of a range of community energy business models in practice; and an ongoing stream of policy and practice engagement.

This report presents the final of four case studies of UK community energy organisations conducted during 2018/19, which will later be included as part of a synthesis briefing alongside a series of sector-level interviews. The case study makes use of a combination of qualitative (e.g. interviews, organisation reports) and quantitative (e.g. financial reports) data.

UK Energy Research Centre

This project was undertaken as part of the UKERC programme, funded by the Research Councils Energy programme. UKERC carries out world-class interdisciplinary research into sustainable future energy systems. It is a focal point of UK energy research and a gateway between the UK and the international energy research communities. Our whole-systems research informs UK policy development and research strategy.

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BHESCO key facts

Year established	2013
Location	Brighton and Hove
Legal structure	Co-operative (bona fide)
Annual turnover	£250,647 (2017/18)
Net surplus	-£33,432 (loss for financial year ending March 2018)
Total assets	£519,730 (2017/18)
Generation capacity	400 kW of renewable energy generation capacity
Finance	Community shares, some soft loans
Subsidies	Combination of grants and long-term revenue payments (e.g. FIT & RHI).
Number of FTE staff	5.4 (Three full-time, plus two part-time employees)
Number of regular volunteers	Approximately 15
Number of members	170
Key partnerships	Installation specialists, energy suppliers, community energy groups, local small and medium-sized enterprises (SMEs), local authority.

(Source: BHESCO public accounts, 2018a; BHESCO Share Offers, 2018c & 2019a; interviews)

Summary of key lessons

- Energy efficiency and heating services can constitute a core offering of community groups.** Unlike many other community organisations, BHESCO has been able to develop a compelling value proposition, centred on delivering affordable comfort and warmth, through a combination of efficiency and generation measures.

By employing a Pay As You Save model, it has unlocked a previously untapped revenue stream for communities, which importantly is less reliant on generation subsidies such as the Feed-in-Tariff (FIT). However, we find the model is limited in its ability to assist the fuel poor, who cannot be expected to share any cost savings generated, and tenants of rented properties where landlords are uninterested in investing in energy savings.
- Financing a serviced based model presents uncommon challenges in the community energy sector.** Compared with other community energy groups, BHESCO's investors must consider higher operating costs, on-going capital needs and a more complex offering, based on its business model rather than a singular asset. However, BHESCO has negotiated these challenges deftly and is open to alternative approaches, involving blended finance and working in consortia, as it explores potential larger scale projects.
- The complexity of BHESCO's business model presents both advantages and disadvantages.** On the one hand, its relative complexity makes the venture less dependent on any single technology, customer, revenue stream or subsidy (such as the FIT), versus most other community energy groups. This helps to insulate the organisation from market and policy shocks. On the other hand, the complexity of BHESCO's business model and the novelty of its proposition mean it has taken time to mature as a venture. For a time, it relied strongly on grants and the commitment of its key founder and CEO.
- The adoption of the bona fide co-operative legal structure stems from both financial and ethical considerations.** A co-operative model was adopted largely as a means of raising relatively low cost community shares. This was largely a reaction to a lack of affordable finance being offered to community-led energy efficiency oriented businesses like BHESCO, even from ethical investors.

Beyond finance, the co-op model was also selected on ethical grounds. Specifically, the cooperative model's 'one shareholder-one vote' model provides a broader distribution of power versus the 'one share-one vote' model employed by companies limited by shares. Furthermore, the absence of an asset lock provides its citizen investors with the option that assets can be liquidated to pay back their investment.

1 Mission statement and value proposition

BHESCO's primary focus is "to develop renewable energy and energy efficiency projects. That's our ultimate goal." Linked to this is the drive to make the energy industry fairer, ensuring "people have equal access to energy" (I25). BHESCO, as a community energy and co-operative company, is also envisaged as part of a broader social justice movement. Its founder suggests that BHESCO helps to demonstrate that there is an alternative to the traditional capitalist approach to satisfying consumers' energy needs (I25).

BHESCO is an Energy Services Company (ESCO), which the EU defines as a company "that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing" (EU, 2006: 6), where its payment for these services is performance related. Energy services can be defined as "those functions performed using energy which are means to obtain or facilitate desired end services or states" (Fell, 2017:

129). For example, the energy service might be heating, through which the desired end state of warmth is provided for. The services payment model means that payments are related to the maintenance of a desired level of warmth in a dwelling, such as a specific temperature in a building, as opposed to the amount of energy used by the heating system, as is currently the case for most domestic heating.

Key amongst its activities is the retrofitting of properties to ensure that these consume less energy and proprietors pay lower fuel bills. BHESCO manages the retrofits by using "various finance mechanisms to enter into long-term agreements with ... customers. So the customers don't pay anything upfront for the systems" (I25). Instead, BHESCO owns and operates the systems and customers pay it back through the savings on their energy bills (I25).

2 Origins and development

The story of BHESCO has its origins in Amsterdam. In 1998, a qualified accountant with expertise in financial modelling won the sustainability prize from the Dutch energy supplier Nuon for developing a financial mechanism for renewable energy (BHESCO, 2016; I25). This became the Pay As You Save model² (see Section 4.5.1), which would become the core idea behind BHESCO. The model's designer Kayla Ente would become the co-op's founder and CEO.

Ente explains that, from the time she won the prize, she had wanted to set up an ESCo, but the journey from the inception of the idea to incorporating the enterprise was a long and complicated one. Ente moved to London and, in need of work, set up several private companies, limited by shares. These included a financial consultancy called Ente Consulting Limited, in 2006, and a spin-off called Trisolar, in 2009, owned by Ente Consulting Limited. Trisolar was founded by Ente and two colleagues with backgrounds in the solar PV industry. Her partners pulled out due to difficulties making the business model work in London. Due to a lack of cohesion across London boroughs, Ente explains that she moved to Brighton where she already had a good network and could make the venture work.

To better reflect the new home of the organisation and its line of business, in 2012 Trisolar was renamed Brighton and Hove Energy Services Ltd. It was still a private company limited by shares, because "when you spend so much time on something, you want to make some money from it" (I25). However, shortly after founding the company, Ente began to have a change of heart:

"I took the decision ... that I didn't care if I got rich ... I wanted to remove the profit element so that we could engender more trust in our organisation ... We're not doing it to make money. We are doing it to make a change" (I25).

In 2013, Brighton and Hove Energy Services Cooperative (BHESCO) was registered on the FCA Mutuals Register, founded by Ente and several colleagues, and, in February 2015, Brighton and Hove Energy Services Ltd was merged into BHESCO.

In the early years of the endeavour, without any contracts to provide sustainable income, the business was not in a position to hire staff, meaning that Ente worked alone full-time for two years unpaid.³ She reflects that, with no staff or office, the business lacked "gravitas" (I25). During this time she had been building contacts with other people in the industry and had also been refining the business model (BHESCO, 2018c). The novelty of the BHESCO proposition proved to be a challenge. Ente explains that "it took me a couple of years to be able to explain what we were doing in one or two sentences that people would be able to understand" (I25).

¹ For a full list of interviewees, refer to Appendix A.

² Other comparable schemes are common across the energy services sector (see Stoker, 2017).

³ Ente lived frugally from other income, including from consultancy work undertaken independently of BHESCO.

The initial work of BHESCO was largely related to fuel poverty. In the early stages, the organisation was “almost entirely grant-funded” and its mission was to “help people who can’t afford to heat their homes in the winter” (I25). Ente would visit homes, compile energy reports, give advice on the best energy suppliers and tariffs, help beneficiaries attain the Warm Home Discount, and install measures “to help them get their bills down and help them feel more comfortable about turning on the heat” (I25). This work continues today.

As the business has grown, it has diversified, and this line of work has become a smaller part of its overall operations. Fuel poverty work, funded by grants, now constitutes just one fifth of the co-op’s total income (BHESCO, 2018c).

The breakthrough year for BHESCO was 2015 (BHESCO, 2018c) for two reasons (see Table 1). Firstly, BHESCO successfully secured grant funding for a number of projects, including funding from the British Gas Energy Trust “to provide energy efficiency services to 200 homes in the area through the ‘Warmth For Wellbeing’ programme” (Curtis, 2016). These grants enabled BHESCO to start hiring, employing five members of staff (ibid).

Secondly, in partnership with Ethex - an online ethical investment platform - the co-op raised enough money through a share offer to develop its first commercial projects. The jump in business activity that these developments facilitated is charted in BHESCO’s annual accounts. Turnover in the year ending March 2014 was £6,864, but by 2017 this had rocketed to £308,956 (BHESCO, 2015a, 2018a). Since 2015, Ethex has promoted three further share offers for BHESCO (I28; BHESCO, 2019a).

3 Legal structure

BHESCO is a consumer co-operative⁴ and one that is run for the benefit of its customers and its shareholder members. BHESCO has three categories of member:

- **Customer member** – a “regular user of the services of the Co-operative”;
- **Employee member** – part and full-time employees; and
- **Shareholder member** – any person or organisation⁵ that has financially invested in the co-operative’s business (BHESCO, 2015b: 4; I25).

All members must hold at least one share, and each has one vote in the major company meetings, such as annual general meetings. Customers receive a share when they enter into a

Table 1 – Timeline of milestones

1998	Dutch financial consultant Kayla Ente wins Nuon sustainability prize for the implementation of the Pay As You Save model to lease renewable energy equipment.
2006	Ente moves to London and founds Ente Consulting Limited.
2009	Trisolar is founded, with Ente Consulting owning all of the shares.
2012	Trisolar is renamed Brighton and Hove Energy Services Ltd.
2013	Brighton and Hove Energy Services Co-operative (BHESCO) is registered.
2014	BHESCO works with Hove Station Neighbourhoods forum and wins a Community Energy Action award for work with Hanover Action on Sustainable Living
2015	February: Brighton and Hove Energy Services Ltd merges with BHESCO. December: First share offer ends.
2016/7	<ul style="list-style-type: none"> • £288,000 is raised in investment capital; • BHESCO is named as the archetype for local consumer services in OFGEM’s future insights report; • Work on fuel poverty (in partnership with Money Advice, Citizens Advice, Age UK and the Possibility People); • By the end of the financial year, BHESCO had visited over 250 homes since inception, with its advice saving almost £100,000 for the community.

financial agreement with BHESCO over a contracted period of time. Employee members are offered the opportunity to purchase shares. Each share has a value of £10. For shareholder members - i.e. members who have purchased shares as an investment through a BHESCO share offer - there is a minimum shareholding of 25 shares. This effectively means a minimum investment of £250 (BHESCO, 2019a). All members are expected to “support the objects of the Co-operative” (ibid).

The consumer co-operative structure was chosen chiefly because it does not require the provision of an asset lock.⁶ BHESCO’s CEO explains the aversion to an asset lock in terms of how it provides insufficient security to investors:

“If you do an asset lock, and God forbid, something happens to your organisation ... you can’t sell ... [your] assets and pay back your investors. Your organisation has to be spun off to another co-operative who may not have the experience or capability of managing those assets” (I25).

In effect Ente believed an asset lock presented an unnecessary risk to investors. Ensuring investors didn’t ‘lose out’ was critical to shaping their decision around which legal structure to adopt.

The unwillingness to create an asset lock ruled out all of the other main legal structures in community energy’ apart from a companies limited by guarantee (CLG). CLGs were not

4 Business model

4.1 Activities

Key activities revolve around the core business of the co-op: consultancy and project management. As of October 2019, BHESCO has provided advice to 1,934 people (I25). This is advice given free, as part of BHESCO’s work on fuel poverty, supported by grants from the Big Energy Saving Network (Curtis, 2019b).

BHESCO also undertakes property surveys, for which it charges a fee¹⁰ (BHESCO, 2019a), undertaking 121 of these as of October 2019. Each of the surveys leads to the production of a report which details a list of suggested interventions to improve the energy efficiency of that property.

BHESCO manages the installation of energy efficiency measures too. This includes providing advice on the financial models that customers can use to finance the installation via BHESCO and the agreement of contracts with the customer. It also involves the subcontracting of work to installation specialists (see Section 4.4.1). Thus far, BHESCO has managed the installation of energy-saving measures in 462 properties, including 158 in the financial year ending March 2018 (BHESCO, 2018a, 2019a).

Once completed, BHESCO then monitors the performance of energy generation installations using “energy monitors with remote capability to ensure that our targeted level of [financial] savings and energy generation are achieved” (Ente, 2016: 5). Monitoring is a significant aspect of the BHESCO model.

Firstly, this is because BHESCO monitors performance to ascertain whether the extent of the cost savings is in accordance with the levels communicated to the customer. This is substantiated in an annual monitoring report sent to the customer. Secondly, monitoring is needed because, as the owner of the installed equipment, BHESCO has a duty to

considered a viable option because they cannot issue shares and equity was BHESCO’s preferred means of investment (see Section 4.5.3).

Ente does not believe that there are any advantages that BHESCO has forsaken by eschewing the BenCom model; the most common legal structure in the community energy sector (S1). The chief difference between a co-operative and a BenCom is that a BenCom’s duty is to the community,^{8, 9} which likely extends beyond its membership. In contrast a co-operative’s duty is to its membership. Importantly however, its legal status does not prohibit BHESCO from delivering community benefit;

“our whole ethos is benefit to the community; [you don’t] have to be a BenCom to deliver social impact” (I15).

maintain and optimise performance to safeguard the expected financial return. As the CEO explains:

“It’s not just about installing solar panels and walking away; we monitor the performance of those panels and we make sure that they’re delivering the electricity generation that we said that they would deliver. And if they don’t, then we take action to make sure that they do.” (I25).

BHESCO describes its offering as a “turn key service” which delivers benefits from “the initial energy survey, to post installation monitoring of the system” (BHESCO, 2019a: 5). It is a model which is, as BHESCO’s CEO admits, “labour-intensive” (I25). Monitoring work is always undertaken by volunteers; it provides work experience to recent graduates, who reportedly appreciate the opportunity to gain experience of working with real-world data (I25).

4.2 Customers

In a significant departure from more common community energy business models, which gain revenue from selling electricity to just one or two customers (i.e. the network operator or a supplier, through a Power Purchase Agreement), BHESCO’s customers are both residential and commercial property owners. The latter include “private and social housing landlords and tenants, warehouses, schools, local authorities, office buildings, etc.” (Ente, 2016: 7). It does, however, have two key

⁴ Its legal form is referred to as a *bona fide* co-operative to distinguish it from the Community Benefit Society (or BenCom), which is the other co-operative structure under UK law. *Bona fide* co-operatives can take a variety of distinct forms, such as consumer co-operatives or worker co-operatives, depending on their rules of membership.

⁵ Organisations must name a representative for voting purposes.

⁶ An asset lock is a means to prevent company assets being sold for the private benefit of members; typically, an asset-locked company can only sell assets to another company with an asset lock.

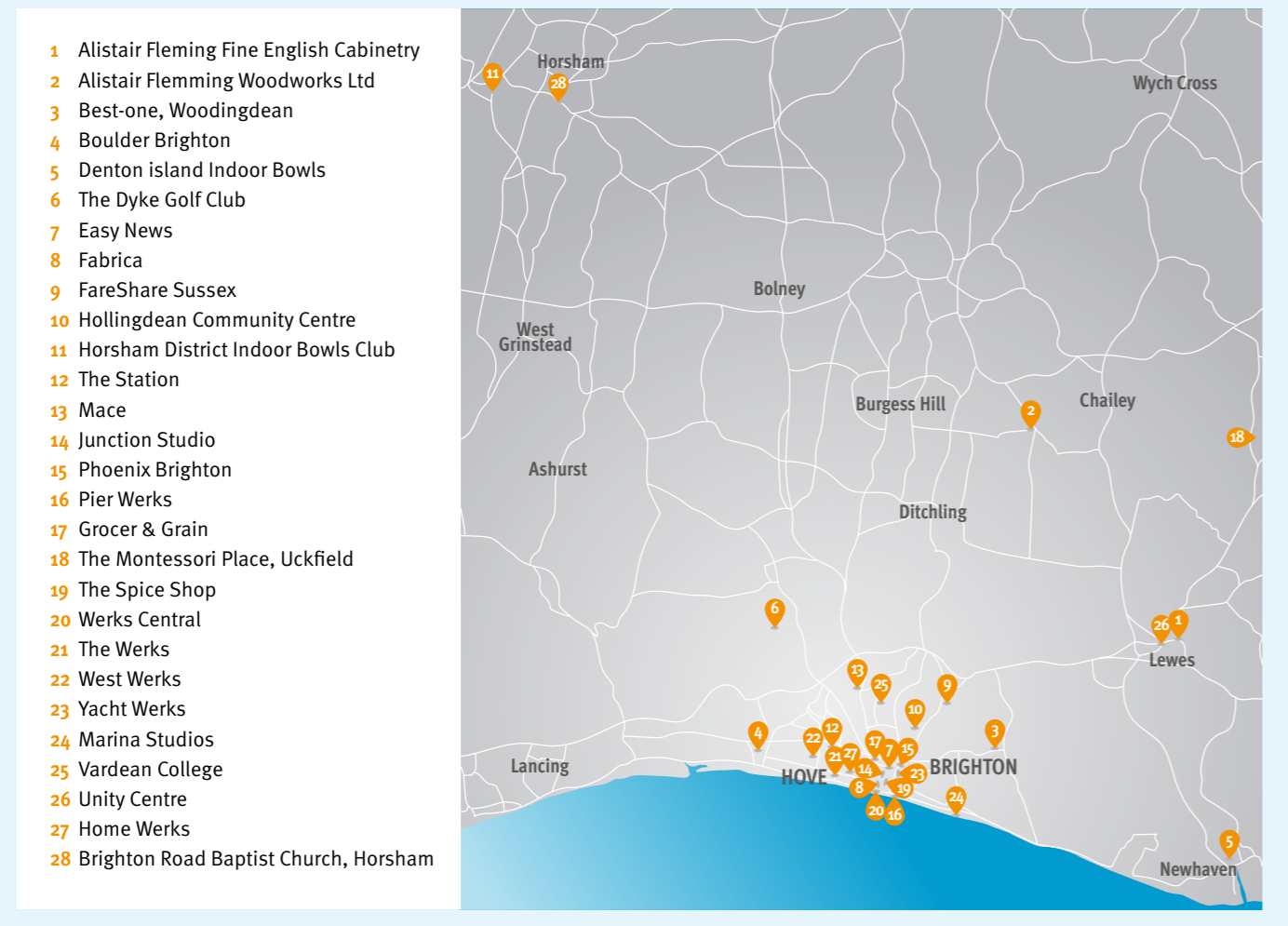
⁷ The other main structures in the community energy sector are Community Benefit Societies, Community Interest Companies and CLGs (S1). While other companies can opt for an asset lock in their rules, Community Benefit Societies and Community Interest Companies have statutory asset locks imposed upon them by law (BEIS, 2016; Community Shares Unit, 2019b).

⁸ Another significant difference is that a co-operative is expected to trade directly with its members. This makes the standard model of community energy electricity generation for export to the grid difficult for co-operatives, because the customer in that model is a supplier or network operator rather than the co-operative members. A co-operative, however, can have different categories of members, such as investor members, which need not be customers (Community Shares Unit, 2019a).

⁹ The community is defined in the BenCom’s constitution.

¹⁰ The fee depends on the size and function of the property. For example, for a one-bedroom house £125 is charged and for a six-bedroom house the cost is £226. Business properties are charged a minimum of £500 (BHESCO, 2019b).

Figure 2 – Locations of BHESCO community-owned projects (BHESCO, 2019e)



customer types: a) householders and b) proprietors of small businesses, schools and social enterprises.¹¹ It refers to the installations it performs for the latter type as “community-owned energy projects”, or often just “projects” (BHESCO, 2019a: iii).

The majority of BHESCO's installations have been domestic, covering 420 households (BHESCO, 2018a, 2019a). However, these installations are typically characterised by minor interventions, involving what BHESCO describes as light technologies (see Section 4.3.1 for examples of light technologies).

BHESCO has also undertaken 42 non-domestic installations for its community customers (See Figure 2 and Appendix B for examples of BHESCO's non-domestic projects)¹². These projects are typically more substantial, involving what BHESCO describes as material interventions (I25). These include energy efficient boilers, solar panels or heat pumps (see Section 4.3.1). BHESCO emphasises the significance of commercial customers; the co-

op targets commercial customers because projects “cost less to develop and the installations are larger”, i.e. offering important economies of scale (Ente, 2016: 5).¹³

BHESCO has used networking to reach commercial customers, generating custom through referrals. BHESCO also uses social media to raise awareness, promoting itself on Facebook, Twitter and LinkedIn, as well as creating online content, such as regular blogs on its activities and on energy-related issues. It issues a newsletter with over 1,000 subscribers. It has also hosted a radio show, provided on the online radio station Radio Free Brighton (ibid). All this activity has generated media attention in the local press, seeing BHESCO appear five times in the local newspaper since its inception (Brighton Argus, 2019).

Together with its wide-ranging activities, this marketing strategy has helped BHESCO's CEO to become known as a respected source of knowledge on issues such as CE, electricity market reform and fuel poverty (Ente, 2016; I26).

11 For example, in 2019 BHESCO raised shares to install solar PV on the roofs of four local schools, using a model similar to the scheme of Edinburgh Community Solar Cooperative (ECSC) (Cairns et al., 2020a). Like ECSC's model, this model is noted as being dependent on the FIT, so such plans will not form the basis of BHESCO's work going forward (I25).

12 Figure 2 shows the 28 locations of BHESCO projects. The disparity between the number of locations and the number of projects is because BHESCO have undertaken projects for the same customers in the same locations. Appendix B lists 30 projects for which details are available on the BHESCO website.

13 BHESCO also initially targeted commercial properties for the purpose of “lowering our market entry costs” (Ente, 2016: 5). If BHESCO is an issuer of lease and hire purchase agreements, the Consumer Credit Act applies to it for contracts with individual, rather than business, customers, which comes with a greater regulatory burden (Field Fisher Waterhouse, 2012)

4.3 Resources

4.3.1 Technological resources

BHESCO deploys a far greater range of technologies than most community energy organisations because the co-op deploys energy generation, storage, heating and demand management technologies (BHESCO, 2019e; Curtis, 2018a, 2019a). Its full range of technologies includes:

- **Electricity generation** – solar PV;
- **Storage** – battery storage, heat storage (e.g. Sunamp);
- **Heat** – air-source heat pumps, efficiency boilers; and
- **Demand management** – energy efficiency appliances, building fabric improvements, LED lighting, double-glazing, air conditioning, heating controls, efficient electric heating systems.

The focus on storage, heating and efficiency sets BHESCO apart from most other community energy organisations, which typically focus only on generation. An example of storage includes a battery combined with 7.7 kW of solar PV in an off-grid maintenance equipment shed on a golf course (Figure 3).

To generate heat, it has installed air-source heat pumps (Figure 4). BHESCO has also been a first-mover with regard to installing SunAmp's phase-change thermal storage technology (Sunamp, 2019), which utilises similar chemical storage technology to that employed in hand-warmers. It stores heat from surplus electricity generated from solar PV and transfers this to water when it is demanded by the consumer (Fully Charged, 2019).



Figure 3 – Battery storage at a Golf Club (Curtis, 2018a, 2018b)

Turning to heating projects, BHESCO has installed an air-source heat pump in a Montessori School (Figure 4) and an air-conditioning system in a workshop. It has ambitious plans for expanding the heating side of its business: “heat is a strategic direction that we're moving in more and more” (I25). Two examples of projects under development illustrate the scale of this ambition and how it might be realised. These relate, firstly, to the creation of an anaerobic digestion plant and, secondly, to a district heating scheme (see Section 5).

Measures to improve energy efficiency include double and secondary glazing; light technologies such as chimney balloons, radiator reflectors, LED light bulbs (Figure 5); energy efficient refrigerators, insulation foam, loft insulation, infrared heating and under-floor heating.



Figure 4 - An air-source heat pump at The Montessori School (BHESCO, 2019a)



Figure 5 - LED lights installed in a bowling club (BHESCO, 2019a)

Because of its deployment of such a wide range of technologies, singular technologies are of less importance to the business than is evident with other community energy initiatives. BHESCO's 2018 share offer document explains:

“As project managers, we are not confined to particular technologies. Our projects seek out the most appropriate environmentally sound solutions for our customers' business. As a result, you will see a variety of renewable technologies applied in all of our projects” (BHESCO, 2018c: 5).

To capture expertise on specific technologies, BHESCO works with installers to design and implement the most appropriate range of interventions for a property. It scrutinises the recommendations of installers, to ensure the best outcomes

for their customers. In so doing it has developed considerable knowledge of how its customers can best benefit from different suites of interventions. BHESCO also employs a heating engineer for more technical aspects of heating projects.

Its embrace of multiple technologies – and the resultant distancing from any particular technology – is understandable, and potentially advantageous for BHESCO. Firstly, as we shall see in Section 4.5.1, BHESCO generates revenue from the energy savings made by its customers. This contrasts with the traditional community energy model, where organisations make money from a specific technology, such as solar PV. It is, therefore, less dependent on a specific technology for revenue, insulating it from risk around fluctuating technology or feedstock costs, as well as less dependent on the availability of technology-specific subsidies.

Secondly, because BHESCO is not beholden to any particular technology, it is in a position to provide advice about how different combinations of interventions can deliver the most value to the consumer. One of BHESCO's non-executive directors puts this very well:

“No one cares about gas or electricity [really] ... A warm bath ... a warm house ... Sky TV, cold beer from the fridge, Xbox; these things are all valuable ... That's where I think BHESCO is different, because it's trying to look at the fundamental needs of home dwellers, or communities” (I26).

Arguably, BHESCO offers a more resilient business model than many other community energy groups. Being less dependent on singular technologies, it is to some extent insulated from supply issues and technology-specific subsidies. At the same time, providing a service founded on comfort, warmth and both energy and cost efficiencies allows it to provide a more compelling value proposition than it might have been able to as a purveyor of a particular mix of energy products or units of electricity.

4.3.2 Human resources

Including the CEO, in total BHESCO has five members of staff who draw a wage: three full-time and two part-time. This is unusual in the community energy sector, where much of the work is done by volunteers.¹⁴ This can be accounted for by the labour-intensive model that BHESCO has adopted (see Section 4.1).

The driving force of the co-operative is its founder and CEO Kayla Ente (BHESCO, 2019f). She is a qualified accountant and has an MBA in Environmental Management and work experience in accountancy firms and energy companies. This background in finance and energy has meant she was extremely well placed to develop the complex Pay As You Save model on which much of the business is based. Ente was also prepared to work at BHESCO for two years without a wage in order to build the company, and also lent the company money (see Section 2).

Apart from the CEO, other employees of BHESCO include a qualified domestic energy assessor and a project developer with 25 years' experience in this field. BHESCO also offers opportunities to volunteers, including work producing reports, monitoring and digital media content creation.

Members of BHESCO's board of directors have considerable experience in financial services, waste management and project development. For example one non-executive director is the former CEO of Mongoose Energy, a well-known company in the community energy sector, which provided project development and finance services to the sector. Another has been the CEO of the Carbon Trust and the Energy Retail Association and the non-executive director of the Energy Savings Trust.

The key strengths of the employees and board members, then, are project management and financial knowledge, particularly in the energy sector. This suits the co-op's business model, which focuses on project delivery and the financial arrangements around this. BHESCO's team are “not experts in any technology” but “generalists” who “know how the technologies work” in broad terms (I25).

4.4 Partners

BHESCO has negotiated the challenge of operating a complex business model which relies on multiple technologies by specialising in project management rather than technical expertise. To access this expertise, BHESCO has formed several key partnerships which have been important to the development of the co-op and will be crucial for its future plans. These include partnerships with installations specialists, energy suppliers, other community energy groups, private businesses and the local authority.

4.4.1 Installation specialists

BHESCO relies on a number of technical specialists to undertake installations and maintain the equipment in properties. BHESCO tenders the work out to a minimum of three contractors to ensure a competitive quote from the network of technology suppliers it has developed (BHESCO, 2019e).

4.4.2 Energy suppliers

BHESCO has had formal partnerships with electricity suppliers since 2013, the year of its incorporation. Its first partnership was with Ecotricity, through which BHESCO earned a commission of £60 when households or businesses switched to the supplier. BHESCO used this income to fund its fuel poverty work (Ente, 2016).

BHESCO also developed a referral arrangement with the not-for-profit supplier Our Power. The partnership involved the use of the +IMPACT tariff, which Our Power had designed to offer lower rates to the fuel poor. For each new customer which signed up for the tariff through BHESCO, Our Power donated £36 to BHESCO's fuel poverty campaigns (Curtis, 2018c). BHESCO also hoped to build on this relationship to develop a “sleeved white label agreement” (see Section 6). However, the relationship came to an end when Our Power folded in January 2019 (BBC, 2019).

In July 2019, BHESCO announced that it was partnering with the supplier Co-op Energy (Curtis, 2019c).¹⁵ The partnership involves Co-op Energy's Community Power tariff, for which Co-op Energy sources electricity from community energy projects in the UK (Co-op Energy, 2019); for each new customer which BHESCO signs up, a donation is made by the supplier to BHESCO's fuel poverty work.

4.4.3 Other community energy organisations and intermediaries

BHESCO has built relationships with a variety of energy intermediaries. For example, BHESCO is a member of trade associations such as Community Energy England, a national umbrella group for the sector, and the Association for Decentralised Energy, the leading trade association for decentralised energy in the UK.

BHESCO has built a close relationship with Community Energy South (CES), the umbrella organisation for community energy groups in the South-East of England, founded in 2013 (Community Energy South, 2019). BHESCO is a founder member of CES, and BHESCO's CEO was one of CES's founding directors. Tangible benefits for BHESCO from CES membership has been the building of a relationship with energy suppliers. The role of CES has been highlighted in the development of BHESCO's partnerships with both OVO and Our Power (BHESCO, 2018b; Ente, 2016).

To build the energy efficiency business, BHESCO also developed a partnership with the co-operative intermediary RetrofitWorks. RetrofitWorks has two classes of membership: *practitioners*, i.e. energy saving installers; and *advocates*, “organisations representing a constituency of potential customers, acting as trusted advisers on their behalf” (RetrofitWorks, 2019). For practitioners, RetrofitWorks is an online Job Portal that allows practitioners to identify and bid for work in the local area. It also offers practitioners training and accreditation. Advocates attain access to a network of trusted tradespeople and develop their capabilities around retrofitting. BHESCO's CEO is a director of RetrofitWorks and is an advocate member.

BHESCO's CEO has also highlighted positive relationships the co-op has developed with a number of other community energy organisations, with which they share ideas and sectoral knowledge. These include South East London Community Energy and Brixton Energy (I25).

4.4.4 Local authority

BHESCO has worked with Brighton and Hove City Council on several initiatives since its inception. The co-op has applied for various funds offered by the council in order to deliver specific projects and has applied for work which the council has put out to tender (I27). In terms of grants, BHESCO has been involved in various anti-fuel poverty initiatives linked to the council, such as the EU-funded SHINE project¹⁶ (Brighton and Hove City Council, 2018). In 2015, BHESCO also worked with the council to install solar panels on 25 council-owned houses in the city (Curtis, 2016), partnering with Joju Solar, “designers and installers of low carbon electricity technologies” (Joju Solar, 2019).

A non-executive director of BHESCO explained that the kind of benefits the co-op has been able to derive through working with the council may be more difficult to attain in the future. He thinks that local authorities have become more restricted in their ability to support community energy because of austerity:

“[T]he central funding of government to local authorities has reduced massively, giving [the local authority] much less flexibility to make grants and support ... So, a project that could deliver an enormous amount of value over 15 years is unlikely to go, if it's 5% more expensive than the cheapest one that delivers value for three years” (I26).

4.5 Finance

4.5.1 Income

In the financial year ending March 2018, BHESCO's turnover was £250,647 (BHESCO, 2018a). The co-op's income consists of sales (£61,330), grants (£42,590) and sales made on finance lease or hire purchase (£146,727). BHESCO also derives income from interest from finance leases (£33,369).¹⁷

From 2014 to 2019, on average BHESCO sourced 31% of its annual income from grants (BHESCO, 2019a). However, its support from grants varies year to year. In 2014/15, over 50% of its income was from grants, while in 2017/18 this was 15%. While grant income is expected to be 39% in 2019/20, due to grants secured to determine the feasibility of a district heating project (see Section 5.3), the co-op expects that grants will become a less important source of income for the co-op over the coming years.

Notably, the FiT and the Renewable Heat Incentive (RHI), the payment support mechanisms (for electricity and heat generation respectively), constitute a relatively small proportion of the co-op's income. It attained only 5% of its income in 2018/19 from the FiT and RHI combined (BHESCO, 2019a).¹⁸

The core idea behind the creation of BHESCO is the Pay As You Save model. It provides the key revenue stream for the co-op. In this model, the beneficiary of the installation, i.e. the customer, pays no upfront costs. Instead, the works are effectively covered by the share finance, and other income (e.g. project management fees) raised or earned by BHESCO (Figure 5).

Once the works are complete, the customer enters into a contractual agreement to pay back the co-operative, typically over 10 to 12 years, from a portion of the cost savings achieved from his or her utility bills. This revenue stream allows BHESCO to pay back its shareholders and maintain the levels of staff required to sustain the business.

Even though customers make no upfront payment, they still achieve monthly cost savings from the moment the installations are completed. After the installation costs have been paid back, the customer owns the equipment outright and realises the full cost savings of the installations.¹⁹

¹⁶ SHINE: Sustainable Housing in Inclusive Neighbourhoods is an EU-wide project to reduce carbon emissions (SHINE, 2019).

¹⁷ The capital amount on leases is designated differently according to accounting rules (I25).

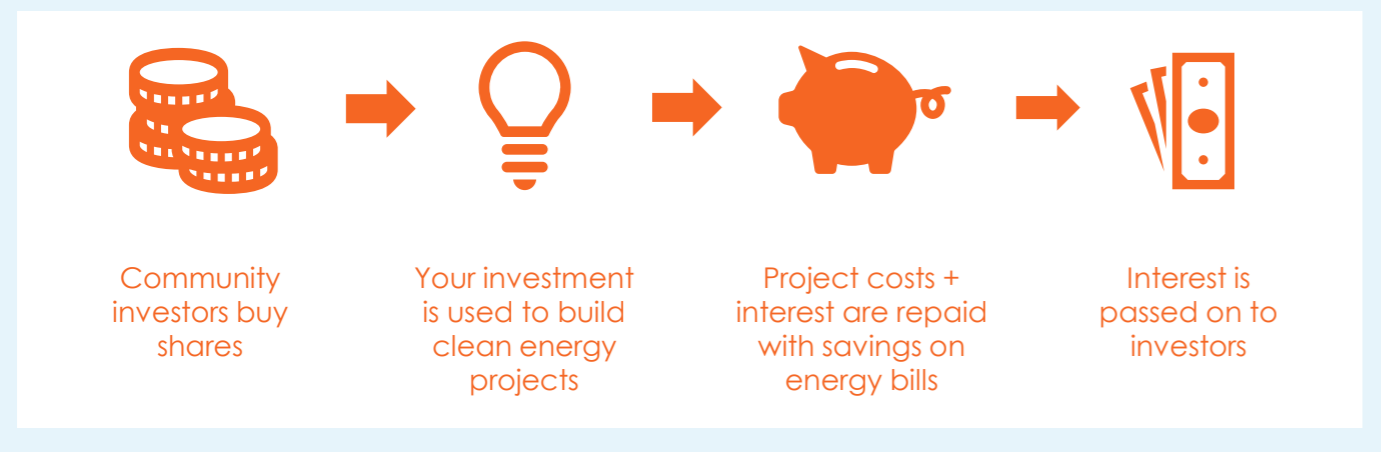
¹⁸ The 2019 share offer states the total income as £274,141 (before costs of sales) and the total derived from the FiT and RHI combined as £27,625.

¹⁹ “Should the customer wish to sell their property, the present value of the income streams from the lease (our investment) is paid off when the property is sold” (Ente, 2016: 5). i.e. the remaining sum expected by BHESCO according to their contract is paid off in one instalment when the house is sold. Note that the value of the property is increased by BHESCO interventions and/or any revenue streams associated with them.

¹⁴ Our Financing Community Energy survey found that, of 142 community energy organisations, 97 (68%) had no paid members of staff, and of the remainder most had one or two paid members of staff (S1).

¹⁵ Co-op Energy has recently (August 2019) been bought by Octopus Energy (Ambrose, 2019).

Figure 6 – How BHESCO works (BHESCO, 2019a)



To deliver Pay As You Save, a variety of financing options are deployed. Examples include:

- Lease agreements, where the customer does not take ownership of the energy assets until the cost of the installation is paid back; and
- Hire purchase agreements, where the customer owns the equipment for tax and accounting purposes from the outset²⁰ but pays the cost off in instalments.

These finance options fit the Pay As You Save model, providing that the instalments that the customers pays to the co-op monthly are less than the monthly cost savings resulting from the installations. All of BHESCO's projects with small local businesses have been undertaken in this way.

In total, around 50% of the interventions undertaken by the co-op are completed using Pay As You Save (I25). One potential issue with the model is that it has not been applicable to the fuel-poor groups that BHESCO has worked closely with. BHESCO's CEO explains the problem by commenting that the fuel-poor communities for which BHESCO delivers "can't even afford to pay their energy bills ... we just would not be able to take on that credit risk" (I25). Although it is BHESCO's intention to finance its activities to combat fuel poverty from profits in the future, currently delivering for the poorest continues to be dependent on grant funding.

The business model is also less easily applicable to those who do not own their own properties. This is illustrated in reference to the challenge of breaking into the market for SMEs. Ente notes that:

"[M]ost businesses don't own the buildings that they trade from ... So how are [we] going to crack that nut, when the landlord is not interested in investing in their property and the tenant really wants to save money on their operations?" (I25).

BHESCO has been working on an adapted model of Pay As You Save, which is applicable in the rented sector (see Section 5.1).

Despite the challenges, BHESCO's Pay As You Save model is a considerable leap forward in providing a sustainable revenue stream to support energy efficiency and demand management energy services.

4.5.2 Expenditure

Innovative business models typically experience negative cashflow during their development stage, breaking even only after a number of years and subsequently turning a profit (Aulet & Murray 2013).

In this context, BHESCO's CEO explains that because the co-op is still in its development stage, its income is currently insufficient to cover its costs. In 2018, BHESCO ran at a loss of £33,432 (BHESCO, 2018a) and has run at a loss every year since its foundation (BHESCO, 2019a). It has run at a loss every year since its foundation (BHESCO, 2019a). BHESCO's 2019 share offer document explains that this is because the co-op's business model is capital intensive. The co-op invests in "energy generation or savings assets", and these depreciate over a term determined by the accountant, which "in most cases ... is shorter than the useful life" (BHESCO, 2019a: 18). Depreciation nonetheless contributes to a net loss, which appears in the company accounts.

However, as the co-op continues to develop, it expects to achieve an operating profit from 2019/20 onwards (ibid). BHESCO's leadership has this expectation because, in the initial stages of development, the co-op concluded contracts which were not highly profitable, to validate its model, develop custom and build the venture (I25). This meant that BHESCO's return on investment was only around 2–3%. Having established the value of the venture amongst an increasing customer base, it has been able to develop more profitable contracts and raise its return on investment to around 8%, which it expects will cover its operating costs.

According to the company accounts, BHESCO has several considerable costs. Its cost of sales²¹ constitutes a considerable proportion of its spending,²² of which the purchase of energy technologies is the most significant element. For example, in the financial year ending 2018, BHESCO spent £120,659 on finished good purchases. The second-largest element in the cost of sales is subcontracted labour (£19,738), hired to undertake BHESCO's various installations.

As one might expect from an innovative company at the early stages of its development, BHESCO also has shown high operating costs relative to its income. The most significant of these is remuneration for its staff. For example, in the financial year ending 2018, BHESCO spent £111,774 on wages.²³ It also spent £9,518 on social security²⁴ payments.

In total, BHESCO spent £141,130 on labour costs in the year ending 2018, accounting for 56% of its income for that year. This is in stark contrast to most community energy organisations that own and operate an energy asset (e.g. an onshore wind turbine), which operate largely on volunteer time alone (see our other case studies in this series).²⁵

BHESCO also spent £21,041 in interest payments to its shareholders in the year ending March 2018. Greater detail on the funding and finance of BHESCO is provided in the following section.

4.5.3 Funding and finance

The set-up of BHESCO was supported by grants and soft loans. BHESCO continues to receive grants, which support its activities to combat fuel poverty (BHESCO, 2019a) (see Appendix C).

BHESCO received an interest-free loan from its founder and CEO of £62,294, which "financed the start-up costs for the first two years of operations" (BHESCO, 2019a: 23). This is to be paid back after five years of operation, in 2019. BHESCO also received an interest-free loan of £30,000 from Social Enterprise Assist²⁶ "in order to finance [BHESCO's] energy assessment and installation service" (ibid: 23). The loan is to be paid back in full after three years.

However, the major investment in BHESCO business development has come from community shares. The decision to finance the operation of the company through community share issuance was based in part on a modern critique of capitalism in Thomas Piketty's book *Capital in the 21st Century* (Piketty, 2013).

While Piketty himself has little to say about the co-operative movement, his work helps to substantiate the argument that co-operatives, such as BHESCO, are an "alternative to capitalism" (I25). Instead, co-ops represent a means through which ownership of the productive economy can be spread more widely and safeguarded through their democratic legal structures (Malleon, 2014). By basing BHESCO's investment model thus far on equity, as the co-op grows (and membership and investment increases), so collective ownership expands across the energy sector.

Moreover, Piketty's work influenced the rate of return which the co-op offers investors. Piketty demonstrates that higher rates of return on investment within an economy, relative to rates of productivity growth, are the key driver of economic and social inequality. Inequality, in turn, has deleterious consequences for the natural environment (e.g. Islam, 2015). Piketty states that 5% is the average return one can expect from ownership of capital.²⁷ BHESCO's CEO explains: "I specifically chose 5%, because of what Thomas Piketty said" (I25).

Beyond moral (or, perhaps, ideological) considerations, the BHESCO investment strategy has been based on the practical challenges of sourcing finance to drive the company forward. BHESCO has explored working with various established investment groups which market themselves as being ethical. However, the overtures have been rejected because, as Ente understands it, BHESCO was operating at too small a scale:

"[T]hey're not even interested in talking to us because we're small potatoes for what they want ... So the lack of support that we've gotten from any of these organisations, and I spoke to them all, Abundance, Triodos, ... all of them, and not interested. Even Pure Leapfrog in the beginning, they tried to be helpful but they never provided us with any finance" (I25).

21 The cost of sales is the accumulated total of all costs used to create a product or service (AccountingTools, 2019).

22 BHESCO's CEO explains that the high costs are attributable to accounting rules which state that hire purchase agreements must include the entire CAPEX within costs of sales. It is difficult, therefore, to compare costs of sales between BHESCO and other case studies.

23 £61,250 in remuneration for the two directors and £50,424 wages in wages for other staff.

24 In the UK, employers make a contribution to state benefits, for example via Employers National Insurance contributions.

25 This is complicated by the fact that sometimes community energy organisations outsource work. For example, in Green Energy Mull, the employees managing the project are paid. However, they are not employees of Green Energy Mull but of the parent organisation the Mull and Iona Community Trust and are paid for a variety of roles, including the energy work (Cairns et al., 2020b).

26 These loans are funded by the Charities Aid Foundation.

27 Piketty derives the 5% figure from empirical analysis of the return on capital over several centuries and in multiple major economies.

20 Although the customer owns the asset for tax and accounting purposes, BHESCO is the legal owner with rights to the FIT and/or RHI.

Loan finance in particular, BHESCO's CEO explains, is prohibitively expensive. She says "I would be shocked if we could get any money at 5%" (I25). The high cost of finance is an issue, even with ethical banks. BHESCO's CEO became familiar with the bank Triodos when she invested in one of their funds in the Netherlands. However, after coming to the UK, she came to the conclusion that "they're basically a commercial organisation that invests in [large-scale] renewable projects" (I25). She has not found other ethical banks to be in a position to offer better assistance; she says: "they're interested in low transaction costs, so big returns for big projects. They're not interested in our business model" (I25).

Apart from these potential structural issues, which restrict the availability of finance for community energy groups, the novelty of BHESCO's business model has in itself presented additional challenges for sourcing finance. While typically community energy groups focus their investment proposal on the development of specific projects, BHESCO's proposal was overwhelmingly focused on the delivery of its business model. An associate at Ethex who was involved in the first BHESCO share offer explains the novelty of the BHESCO proposition:

"They've been quite unlike some of the other offers that we've had on the platform because, right from the start, they were very much about investing in BHESCO as a business, rather than investing in specific projects. It was a bit of a challenge for us to get our heads around that and to understand exactly how they were going to make the business work" (I28).

Part of the difficulty lay with the fact that BHESCO has "more of a holistic mission than some of the individual community energy projects"; BHESCO is not "narrowly focused on ... creating one renewable energy asset" (I28). BHESCO's associate at Ethex explains that energy services are more difficult to deliver: "with energy efficiency, you know you will have clients, you will have leases to deal with, it might be a lot smaller scale, the payback might be longer, etc." (I28).

In addition, BHESCO's business plan involved high operating costs, which most community energy groups do not often have to factor in:

"[Q]uite often the community energy projects don't really have an OpEx other than what's specifically related to the asset ... whereas [BHESCO] was about building up the team, doing these energy surveys, doing the energy efficiency projects" (I28).

Salaries, therefore, had to be factored into the investment proposition. As was noted previously, this cost is considerable, in comparison to other community energy groups.

BHESCO discussed with Ethex how best to present the BHESCO proposition. These talks were constructive. For example, to maximise the appeal to investors, it was agreed that the initial share offer would emphasise the projects and assets which the shares would finance, as well as BHESCO's business model (I28). Ethex provided a platform for the share offer in June 2015. Since then, a further two share offers have been concluded through Ethex and another is ongoing (Table 2 details the main funding and finance received by BHESCO).

Since 2013, BHESCO has raised the bulk of its finance from community shares, raising approximately £518,000 in share capital compared to £289,000 in grants (BHESCO, 2018a, 2019a).²⁸ It should be noted that BHESCO has raised share finance in an area with above average levels of disposable income.²⁹ In 2016, Brighton and Hove was ranked 119th out of 391 local authorities in the UK in terms of Gross Disposable Household Income per head, sitting 4% above the average (ONS, 2018). It is likely that higher-than-average disposable income has helped BHESCO to raise share capital from the local community versus areas with less disposable income to invest.

In the future, however, a different approach to investment might be required. This is for two main reasons. Firstly, as is suggested by BHESCO's associate at Ethex, bonds might better suit BHESCO's business plan in the long term. BHESCO is not focused on one major project but on building a business; the investment strategy has never been about raising finance through one major share offer only. As BHESCO's CEO explains, "I always wanted to be constantly fund-raising ... so that we would always be able to do these projects" (I25).

However, the approach of continual share issuance has a key disadvantage. BHESCO's associate at Ethex suggests that BHESCO "might want to take on shorter-term debt rather than take on more and more shareholders where they're going to be paying over the long term" (I28). To a certain extent, restricting long-term liabilities has been factored into the BHESCO financial plan. As the 2018 BHESCO share offer document details, after three years the co-op aims to make 10% of its capital available to repurchase shares (BHESCO, 2018c). However, typically formulated as short-term debt, bonds offer a more straightforward and concrete means of restricting the company's liabilities over a specific period of time.

Secondly, bond issuance may be required to raise the far greater sums of capital needed for the major projects BHESCO currently has planned. BHESCO's CEO explains that the co-op is investigating bond issuance to complement shares for these projects: "in principle, it's very similar to what we're doing now, because we're paying 5% interest" (I25). Bonds constitute shorter-term finance than shares, can be eligible for tax relief (through Innovative Finance ISAs) and give a greater

commitment to the investor in terms of the returns that can be expected.³⁰ They therefore appeal to investors who may not wish to have their capital tied up for the long term and prefer greater clarity on returns. Because bonds appeal to different kinds of investor than shares, the hope is that, by using more investors, more investment will be made available to deliver on larger, more costly projects (I28).

In the short term, BHESCO's commitment to a 5% rate of return is also being challenged. Two issues undermine the sustainability of this level of return to investors (I25): (1) the withdrawal of the FIT and (2) Brexit.

Whilst existing BHESCO projects (e.g. solar) have their FIT payments secured for 20 years, projects launched after the FIT closed in March 2019 will not receive any FIT payments, meaning less income from electricity generation in the future. This has reduced the attractiveness of the offer that BHESCO is able to make to customers (I25). Turning to Brexit, because much of the energy-saving and generating equipment is imported, its price is being affected by the fall in the value of Sterling, precipitated by the UK's intention to withdraw from the European Union. Ente says:

"[W]e're kind of stuck between a rock and a hard place, where the cost of the equipment is not going down because the pound is so low, and there's no Feed in Tariff" (I25).

5 Future prospects and plans

Beyond expanding its activities and customer base, BHESCO has significant plans for future development. For example, it plans to develop its Pay As You Save model for the rented sector and an energy white label (explained below). Moreover, BHESCO has a number of large projects in development, including an anaerobic digester and a district heating system.

5.1 Adapting the Pay As You Save model for the rented sector

To attempt to adapt their offering to the rented sector, in the near future BHESCO will trial a model whereby the co-op pays the upfront costs for measures across rented properties. The co-op will then enter into a contract with a landlord, who will pay the cost of the installation off in instalments. For both tenants and landlords, the arrangement will be established in such a way as to be cost neutral. The tenant will have lower energy bills, but will pay the landlord a service charge to the value of the cost savings. However, tenants will benefit from less draughty, more comfortable homes. Meanwhile, landlords will benefit from the increased value of the property.

5.2 Anaerobic digestion

A major project that BHESCO is currently planning is the construction of an anaerobic digester. The plant will convert agricultural and food waste into biomethane for a projected

lifespan of 25 years. The facility will collect 35,000 tons of organic waste per annum, then convert it into gas to supply approximately 10,000 homes (BHESCO, 2019d). This can be converted into heat and electricity.

The cost of the construction of the site has been estimated at £12 million (I25). The CEO mentions bond issuance, in addition to share issuance, as one potential way to finance the scheme. Triodos or Unity Bank might also be approached for finance, as the project can be assumed to be of sufficient scale to interest such banks. However, to cover the full cost of the project, BHESCO envisages joining a consortium of various enterprises, which will jointly fund and, therefore, own the venture, with the community owning a majority stake.

For the successful delivery of the project, BHESCO aims to partner with Brighton Paper Round, a waste management company (Paper Round, 2018), and a supplier. For a "small, nominal amount", this waste collection service will be provided by Paper Round, which will collect the organic materials from businesses which have signed up to the scheme (BHESCO, 2019d). It is projected that businesses that provide waste will experience a drop of 40% in the cost of collection and disposal of the organic material (Curtis, 2015). In addition, BHESCO is currently considering rewarding participating businesses with equity in the anaerobic digester scheme.

²⁸ These sums do not precisely match the figures in the table for several reasons. Total share capital is taken from BHESCO's 2018 accounts (2018a), whereas the table details the sums raised during the periods of the share offers. Shares purchased outwith these periods do not appear in the table. Also, the total share capital sum does not include withdrawn shares. The table details only significant or regular grants. We have been unable to detail all of the grants which BHESCO has received.

²⁹ Although it might be noted that BHESCO appealed outside the local area by using the Ethex platform.

³⁰ Payments to bond investors are paid according to a strict schedule, which is legally enforceable.

Delivering the gas to customers will also involve partnership working. One plan is for BHESCO to partner with a property developer. The facility would be located close to a new development and the gas would be used to power a heating plant in the development. Another plan is to supply the gas through the gas network. This option would involve selling the gas through a power purchase agreement with a supplier such as Ecotricity, which sells 100% "green gas".³¹

5.3 District heating

Another major project with which BHESCO is currently involved is a district-heating scheme for the village of Firle, some 13 miles from Brighton (Figure 7). This would be a large-scale initiative. The village consists of "81 properties, a pub, a church, a brewery, a grocery store, a village hall and an estate office" (BHESCO, 2019c). The plan is to supply heat to the village by heating zone, with several heat networks powered by heat pumps driven by a solar PV plant. The system would replace existing costly and environmentally damaging kerosene oil heating systems, which currently heat most properties in the village. The plan will make "Firle ... the first village in the country to go fossil fuel free" (BHESCO, 2019c). The estimated cost of the project is about £3.5 million (I25).



Figure 7: Firle, East Sussex, England (Source: Charles Drake)

Thus far, BHESCO has secured a grant from the UK Government's Rural Community Energy Fund (RCEF) of £19,180 to undertake a feasibility study, which it delivered in partnership with private energy consultants Reenergise Ltd. BHESCO intends to offer villagers the opportunity to invest in the system, and bonds are being considered as a suitable finance mechanism (see section 4.5.3). This is likely to involve establishing a special purpose vehicle to both fund and manage the project on behalf of residents (I25).

It is stated on BHESCO's website that the "systems will be owned by the village and run in the interests of residents" (BHESCO, 2019c). Reenergise Ltd state that the "final scheme will be delivered through a community energy supply company administered by BHESCO" (Reenergise Ltd., 2018). It is likely, then, that the project will be run much like other BHESCO

projects, with heat supply agreements between the customers, in this case the village, and the co-operative. The village will receive the protection of the Heat Trust, a not-for-profit organisation which champions the customers of heat networks (Heat Trust, 2019).

It is a considerable challenge for community energy groups to set up and run a district heating system, particularly because it is difficult to get all local property owners to sign up to the new network. In the case of Firle, BHESCO's delivery of the scheme seems to have been aided by an unusual model of ownership in the village. Firle Management Limited, a private company limited by shares, is the local landowner. BHESCO's website explains that:

"The land is owned by the Firle Estate, providing the freedom to deliver the best outcomes for the village. The Estates Manager is a keen supporter of innovative solutions for eliminating fossil fuels from the community's energy supply" (BHESCO, 2019c).

It would appear that in the case of Firle, BHESCO enjoys the beneficial coincidence of a powerful local actor who is both capable of pushing and willing to push such a scheme forward.

5.4 Sleeved white label

BHESCO aims to develop a sleeved white label³² form of local energy tariff. The approach is seen as building on the kind of relationship with a supplier which BHESCO had previously with Our Power, but to "expand that to a different level" (I25). The BHESCO brand would appear on customers' utility bills, but the co-op would not take on the full responsibilities of the registered supplier. Instead, it would operate within certain parameters established by the supplier with which it had partnered.

Unlike a simple white labelling relationship, through 'sleeving' and the use of smart metering, power generated by BHESCO's energy assets would be deemed to have been transported through the public network to BHESCO's customers, using what has been described as virtual trading (I4). Such an arrangement offers the potential advantage to companies such as BHESCO that they are able to earn more from the electricity they generate, while customers pay less than the average market rate. Examples of trials of such arrangements include Energy Local, the Energy Co-op and SMART Fintry and Good Energy (Energy Local, 2019; Smith, 2018), but these remain in "trial mode" (I12).

6 Key lessons

1. The complexity of BHESCO's energy services business model presents both advantages and disadvantages

The case of BHESCO shows that there are opportunities for community energy groups to develop an ESCo model, but the trade-off is greater complexity. On the one hand, BHESCO's business model is arguably more resilient than the typical community energy model of operating a single form of renewable electricity generation and supplying a homogenous customer base. By serving a variety of customers, deploying a mix of technologies (e.g. lighting, solar, batteries) and harnessing different revenue streams (e.g. Pay As You Save, consultancy), BHESCO has spread its risk. It is therefore less dependent on any single government policy or customer to operate cost-effectively, versus many other community groups that employ less complex business models. In particular, BHESCO's model is a rarity in the community energy sector, as it does not appear to be dependent on the FIT, from which the co-op derives only a small proportion of its income.

On the other hand, BHESCO's operates an unusually complex business model for the community energy sector, which presents its management with some exceptional challenges. For example, it has taken longer for the business to mature and it is still not generating a surplus. While this is a common characteristic amongst innovative businesses, it is not common in the community energy sector, and requires supporters to accept a higher level of risk compared to investing in more traditional community energy companies. Furthermore, during its early development, the co-op depended heavily on grant funding and volunteer time to gather momentum.

2. Adapting to the challenges of financing BHESCO's business model

BHESCO's unique and complex business model has proven difficult for investors to grasp. In particular, potential investors have often been 'put off' by BHESCO's high operating costs relative to income; a function of BHESCO's service-based, labour-intensive business model. BHESCO also has to continually convince these investors to invest because it operates a model whereby it delivers a large number of small projects. This is very different to the traditional community model of raising larger sums of finance for a large 'one-off' energy generation asset. Despite these challenges, by working with Ethex, BHESCO has been able to raise sufficient finance to develop the business to a point where the management is assured it will soon be generating surplus.

Looking forward, it is likely that BHESCO will have to alter its approach to finance. If it continues to take on ever-increasing equity investment, it will markedly increase its long-term liabilities. Moreover, because of the large scale of some of its proposed projects, it may be unable to raise sufficient capital from equity investment alone. As a result, developing a blended finance approach seems the likely solution. This would be an approach in which equity investment would still be sought, but supplemented with bond issuance. Bonds could bring in new investors, such as institutional investors, who would be unlikely to invest in community shares, and offer BHESCO a means to limit its long-term liabilities, because they are a form of debt which is time limited.

3. Pay As You Save: an opportunity and a challenge for communities.

BHESCO's innovative Pay As You Save model is a significant step for community energy and has enabled BHESCO to generate revenue from energy efficiency and heating solutions, a rarity for the community energy sector. It unlocks a largely untapped revenue stream, based on splitting the value derived from energy savings between the co-op and its customers. Notably, this is a revenue stream that is less reliant on payment support schemes such as the FIT, which have thus far been the basis of most community energy ventures. However, BHESCO recognises that this model has two main limitations.

Firstly, it is not really suitable for the fuel poor, because they cannot reasonably be asked to share part of the value of their energy savings, given they already struggle to pay their fuel bills. Furthermore, the associated credit risks involved in setting up long-term contractual agreements with such groups are considered to be too high for BHESCO to take on. The inability to apply this model to fuel-poor homes means grant funding remains a necessity for BHESCO to combat fuel poverty.

Secondly, BHESCO has thus far been unable to deliver for tenants when landlords take no interest in investing in the energy efficiency of their properties, knowing that the discomfort and costs will not be borne by them but by their tenants. This implies a stronger role for legislation in compelling landlords to deliver better standards of energy efficiency for their tenants.

4. The adoption of the bona fide co-operative legal structure is based on both financial and ethical considerations.

Both financial and ethical considerations were key to BHESCO settling upon a bona fide cooperative model for their community enterprise.

Financially, a co-operative structure was recognised as being a source of relatively inexpensive finance, because of its ability to issue community shares. This is set against the relative lack of affordable finance from institutional or ethical investors for a 'Pay as You Save' model such as BHESCO's.

Ethically, by sharing the surplus of the productive economy, the co-operative form was deemed to represent a more equitable means of raising finance versus other models that deal in ordinary shares. Furthermore, by avoiding the need for an asset lock, which is normally employed by BenComs, the coop model was considered to provide greater security for its network of ethical investors. This is because assets could be liquidated to repay their investment.

³¹ To be used in the gas grid in the UK biogas needs to be cleaned of impurities, dried and upgraded to a higher methane content (> 95%) so that it resembles the qualities of natural gas" (Biogas-info 2020).

³² A white label refers to when organisations without a supply licence "have a commercial arrangement with, and use the infrastructure and resources of, licensed suppliers to offer tariffs under the white label's branding. For example, a supermarket chain partnering with a supplier to offer tariffs under the supermarket branding. The white label is not a supplier and does not need to apply for a licence or become a party to or comply with the industry codes" (Ofgem, 2017 p.9).

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Appendix A – List of interviewees

Ref	Role	Organisation type	Date
S1 (Survey)	N/A	N/A	TBC
I4	Project officer	Community energy intermediary	
I8	Director	Social investment	Aug 2018
I12	Lawyer	Law firm	Aug 2018
I21	Project Officer	Community energy organisation	Oct, 2018
I25	CEO	Community energy organisation	Oct 2018
I26	Non-executive director	Community energy organisation	Oct 2018
I28	Manager	Social investment	Nov 2018

Appendix B – Examples of BHESCO community-owned projects

	Property	Measures	Annual Cost Savings	Lifetime Cost Savings	Lifetime Carbon Savings
1	The Werks	LED lighting panels, boiler replacement and heating controls	£2,418	£154,028	29
2	Fareshare Sussex (2017)	95 LED lights	£1,968	£15,741	37
3	Denton Island Indoor Bowls Club (2016)	406 LED lights	£1,421	£36,266	87
4	Boulder Brighton	35 LED lights	£814	£12,210	58
5	Fabrica Art Gallery (2015)	LED lighting, secondary glazing	£750	£15,000	36
6	Yacht Werks (2017)	Boiler replacement and LEDs	£1,329	£11,750	40
7	Pier Werks	319 LED lights	£1,093	£8,747	34
8	Hove Park Stores	4 x energy efficient refrigerators	£2,827	£11,309	98
9	Easy News	2 x energy efficient refrigerators	£1,686	£7,019	64
10	Phoenix Art Gallery	99 LED lights, 5 x Fischer heaters	£200	£3,700	18
11	Mace Stores (2017)	2 x energy efficient refrigerators, LED lights	£1,955	£7,142	58
12	Best One Stores	3 x energy efficient refrigerators, LED lights	£1,726	£34,514	55
13	The Grocer & Grain	82 LED lights	£477	£3,813	8
14	The Spice Shop (2017)	10 LEDs, infrared heater and draught proofing	£132	£2,194	2
15	Junction Studios (2018)	4 kWp solar PV system, LEDs, Insulation, Secondary Glazing, Air Source Heat Pump	£1,888	£37,763	33
16	Marina Studios (2018)	57 LED lights	£1,548	£12,388	6
17	Home Werks (2016)	43 LEDs and Fischer heaters.	£2,989	£59,780	79
18	Alistair Fleming Store (2018)	SunAmp thermal heating system	£781	£15,620	6
19	Alistair Fleming Workshop (2017)	A 28 kW solar PV system, 79 LED lamps, and 7 air conditioning units.	£1,020	£322,931	269
20	Dyke Golf Club (2017)	7.68 kW solar PV system, a 10 kW battery storage system and LED lighting system	£463	£9,254	35
21	Hollingdean Community Centre (2017)	4 kW solar PV system, roof insulation, 4 radiator reflector panels, and 56 LED lamps.	£633	£12,655	22
22	Horsham Indoor Bowls Club	2 new boilers and 350 LEDs.	£11,840	£517,695	275
23	The Montessori Place School (2016)	Under-floor heating, 106 LED lamps, 27 kWp solar PV system, roof insulation and an 7 kW Air Source Heat Pump	£2,463	£49,260	114

24	Werks Central (2016)	A 12 kW solar PV system and 261 LEDs.	£1,540	£30,793	131
25	West Werks (2016)	12 kW solar PV system and 67 LEDs.	£1,979	£39,584	28
26	Best One Woodingdean (2019)	3 chillers and 24 LED panels	£1,402	n/a	n/a
27	Boulder Brighton (2016)	24 LED lamps.	£1,537	n/a	n/a
28	Station Stores (2016)	4 energy efficient refrigerators	£2,716	n/a	n/a
29	The Grocer and Grain (2016)	82 LEDs.	£580	n/a	n/a
30	Phoenix Art Gallery (2017)	99 LED lamps and 5 Fischer heaters.	£1,267	n/a	n/a

Source: (BHESCO, 2019e)

Appendix C – Main funding and financing secured by BHESCO

Date	Type	Source	Target amount (£)	Amount raised (£)	Interest rate	Duration	Annual repayments	Notes
2013	Loan	CEO	N/A	£62,294	0%	5 years	N/A	Start-up costs
2015	Loan	Social Enterprise Assist ¹	N/A	£30,000	0%	3 years	Flexible repayment date target for repayment 2020.	For energy assessment and installation service
2015	Grant	Big Energy Saving Network ²	N/A	£6,000	N/A	N/A	N/A	Fuel poverty work
2015	Community shares	Various members. Use of social investment platform Ethex	£1,000,000	£187,370	5%	N/A	£9,365	For a round of projects
2016	Grant	Big Energy Saving Network	N/A	£4,000	N/A	N/A	N/A	Fuel poverty work
2016	Community shares	Various members. Use of social investment platform Ethex	£150,000	£271,550	5%	N/A	£13,577	For a round of projects
2017	Grant	British Gas Energy Trust	N/A	£40,000	N/A	N/A	N/A	Fuel poverty work
2017	Grant	Big Energy Saving Network	N/A	£40,000	N/A	N/A	N/A	Fuel poverty work
2017	Grant	Big Energy Saving Network	N/A	£20,000	N/A	N/A	N/A	Fuel poverty work
2018	Grant	Rural Community Energy Fund (RCEF) for Firlie	N/A	£19,180	N/A	N/A	N/A	Feasibility work for district heating system
2018	Grant	Big Energy Saving Network	N/A	£20,000	N/A	N/A	N/A	Fuel poverty work
2018	Community shares	Various members. Use of social investment platform Ethex	£75,000	£49,760	5%	N/A	£2,488	For a round of projects
2019	Community shares	Various members. Use of social investment platform Ethex	£200,000	Share offer still open	5%	N/A	N/A	For a round of projects

¹ Financed by the Charities Aid Foundation (CAF) (Charities Aid Foundation, 2019).

² BHESCO has been awarded a grant from the Big Energy Saving Network each year since 2015. Sums vary year to year, depending on the number of people involved in the delivery of the project.

