

# Smart local energy finance: is it possible to crowdfund SLES?

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## Key points

- The complexity of Smart Local Energy Systems (SLES) is a major obstacle to all investment, particularly to citizen investment. Due to this complexity, finance professionals see individual elements of SLES as more investable than whole SLES projects.
- The scale of citizen finance is well suited to many of the elements of SLES, which often need an investment of less than £5m. As SLES finance scales up, there is a role for citizen finance alongside other investors.
- Citizen finance can play a role in investing in tried-and-tested elements of SLES, such as renewable electricity generation. It is not as suited to more novel, complex and riskier projects. Over time, as the financial profiles of SLES projects become better known and less risky, citizen finance may play a larger role.
- Citizen finance can engage local investors but is likely to also rely on investors from further afield.
- People with low incomes have invested in energy projects through citizen finance platforms, but most investment is from those in the middle to upper income bands. Consequently, citizen finance has the potential to spread the financial benefits of SLES more widely than commercial finance, but it is not a panacea.

## Introduction

Smart local energy systems (SLES) have been shown to be a cost-effective way to decarbonise the UK energy sector, compared to larger and more centralised solutions (Aunedi and Green 2020). However, even if SLES are cost-efficient, they require billions of pounds of upfront investment.

This investment is widely expected to come from large commercial energy finance institutions (Energy Systems Catapult 2021, UK100 2020). But over the last decade or so, citizen finance – online crowdfunding of various forms – has become a small but established part of UK renewable energy development (CEE 2017, Brauholtz-Speight et al 2020). Could citizen finance approaches be used to fund SLES?

Using innovative financing approaches to fund innovative energy projects has a prima facie logic. Furthermore, both SLES and citizen finance emphasise people becoming more consciously active players in the systems they are embedded in. However, the prospect of ‘crowdfunding SLES’ raises questions about the feasibility and desirability of asking the public to put their savings into the development of complicated new energy systems.

To understand the opportunities, and obstacles, to using citizen finance to fund SLES we interviewed several professionals in the energy investment sector, from both citizen and commercial finance companies. To understand the potential social and geographical impact of citizen investment in SLES, we complemented the interviews by analysing two sorts of data: survey data provided by Cooperatives UK on the characteristics of people who invest in community shares and UK Office for National Statistics (ONS) data on household income and wealth.

In this briefing, we answer four key questions about how SLES will be financed:

1. Does the complexity and novelty of SLES make them uninvestable?
2. Do SLES project scales fit with investor needs?
3. Can SLES be locally financed?
4. Can SLES finance make the energy transition more equitable?

## 1. Does the complexity and novelty of SLES make them uninvestable?

### SLES are complex

The complexity of SLES projects is a major challenge for all potential investors. SLES are complex because they integrate multiple energy vectors: heat, power and mobility. SLES are also complex because they have many customers. This includes both numbers and types of customers: households, companies with very different energy use patterns, etc. Complexity means potential investors must invest considerable time to understand what the running costs of a SLES are likely to be, and what their expectations for revenue should be.

Furthermore, many SLES projects attempt to develop a SLES for an entire town or region in order to maximise the benefits. Raising finance for a ‘whole place’ SLES is perhaps the most complex of all approaches to SLES.

### Complexity can make SLES expensive or difficult to finance

This complexity effectively makes SLES appear riskier than conventional energy projects, a perception that might deter investors from investing at all. Alternatively, it may lead investors to demand a high rate of return, which in turn will limit which SLES projects are deemed financially viable.

### Can citizen finance help overcome this challenge?

Several solutions to this challenge have been developed. The first is to finance individual elements of SLES separately, e.g., solar power plants, EV charging stations, heat networks, etc.

**“ Something like SLES would probably be developed over time, and complex with lots of elements and different SPVs.<sup>1</sup> We could probably fund those different sub-projects.”**  
(Interview 3, citizen finance platform)

A second, exemplified by the Bristol City Leap programme, is to stay with the vision of a ‘whole place’ SLES, but create a long-term partnership with a commercial energy developer. The long timeframe – decades in the Bristol case – de-risks the SLES to an extent, offering time to learn how to deal with challenges and overcome any initial problems. A third, proposed by researchers, is to package the different elements of SLES into a tradeable financial security such as a bond (Fuentes-Gonzalez et al. 2023). A fourth way is to use citizen finance, although views differ on whether it can fund complex and novel projects.

Our interviewees felt that citizen finance was unsuitable for the most complex or novel forms of energy projects. Where people are directly investing their own money, they tend to be relatively risk averse. As one interviewee said:

**“ It’s quite a lot to ask non-professional investors to swallow something that’s not tried and tested.”** (Interview 2, citizen finance platform)

1 Special Purpose Vehicle – a company created specifically to operate a particular project.

### Box 1: Mechanisms for citizen finance – shares or bonds?

While citizen finance can take many forms – from unlisted shareholdings to loans to donations - for energy projects, most citizen finance has taken two forms: community shares and bonds.

Community shares are issued by cooperatives. A shareholder becomes a member of the coop, and has voting rights, on a one-member-one-vote basis – no matter how many shares they have bought. Members cannot trade their shares with third parties. Community shares are, therefore, highly egalitarian and promote democratic governance of the projects they fund. However, with renewable energy projects, community shares are often designed to pay back over 20 years: they are not suitable for people needing their money back quickly.

Bonds are generally shorter-term, of 5 to 10 years duration, and don't confer voting rights. However, as they are a more widely known financial product, and offer a quicker return of capital and often a slightly higher interest rate than community shares, they may be more suitable for scaling up citizen investment.

Our research suggests that in the short term, there may be a limited role for citizen finance for SLES. However, in the medium term, as the financial profiles of SLES business models become better established, the potential for citizen investment may expand.

Citizen finance is well-placed to play a role in supporting projects that use well-established technologies and business models but offer relatively low financial returns. It is suited for this role for two reasons.

First, different actors make investment decisions based on different criteria (Bolton and Foxon 2015, Bergek et al 2013). Community shareholders often value the environmental or social impacts of their investment as much as, or more than, the financial return (Cooperatives UK 2020). Second, a relatively low rate of return for an institutional investor, choosing between many different commercial opportunities, may be an attractive rate of return for citizen investors, whose financial options are limited to the savings products on offer in the retail finance market. Therefore, SLES that can make a convincing case for their social and environmental benefits alongside a basic financial return may, in the future, attract significant citizen finance.

## 2. Does the scale of finance needed for SLES projects match investor requirements?

The overall investment required for deploying SLES across the UK has been estimated at running into billions of pounds (UK100 2020). However, the financial scale of individual projects and systems is likely to be much smaller. A study of SLES pilot projects to date found four distinct types of project, each with a median budget of between £1.8m and £4m (Wilson et al 2020). Looking at more commercially viable projects, the mean budget for projects supported by Local Energy Hubs ranges from £2m for “community renewables” projects, to £9.3m for “zero carbon developments” (UK100 2020: 20).

How does this scale fit with the investor requirements? Citizen and commercial finance currently operate at very different scales. Little detailed data on commercial energy investment is publicly available (BEIS 2022). While a commercial renewable energy developer we interviewed spoke of wanting to invest £100m at a time (interview 3), many investments in elements of SLES (e.g. rooftop solar PV or local scale battery storage) are likely to be much smaller. Meanwhile, a typical community energy share issue is for less than £1m (Braunholtz-Speight et al 2020), and interviewees spoke of raising “between £1 and 2 million” in citizen finance (interview 2).

The financial scale of SLES investment to date seems to fall somewhere between the average commercial investment size and the high end of citizen finance investments. Citizen finance therefore seems well placed to help fund elements of SLES at this scale, either alone, or alongside commercial or public finance for larger projects.

However, it may be that if SLES deployment is to scale up – in the size and number of projects – it will need to move further into commercial investment scales. Accessing larger scale pots of capital may require the aggregation of many smaller projects into larger packages, composed either of many different projects in one place over time (as Bristol City Leap is doing), or many similar projects in different places (Energy Systems Catapult 2021, UK100 2020).

Citizen finance can still play a role in larger scale SLES finance. Larger programmes or portfolios are likely to involve multiple investors: these investors could include citizens investing directly. For example, while Bristol City Leap is currently mainly financed by a single commercial developer, citizens are likely to provide some funding in the future, in particular as there is already a thriving energy cooperative sector in the city that is actively seeking to participate (Bristol Community Energy Propagator Group 2021). Notably, a battery storage project co-financed by Thrive Renewables and Bristol Energy Cooperative is already in development (Solar Power Portal 2023).

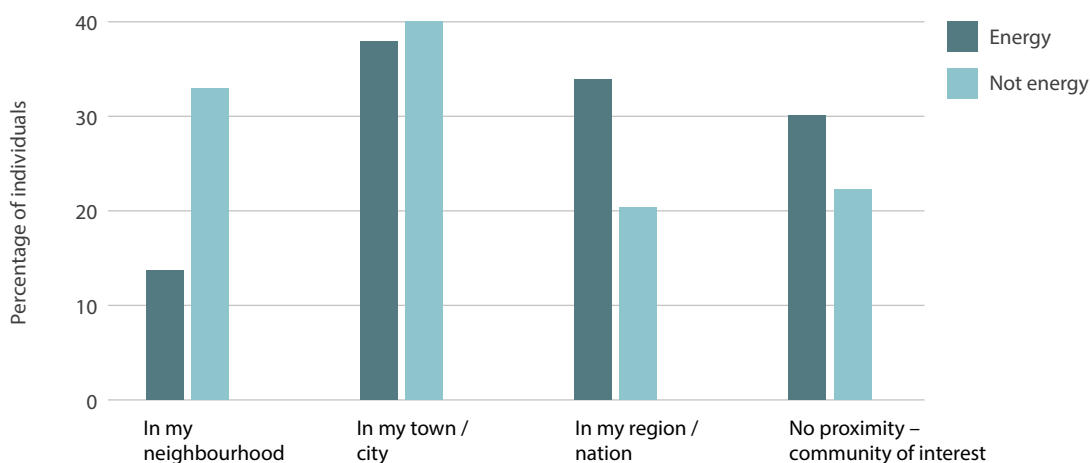
And for portfolios of projects spread across many locations, citizen finance may be able to provide local ‘top-up’ financing for external commercial investment, thus strengthening the local element in SLES.

### 3. Can SLES be locally financed?

There are various ways in which a smart energy system could be said to be ‘local’: operating in a defined geographical area; being managed by a team based in that same area; or through local financing or ownership of the system (Ford et al 2019). Commercial energy finance is generally not ‘place based’: it draws on funds at a national or international scale. Can using citizen finance make the financing of SLES more local?

The evidence from data on community shareholders suggests that the answer is ‘yes, to a point’ (Figure 1). Just under half of the people with community shares in energy projects had invested in a project in their local area, or their town or city. However, the rest were not so near to the project they had invested in. Furthermore, the geographical distribution of community energy shareholders was notably less localised than that of holders of community shares in non-energy projects.

**Figure 1:** Physical proximity of community shareholders to the project they have invested in: energy projects vs others. Data source: Community Shares Investor Survey 2020.



Citizen finance is therefore unlikely to provide entirely local funding for SLES. Instead, citizen finance draws on a wide pool of investors, which is positive both for raising larger sums of money, and for enabling projects to go ahead in lower income areas, where local residents have less money to invest.

#### 4. Can SLES finance make the energy transition more equitable?

Concerns about the fairness and equal spread of benefits from the energy transition are widespread. While much of the ‘just transition’ debate is focussed on access to energy services, questions about who owns energy assets and who benefits from energy financing are also relevant.

Most financial wealth is held by a minority of UK citizens (TUC et al 2022, ONS 2022a), with just 11% of the general population holding conventional UK shares, and an even smaller proportion holding bonds or unit trust investments (ONS 2022b). Can citizen finance play a role in sharing the financial returns from SLES more widely and equitably?

During the period when the Cooperatives UK survey of community shareholders was conducted, the UK median annual income was £30,500 (ONS 2020).

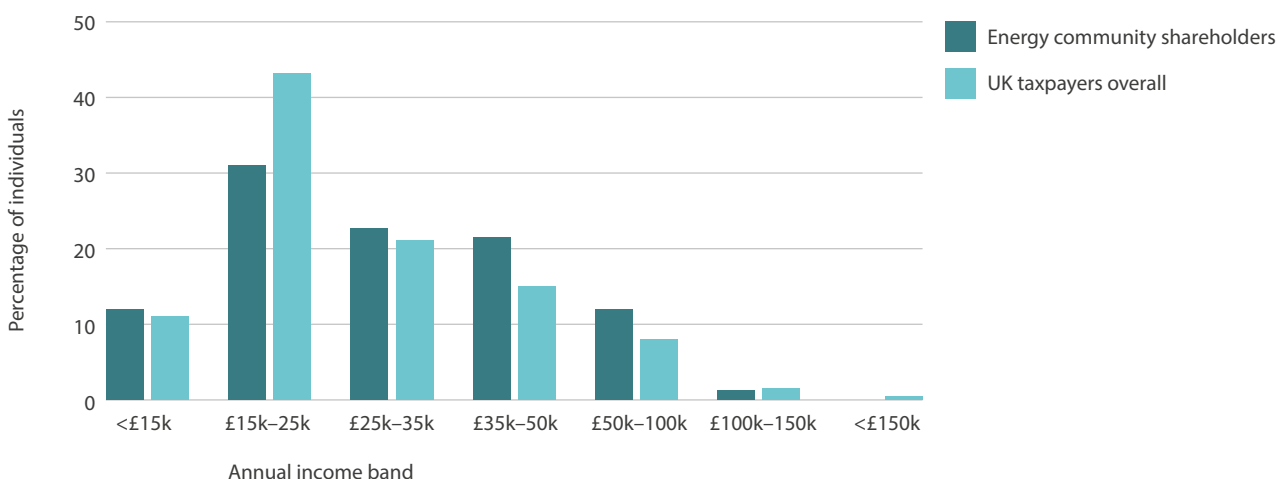
As can be seen in Figure 2 below, most community energy shareholders had an annual income around the median or below (a total of 43% reported annual incomes below £25,000 p.a., and 23% reported incomes in the £25,000 - £35,000 p.a. band). This income distribution suggests that citizen finance can make the financial returns from SLES investment fairly widely accessible.

However, it is also apparent from Figure 2 that higher income people are somewhat over-represented among community shareholders. Furthermore, the majority of community energy shareholders (including those on lower incomes) own their house outright. And, just over 50% of community energy shareholders said they also held conventional stocks, shares or other investments (not including ISAs or occupational pensions) – so there is considerable overlap between conventional and citizen investors. This data suggests that, while citizen finance can make energy finance more socially equitable, it should not be seen as a panacea in this regard.

#### Conclusion: making the most of citizen finance for SLES

Citizen finance clearly has a role in funding SLES. This role may grow over time as SLES projects become better understood, lowering the financial risk and making them safer investments.

**Figure 2:** Annual income of community energy shareholders compared to all UK taxpayers. Data source: Community Share Investor Survey 2020, HMRC 2022. Note that the taxpayers data only includes individuals with some liability for Income Tax, and therefore underrepresents individuals on the lowest incomes.





Many of the elements of a SLES are likely to be of a suitable scale and level of risk for citizen investment. Larger projects or more complex systems can still benefit from a citizen funding element, alongside other sources of finance.

Citizens may also be more attracted than commercial investors to 'whole place' SLES where the investment will benefit the place where they live. However, it should be noted that many citizen energy investors are interested in supporting clean energy projects wherever they are. This 'place-blind' approach can help raise larger sums of money, and facilitate the spread of SLES into areas with limited local investment potential; however, it potentially lessens the 'localness' of SLES as far as financing and financial benefit is concerned.

Citizen finance also has a role in advancing a just transition to a decarbonised energy system, by spreading investment opportunities and returns more widely than commercial finance generally does. However, while it can reduce inequality in who benefits from energy investment, citizen finance is not a panacea. It remains mostly the preserve of those with middle and upper levels of income or wealth.

To make the financial benefits (although also, it should not be forgotten, the risk of financial losses) of SLES investment more accessible to those on low incomes, a lower minimum investment amount can be offered to local residents in low-income neighbourhoods; or local residents can be allowed to pay for their shares in instalments. Additionally, the Cooperatives UK Community Shares Booster Fund has provided match funding to community share issues in deprived areas (Cooperatives UK 2023), helping projects go ahead while local residents retain democratic control through community share's 'one shareholder one vote' governance model (see Box).

Other approaches to financing SLES may also be needed, if the financial benefits of SLES investment are to be spread as widely as possible. For example, Octopus Energy has recently announced a £200m investment from Nest (Octopus Energy 2022), the government-owned occupational pension fund, whose members' median income was below £20,000 in 2021 (Nest 2021).

Direct public sector investment also allows financial returns to be used to the benefit of the population as a whole; and can be combined with citizen finance, as for example has been done with Community Municipal Investments in other energy projects (Davis 2021).

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## Acknowledgements

The authors wish to thank the Community Shares Unit of Cooperatives UK, for sharing anonymised data from their Community Shares Investor Survey; and the staff of citizen and commercial finance companies for generously sharing their time and insights with us.

This report should be referenced as:

Braunholtz-Speight, T., Sharmina, M. and Hardy, J. 2023. Smart local energy finance: is it possible to crowdfund SLES? EnergyREV, University of Strathclyde Publishing: Glasgow, UK. ISBN 978-1-914241-46-8

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## About EnergyREV

EnergyREV was established in 2018 (December) under the UK's Industrial Strategy Challenge Fund Prospering from the Energy Revolution programme. It brings together a team of over 50 people across 22 UK universities to help drive forward research and innovation in Smart Local Energy Systems.

EnergyREV is funded by UK Research and Innovation, grant number EP/S031898/1.

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