



Perspectives

Social housing and renewable energy: Community energy in a supporting role

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ABSTRACT

The development of renewable energy offers potential for achieving distributive justice. Individuals and communities have emerged as a major force in shaping just energy transitions. This brief perspective piece provides an introductory exploration of the potential application of community energy to social housing in order to mitigate barriers to energy provision for low-income groups.

1. Introduction

As renewable energy (RE) technologies become cheaper and more efficient and hence *theoretically* more attainable, there is a renegotiation occurring as households and communities become both producers and consumers [2–5]. Evolving from this phenomenon, a number of diverse and innovative community ownership arrangements have developed. “Community energy” or “community-owned renewable energy” (CRE) is one such novel development. Many of the groups which produce and consume CRE have goals embedded within local and immediate needs, often beyond environmental aspirations and towards broader social justice goals [1,6]. CRE can potentially play a transformative role in shaping more democratically controlled energy systems [7], varying from traditional arrangements (based primarily on capitalistic relationships), and creating an active “prosumer” energy public [8,9].

Due to cost issues, there are strong trade-offs between ensuring sustainable and affordable living situations, particularly for low-income groups. Social housing provision recognises housing as an integral right, aimed at those unable to enter the traditional housing market [10]. Low-income housing associations provide a unique opportunity for renewable energy installation, not only through potential scale of implementation sites, but also in reducing social and financial costs to tenants [10–14].

However, research has rarely combined the two concepts of CRE and social housing, despite a growing interest in the prospective merits of applying energy strategies to social housing arrangements (including both generation technologies and energy efficiency retrofitting), and the facilitatory role that community engagement techniques (both the social housing tenant community and broader community) can play in

shaping the success of such energy strategies [15–17]. The following sections introduce the existing policy context, and potential future avenues for CRE.

2. The present: policy context

In many countries of the world, including Czech Republic, The Netherlands, Austria, the UK, Ireland and Poland, social housing arrangements account for the majority of the rental sector [18]. There has been a recent interest in policy and research in the role of renewable energy and energy efficiency in achieving energy access and justice, and shaping energy consumer behaviour within social housing arrangements. In France, as part of broader EU policy on climate change action, *Le Grenelle de l'Environnement 2* was developed in 2012, which includes a specific requirement for energy efficiency retrofitting of social housing (800,000 by 2020)[15]. As part of the wide-scale “*Energiewende*” (energy transition) in Germany, social housing associations are beginning to implement renewable energy technologies, including solar and combined heat and power generation (CHP) and energy retrofitting [19,20]. Other schemes have been developed in order to bypass the “split-incentives” problem (where there is a discrepancy between the cost and benefit of installed solar to renter and landlord), as well as provide benefits of collective impact of neighbourhood solar installations, including the “zipcode rose project” in the Netherlands, where there are tax deduction incentives to energy consumers who also produce energy collectively across adjacent suburbs [21]. In Australia, the surge in domestic solar applications (particularly in the state of Queensland) has also created and enhanced precedent for the integration of renewable energy (including community energy) and social

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Box 1

Brixton Energy Co-op: A successful application of Renewable energy and Community Renewable Energy [27].

Brixton Energy is a not-for-profit community energy co-operative based in south London, UK. Beginning in 2012, the group has since successfully applied solar photovoltaics to three developments within a local social housing estate.

Aims

Whilst provision of energy to low-income households is a major goal of initiative, other goals include:

1. Increasing local energy resilience and security
2. Raising awareness about energy efficiency and tackling fuel poverty
3. Providing training and employment for local people

Organisational model

The project is a joint effort between the co-operative, the local council, local sustainability movements (transition town Brixton and the Brixton pound) and local social housing authorities. As a co-operative, profit distribution is determined by the members.

Profit distribution model

Profits from the installation are ensured by the UK Government's feed-in-tariff scheme. After distribution to share interest, Brixton Energy re-invest part of the income from the PV installs into a Community Energy Efficiency Fund. This fund has so far contributed to energy advice sessions, surveys, work experience, home energy audits and community events and workshopping to promote energy efficiency knowledge diffusion in the local area.

Benefits

- Addressing fuel poverty
- Raising awareness on energy efficiency
- ROI for investors
- Cost reduction in energy bills
- Local ethical investment opportunity

housing [22–24].

Though a number of policies have been developed, particularly in Europe, surrounding the carbon reduction potential of the housing sector more broadly (with some mention of social housing within these), there are fewer examples of specific policies that focus on social housing arrangements [25]. Global instances of policy or programs that combine community energy arrangements and social housing are also rare.

In 2014, the UK Department of Energy and Climate Change announced its 'Community Energy Strategy' to promote community energy generation projects, also making particular reference to the potential application to social housing [26] (Box 1).

While there are existing examples of community energy and social housing in some areas of the globe, this is not well reflected in research. There appears also to be growing interest in the beneficial role of municipalities and cooperatives, as opposed to national policy intrusions, in implementing and supporting neighbourhood-scaled renewable energy systems [21]. As both affordable and equitable energy and housing provision are issues related to distributional justice, this perspective piece aims to explore these two areas in the context of community energy. It comes out of a systematic literature review of the application of RE to social housing contexts [45], as well as research and engagement with a community energy scheme exploring application to social housing in Australia. The discussion is not intended to be prescriptive. The authors aim to spark a discussion around the still dormant potential for application of RE technologies through third-party community financing options as in community energy initiatives currently proliferating across the globe.

3. The future: potential avenues for CRE**3.1. Building social capital and awareness**

Community energy groups are assembled around the building of social capital and community involvement [28]. Hoppe [29] found that where active support from the community is lacking, RE developments in social housing contexts may not be able to get off the ground [16]. Community energy groups could liaise with local organisations and engage the community by framing CRE as a local investment and development opportunity. Where application of renewable energy and social housing has occurred in the past, information barriers have been common across many actors involved [30–33]. This has led to the disengagement or disapproval of the residents as well as the inefficient use of the technology itself [34].

As opposed to traditional applications of RE driven by external funding, community energy initiatives pose a unique opportunity to engage with broader sections of the community. This is because of the inclusive community investment/involvement models that are integral to community energy schemes [35]. However, like many community organisations, because community energy schemes are often volunteer-run (running on "sweat-equity") there is a risk of burnout. If long-term maintenance or ongoing support does not eventuate, this could lead to distrust from the wider community and a lack of support for follow-up projects [36].

3.2. Providing capital investment

Third-party financing options have been explored to remove financial capital barriers to RE and social housing [37]. However, in some instances, pre-existing tensions between external bodies and

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