

The role of community leadership in the development of grassroots innovations

Article (Published Version)

Martiskainen, Mari (2017) The role of community leadership in the development of grassroots innovations. *Environmental Innovation and Societal Transitions*, 22. pp. 78-89. ISSN 2210-4224

This version is available from Sussex Research Online: <http://sro.sussex.ac.uk/id/eprint/61249/>

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the URL above for details on accessing the published version.

Copyright and reuse:

Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.



Original Research Paper

The role of community leadership in the development of grassroots innovations



Mari Martiskainen

Centre on Innovation and Energy Demand, Sussex Energy Group, SPRU – Science Policy Research Unit, Room 331, Jubilee Building, University of Sussex, Brighton, BN1 9QE, UK

ARTICLE INFO

Article history:

Received 9 November 2015
 Received in revised form 8 April 2016
 Accepted 12 May 2016
 Available online 26 May 2016

Keywords:

Community leadership
 Grassroots innovations
 Nurturing
 Intermediaries
 Community energy

ABSTRACT

This article focuses on the role of community leadership in the development of grassroots innovations. It asks: When community leaders initiate energy projects, what types of skills and knowledge practices do they utilise to nurture grassroots innovations? Grassroots innovations are usually driven by social and sustainability motives, and developed by civil society groups. Based on a mixed methods approach including research interviews and site visits, the article draws on previous literature on community leadership, grassroots innovations and niche literature. Community leadership is analysed via two in-depth community energy cases in the UK. Research findings show that community leadership can aid the development of grassroots innovations, which operate in niches and require nurturing. Community leadership benefits from being embedded into social networks, shared vision and decision making, but pre-existing skills and tacit knowledge also play a role. Community leaders can also assist niche building by working closely with intermediary actors.

© 2016 The Author. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1. Introduction

New technological and social innovations have emerged to deal with society's problems, especially regarding the sustainability of electricity, transport, and other related systems. Civil society organisations such as community groups, voluntary organisations, charities and community co-operatives, are taking energy action to produce services that have traditionally been provided by incumbent organisations. These civil society initiatives, which take a sustainability approach to addressing every day services in the area of energy (as well as food and transport) have been conceptualised as grassroots innovations (Seyfang and Smith, 2007).

Grassroots innovations are “*networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved*” (Seyfang and Smith, 2007; p. 585). Grassroots innovations differ from technology or market innovations in a sense that they usually have motives for creating social good rather than pure monetary profits (Seyfang and Smith, 2007). This in turn can give an opportunity to the development of new social experiments that would not have been developed or implemented in a purely profit-driven context (Verheul and Vergragt, 1995).

Grassroots innovations have been studied in relation to empirical topics such as community currencies (Seyfang and Longhurst, 2013), community gardens and food networks (Seyfang, 2007; White and Stirling, 2013) and community energy

E-mail address: m.martiskainen@sussex.ac.uk

<http://dx.doi.org/10.1016/j.eist.2016.05.002>

2210–4224/© 2016 The Author. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

(Seyfang et al., 2014). Factors such as local traditions, pre-existing practices, voluntary effort, interpersonal networks and community cohesion are important for the success of grassroots innovations (see for example Ornetzeder and Rohrer, 2013; Seyfang et al., 2014; Seyfang and Longhurst, 2015; Seyfang et al., 2013), though there has been limited focus on community leadership. This article builds on that literature and analyses the development of grassroots innovations in the context of community energy.

Community energy initiatives in the UK context have included a range of technologies and set ups, such as solar PV clubs, renewable energy switching schemes and energy saving networks (Seyfang et al., 2013). The development of community energy projects often involves innovative practice or activity (Seyfang et al., 2014) and groups can have varying motivations ranging from environmental, to economic, social, political and infrastructural (Seyfang et al., 2013). There is no one typical community energy project, in fact the common denominator for the sector seems to be that ‘one size does not fit all’. Furthermore, those who benefit and how they benefit from a community energy project becomes relevant for each project’s definition and boundaries (Walker and Devine-Wright, 2008). Community energy within the remit of this research article is defined as projects initiated and developed by civil society groups which involve innovative practice or activity in the area of sustainable energy.

There has been a surge of interest in community energy in the UK in recent years from citizens, academics and politicians alike. This interest culminated in the publication of the UK’s first Community Energy Strategy in 2014 (DECC, 2014) and the gas and electricity market regulator Ofgem consulting in 2015 on the potential impacts of Non-traditional Business Models, such as community energy, entering the UK energy system (Ofgem, 2015). Previous research has covered a breadth of issues on community energy in the UK context, such as the conceptualisation of ‘community’ within community energy groups (Parkhill et al., 2015), communities as spaces that build capacity for pro-environmental behaviour (Middlemiss and Parrish, 2010), the origins, motives, development and diversity of such groups (Seyfang et al., 2013), processes linked to community energy development (Walker and Devine-Wright, 2008), the diffusion of community energy projects (Hargreaves et al., 2013; Seyfang et al., 2014), impact of community-led energy initiatives on consumers (Gupta et al., 2014) and community energy in relation to policy measures (Saunders et al., 2012). However, there has been limited focus in previous research on the role of community leadership in community energy projects (Hoppe et al., 2015; Rogers et al., 2012; van der Schoor and Scholtens, 2015). While van der Schoor and Scholtens (2015) for instance recognise that local leadership is important in community energy projects, they do not provide further analysis of why that is the case. Hoppe et al. (2015) studied leadership in relation to the development of local energy initiatives but focused on public leaderships (e.g. public officials in local authorities) rather than on leadership within community groups themselves.

Drawing on both literature on community leadership (e.g. Uhl-Bien et al., 2007) and sustainability transitions, especially niche literature (e.g. Geels and Deuten, 2006; Raven et al., 2008; Schot and Geels, 2008; Smith and Raven, 2012; Verhees et al., 2015), as well as original data collection including interviews and site visits, this article asks: *When community leaders initiate energy projects, what types of skills and knowledge practices do they utilise to nurture grassroots innovations?* This article makes a contribution to previous literature by highlighting that community leadership has a part to play in the development of grassroots innovations such as community energy initiatives.

This research was conducted during the period of 2010–2014 as part of PhD research and used a mixture of techniques including document analysis, semi-structured interviews, attendance of community energy events and in-depth analysis of community energy case studies. This article is organised as follows. Section 2 explains the conceptual framework, which draws on niche literature, grassroots innovations and community leadership. Section 3 explains the research methodology and case study design. Section 4 discusses key findings and what the role of community leadership is in the development of grassroots innovations in relation to the processes of voicing expectations, learning and networking. Section 5 discusses the research findings and makes recommendations for further research.

2. Conceptual framework: community leadership and the nurturing of grassroots innovations

2.1. Community leadership

The notion of community is important for the concept of community leadership (as well as community energy), and it can be defined by locality as well as interest. McMillan and Chavis (1986) define community by four dimensions: *membership, influence, reinforcement* and *shared emotional connection*. People feel like they belong to a group (membership) and they are, or at least feel like they are, able to make a difference within that group (influence) (McMillan and Chavis, 1986). Community can meet their members’ needs (reinforcement), while shared emotional connection is built through shared places and experiences, such as joint history and time spent together (McMillan and Chavis, 1986). Community is not only linked to a physical entity, but communities can also be based on shared interests such as culture and politics (Walker, 2008). Communities can be seen as complex systems which are not only defined by boundaries such as geographical location but are open to different participants despite their location (Onyx and Leonard, 2011). Furthermore, people can be members of multiple communities and can “transfer, translate, and transform experiences from one community to another” (Dahlander and Frederiksen, 2012, p.990).

Community leadership is different from the classical notion of leadership being “about ‘leaders’ asking, persuading and influencing ‘followers’” (Sullivan, 2007; p. 142). Community leadership in turn is usually less hierarchical (Onyx and Leonard, 2011) and often based on volunteer action (Zanbar and Itzhaky, 2013), involving the creation of social capital (Riley, 2012)

and acting as a symbolism for change (Sullivan, 2007), as are also many grassroots innovations. Community leaders are often informal, non-elected, leaders (Bénil-Gbaffou and Katsaura, 2014). Community leadership is not a tightly defined concept (see for example Sullivan, 2007), but is also defined by the boundaries of the community within which it operates and community leadership can consist of one individual or a group of people. Community leadership has been studied in a range of subject areas, for examples in education (e.g. Bukoski et al., 2015; Riley, 2012), health (Trapence et al., 2012), local government (Sullivan, 2007), local politics (Bénil-Gbaffou and Katsaura, 2014) and tourism (Cheuk et al., 2015).

Community leadership can be analysed from a multitude of conceptual perspectives, including for example entrepreneurship, and subsets of it such as social entrepreneurship (Austin et al., 2006), which has been used for example in relation to social innovation (see for example Witkamp et al., 2011). Social entrepreneurship is a process which 'adds value to society, offers solutions to social problems, and seeks to increase personal wealth' (Rey-Martí et al., 2016; p. 1651). However, in analysing community leadership in the community energy domain, this article draws on Complexity Leadership Theory (CLT) (e.g. Keene, 2000; Onyx and Leonard, 2011; Uhl-Bien et al., 2007), which is less oriented in wealth creation than social entrepreneurship is for instance. CLT has been developed to deal with the complex problems that societies in the 'knowledge era' face, in a world which is not subjective but results from interactions between people and their environment (Keene, 2000). CLT is of the view that "leadership should be seen not only as position and authority but also as an emergent, interactive dynamic" (Uhl-Bien et al., 2007). CLT identifies three types of leadership: (1) administrative leadership is hierarchical and controlling; (2) enabling leadership encourages creative problem solving, learning and adaptability; and (3) adaptive leadership is a dynamic that empowers change (Uhl-Bien et al., 2007; p. 299). Uhl-Bien et al. (2007) note that adaptive leadership emerges from interactive changes and can be used especially for dealing with problems which require learning, new behaviours and innovation, all of which are also relevant processes to the development of grassroots innovations (Seyfang and Smith, 2007). Furthermore, CLT can be useful especially in relation to analysing community groups, which can have fluid organisational structures (see for example Plowman et al., 2007). Onyx and Leonard (2011) have used CLT in their analysis of five communities, and identified seven elements of successful community leadership: (1) leaders were embedded in the formal and informal networks of the community; (2) decision making was shared with the community; (3) leaders were operating in an open system, engaging with others; (4) leaders had a vision about the future of the community; (5) leaders had practical management skills; (6) leaders had planning in place for their potential successors; and (7) leaders had commitment, persistence and energy (p. 503–505).

2.2. Community energy projects

Community energy projects can be developed by communities who have either been in existence before or are coming together for the first time in order to develop such a project (Seyfang et al., 2014; Seyfang et al., 2013). While multiple definitions of community energy exist (see for example DECC, 2014; Seyfang et al., 2013; Walker, 2008; Walker and Devine-Wright, 2008), community energy projects tend to be initiatives run by civil society actors (such as charities, not-for-profit organisations, voluntary neighbourhood networks and co-operatives), which develop either or both energy saving and renewable energy generation measures. Typically initiated, led and owned by community groups, community energy projects often rely on external help from actors such as local authorities, businesses or NGOs in terms of advice and funding.

Community energy projects can create many benefits such as promoting sustainable energy, reducing emissions and building community cohesion, but projects also face challenges, such as securing funding and how to adapt available information on various technologies to each groups' own individual circumstances (Seyfang et al., 2013). Various funding programmes provided by the government, utilities and local authorities have supported community energy projects over the years (Strachan et al., 2015). However, much of that support has been diminishing due to changes to government policy, especially regarding revenue streams such as the Feed-in Tariff (FiT) and the Renewable Heat Incentive (RHI) – the FiT for example has not supported the community energy sector as much as it has supported households, public sector organisations, businesses and farms (Strachan et al., 2015). Despite the attempt by the government to institutionalise community energy in the UK, as exemplified by the publication of the Community Energy Strategy (Smith et al., 2016) and the sector having more professional actors involved such as consultants and professional service providers (Hargreaves et al., 2013), as well as an Energy Mentoring scheme,¹ the sector remains small, fragmented and up-scaling is relatively limited. The UK's Department of Energy and Climate Change (DECC) estimated in 2014 that there were around 5000 community groups involved in sustainable energy projects (DECC, 2014). However, it is questionable whether all these initiatives have resulted in viable community energy projects given the uncertainty over viable business models (Martiskainen and Nolden, 2015). The existing energy regime in the UK prefers centralised, often large-scale, energy projects, while major corporations have made it difficult for community energy to enter the mainstream energy system (Strachan et al., 2015). Furthermore, while there is a range of technical advice and expertise available for community energy groups, there is a need for "social skills, confidence, emotional stamina to keep going even in challenging times" (Seyfang et al., 2014; p. 39) and projects require further support. In other words, the community energy niche in the UK is not robust enough (yet) to have strategic influence on the dominating socio-technical energy system (Seyfang et al., 2014).

¹ The Energy Mentoring scheme provides advice for community groups who are want to develop community energy projects, <http://www.energymentoring.org.uk>.

2.3. Nurturing grassroots innovations

Grassroots innovations usually have a solution-focused approach to local problems, involving both technological and social innovation (Seyfang and Smith, 2007), and motives for the development of “*new products and services that address social needs*”, which “*help to build more sustainable, cohesive and inclusive societies*” (Grimm et al., 2013; p. 438). This article situates community energy as a grassroots innovation in a niche space in the UK context. For example Seyfang et al. (2014) have conceptualised community energy as a niche in the UK, with “*some evidence of an emerging niche... (identified by dedicated intermediary and network organisations, and policy support, and contributed to by local projects)*” (Seyfang et al., 2014; pp. 39–40).

Niches “*enable transition experiments in which visionary actors can innovate with social goals and learn about social challenges*” (Raven et al., 2010; p. 62). Niches provide protected spaces for new innovations (Schot and Geels, 2008), which often emerge in response to problems within existing regimes (such as the dominating socio-technical energy regime favouring fossil fuel based unsustainable technologies, and related regulation, infrastructure and practices). Niches have the potential to disrupt and transform existing dominating systems, or regimes, and they provide spaces for innovations that would not succeed within the dominating regimes’ selection environments (Smith and Raven, 2012).

Smith and Raven (2012) have identified nurturing, shielding and empowering as key processes for supporting niche innovations (see also Smith et al., 2014; Verhees et al., 2015). *Nurturing* focuses on niche internal processes and contains the processes of voicing expectations, learning and networking (Smith and Raven, 2012). Niches benefit from expectations which are shared by many actors and demonstrated by multiple projects, while social learning including both first-order (facts and data) and second-order learning (changes in assumptions and cognitive frames) allows experiences from different local experiments to be shared (Schot and Geels, 2008). Previous niche literature has recognised that power relations can play a part as to whose expectations matter (for example Raven et al., 2008), however it is not clear how those relationships unveil or whose expectations might be the most influential ones. This is where social networks become important, especially through processes of circulating resources, expertise and knowledge (Raven and Geels, 2010), work which can also be aided by intermediary actors (Geels and Deuten, 2006). Broad and deep social networks benefit the niche with their ability to reach actors and pool resources (Smith and Raven, 2012; Verhees et al., 2015). *Shielding* protects the niche from the outside of its boundaries, by the creation of research opportunities in new innovations, through pilot projects and demonstration projects (Smith and Raven, 2012). For example in the UK context, the Department of Energy and Climate Change (DECC) has created opportunities for communities to investigate the feasibility of electricity and heat projects via its Rural Community Energy Fund (DECC, 2014). *Empowering* relates to the wider up-scaling of the niche, especially in relation to ‘fit and conform’ – the niche innovation becoming competitive in existing markets – and ‘stretch and transform’ – niche innovations having the potential to transform existing regimes (Smith and Raven, 2012). It is important to note that this study relies mostly on the notion of *nurturing* rather than *shielding* and *empowering* because the focus is on niche internal processes, especially micro-level community action.

Niches usually grow as sequences of different projects – or local experiments (Heiskanen et al., 2015) – which share knowledge and experience, benefiting from supporting activities such as the establishment of networks and intermediary organisations (Geels and Deuten, 2006). Intermediary organisations, i.e. “*actors who create spaces and opportunities for appropriation and generation of emerging technical or cultural products by others who might be described as developers and users*” (Stewart and Hyysalo, 2008; p. 296), can aggregate learning from local projects and translate it to established guidance, standards and best practice that benefit other projects, building and strengthening the niche further (Geels and Deuten, 2006). Grassroots innovations, which involve a mix of social and technological innovations, often rely on “*soft’ or people skills*”, or tacit knowledge, and aggregated lessons from such varied projects might not be straightforward for intermediaries to collate (Seyfang et al., 2014; p. 38). Tacit knowledge is the knowledge that people have, but which is not easily taught or openly expressed (Wagner and Sternberg, 1985) and cannot be easily codified (Gascoigne and Thornton, 2013). Furthermore, tacit knowledge “*explains how it is that we possess the awareness and skills that enable us to select the information we want from all that is available, to carry out actions and to evaluate facts and theories*” (Darby, 2006; p. 2931). Skills such as working with groups, facilitating meetings, enabling groups to make decisions and being able to operate effectively as a team are key for the success of community projects (Seyfang et al., 2014). However, grassroots innovations especially do not have the same visions, motives, organisational structures, practices, networks or learning processes as conventional firms or purely technology-focused groups might have (Seyfang and Smith, 2007). For example Seyfang et al. (2014) found that in the UK community energy sector, local projects and intermediary actors have developed at different speeds. To analyse the role of community leadership in the development of grassroots innovations, this article focuses on niche-internal processes, especially the process of nurturing and its relation to community leadership.

3. Research methods

This article is based on the findings of in-depth, qualitative case study research, using interview data and literature of relevant academic, policy and grey literature. Case study approach was chosen as it is ideally placed to study social entities such as communities and social groups (Hakim, 2000), allowing for the “*development of a nuanced view of reality*” (Flyvbjerg, 2011; p. 303). Case studies also have the advantage of studying certain phenomena, such as community energy, “*from inside’; in their cultural and social context, in actual local practices, and in people’s everyday life*” (Gómez and Kuronen, 2011; p. 685).

Table 1
Conceptual framework guiding data collection.

Nurturing processes	Example questions	Empirical examples
Voicing expectations	What were the project's aims and objectives? What did the project want to achieve?	Community energy project has expectations of its outcome, e.g. desire to reduce heating bills
Learning	What type of learning processes were involved? E.g. first and second-order learning and from what resources e.g. internet, publications, other groups, intermediaries?	Initial project plans are adjusted following engagement for example with key funder; experience from projects are shared with others
Networking	Did the project have evidence of being part of wider networks? E.g. with other community energy projects, experts or intermediary organisations?	Community energy group organises events for other groups; the group is involved in mailing lists and internet groups

Hence, case studies are suitable for this type of in-depth, qualitative research, which seeks to examine the role of community leadership in grassroots innovations.

In order to analyse the development of grassroots innovations, an area of study which involves civil-society led innovative activity was chosen as the basis of empirical analysis, with innovation in the context of this research understood as “*an idea, practice, or object that is perceived as new by an individual or other unit of adoption*” (Rogers, 1995; p. 12). This is why community energy proves an interesting topic as it involves civil society groups, who develop sustainable energy activities that have traditionally been an area for incumbent utilities. Furthermore, citizen-led community energy projects have emerged in the UK and there has been a surge in activity especially in the last five years, hence the UK makes an interesting context to study community energy in.

Case selection was informed by literature review, triangulation of previous research and documented information (e.g. databases such as Project Dirt²). The case selection was guided by information oriented-selection, so that “*cases are selected on the basis of expectations about their information content*” (Flyvbjerg, 2011; p. 307). The objectives of case selection were also guided by the definition of community energy within this research, i.e. projects initiated and developed by civil society groups which involve innovative practice or activity in the area of sustainable energy. Cases were chosen in relation to evidence of them having voiced expectations, and involving the processes of learning and networking. This was determined by factors such as the projects having evidence of engagement with external organisations such as funding bodies and other community energy groups, and the projects having been used as an exemplary cases (e.g. EST, undated; NFNPA, 2010).

Two community energy projects, Hyde Farm Climate Action Network and Lyndhurst Community Centre, were chosen for further in-depth analysis. While the sample size is small, strategic case selection, where cases are representative of the parent population, and clear research methodology, can improve generalisation from a small sample size (Lewis and Ritchie, 2012) and aim for analytical generalisation in relation to a broader theory (Yin, 2009; p.43). The in-depth analysis of the chosen cases was expected to aid the analysis of micro-scale processes involved in grassroots innovations, following Lewis and Ritchie, that “*qualitative research studies can contribute to social theories where they have something to tell us about the underlying social processes and structures that form part of the context of, and the explanation for, individual behaviours or beliefs*” (Lewis and Ritchie, 2012; p. 263). Furthermore, it is common for social scientific energy research to use non-comparative case research and also case research which is based on a small number of cases (Sovacool, 2014).

The development of the community energy cases was traced via data collected by semi-structured interviews with key actors of the community energy projects, site visits and document analysis, with the process of nurturing guiding data collection (see Table 1).

The case analysis was supported by secondary interview data with key stakeholders in order to get a wider picture of the community energy niche in the UK. All interviews were digitally recorded, transcribed and coded according to key themes related to the process of nurturing (voicing expectations, learning and networking). The coding process was iterative and sub-codes were added as they emerged. Once all interviews were coded, the transcripts were checked against each other, in order to ensure validity of coding across all interview data. Following data collection, an ‘innovation history’ (Douthwaite and Ashby, 2005) of each case was written, which documented the case’s development in relation to the processes of nurturing (Martiskainen, 2012a,b). Table 2 summarises the cases in more detail.

3.1. Community energy cases

3.1.1. Lyndhurst Community Centre

Lyndhurst Community Centre (referred to as Lyndhurst from here on), is located in the village of Lyndhurst in Hampshire, and owned and operated by the charity Lyndhurst and District Community Association (LDCA). The community centre was built in 1962 and has become a hub of the village over the years, with over 40 local community groups and businesses regularly using the centre and its facilities such as a large community hall, meeting rooms, industrial size kitchen and library. Regular activities take place at the Community Centre, including weekly exercise classes, art exhibitions, music events, local council meetings and farmers’ markets. With the help of several funders including the Big Lottery, local councils, the New Forest

² <http://www.projectdirt.com>.

Table 2
United Kingdom community energy cases.

Case	Hyde Farm Climate Action Network	Lyndhurst Community Centre
Type of organisation	Neighbourhood community network	Charity
Innovation	Energy efficiency measures Solar PV installation First regular community-led draught-proofing event New technology to the community	Energy efficiency measures Biomass installation First community centre in New Forest to install biomass New technology to the community
Leadership	One key visionary Supported by a core team of community members	One key visionary Supported by a core team of community members
Voicing expectations	Old houses needed refurbishing High heating costs How to deal with climate change Two external service providers (Echo Action, British Gas)	Old building needed refurbishing High heating costs Improve energy efficiency Several external funders (Big Lottery, EU Leader, National Park, local authorities)
Learning	Visits to other local climate action groups	Visits to other local renewable energy projects
Networking	Organising events for other groups Active local and national networking Contact with funding bodies, national and local networks Sharing experience with several community groups Organising events Taking learning to other groups Being used as an exemplary project by intermediaries	Organising visits for other groups Active local networking Contact with several funding bodies and local networks Sharing experience with other community centres Organising events Being used as an exemplary project by intermediaries

Table 2 is based on preliminary literature search on case studies.

National Part Authority and the local public, the community centre went through a complete £788,000 refurbishment during 2009–2010, including a new 100-kilowatt biomass heating system.

3.1.2. Hyde Farm Climate Action Network

Hyde Farm Climate Action Network (CAN) (referred to as Hyde Farm from here on) was set up in 2007 in Balham, London, by a group of neighbours who were interested in energy and climate change issues. Hyde Farm Estate mainly consists of residential houses built between 1896 and 1916. The area was designated as a Conservation Area in 1996 and most of the 1800 houses in the area are two-bedroom maisonettes or two to three bedroom houses of Edwardian character. A proportion of housing in the estate was originally allocated to injured war veterans. A typical house at Hyde Farm has single brick walls, high ceilings and single glazed windows, meaning that it is draughty and hard to keep warm. Being a conservation area, there are planning restrictions to the type of energy efficiency measures and improvements that could be considered for the houses. Following successful funding bids to organisations such as ECHO Action and British Gas Green Street programme, Hyde Farm installed renewable energy measures in a local school and facilitated a monthly 'Draught Busting Saturday' event to improve the energy efficiency of local houses and especially help those who were on low incomes.

4. Findings: the role of community leadership in the development of grassroots innovations

As highlighted by previous niche literature, voicing expectations, learning and networking are processes that nurture niche innovations (Smith and Raven, 2012). This research analyses what the role of community leadership might be in those processes in relation to the development of grassroots innovations.

4.1. Voicing expectations

Voicing expectations are important elements of niche building, as these processes help to nurture the emerging niche by providing direction for the niche and attracting potential support and resources from external partners (Raven and Geels, 2010; Smith and Raven, 2012; Verhees et al., 2015). While previous research has shown that intermediary organisations especially can aid the voicing of expectations (Schot and Geels, 2008), there is also a need to understand better whose expectations and visions count in grassroots innovations, especially in the projects at the local level where experiments take place (Heiskanen et al., 2015).

Community energy projects can be developed for a variety of reasons and motivations can be varied (Seyfang et al., 2013) and include for example physical needs such as the desire to save an old community building (e.g. Lyndhurst), improve draughty houses (e.g. Hyde Farm), save money on heating bills (e.g. Hyde Farm and Lyndhurst), as well as the aspiration to work together as a community in addressing challenges such as climate change (e.g. Hyde Farm). For some groups, a community energy project might just be the next activity in a string of activities that the group has undertaken together (as was the case in Lyndhurst), while for others developing a community energy project is a chance to create a community of common interest, often in their local area (as in Hyde Farm). In both types of projects there is always someone, either a person or a group of people, who sees an opportunity and decides to act on it. In the case of Lyndhurst, the project was initiated by the community centre's part-time manager, supported by the centre's staff and volunteers, who had a view that

saving the ageing community centre building was not only just about providing bricks and mortar, but also about creating a flexible community space that would continue to be a centre of village life for years to come, not only creating a vision for the centre but also building on its history and creating shared emotional connection within the community (McMillan and Chavis, 1986). In Hyde Farm, the project's initiator did not know her neighbours that well to begin with but she wanted to act on climate change, start that action in her home and she was also keen to see if her neighbours would be interested in doing the same. In a sense, Hyde Farm's initial motives were as much about creating a community as acting together as a community, showing the importance of shared emotional connection and feelings of belonging to a community (McMillan and Chavis, 1986).

In the cases of Lyndhurst and Hyde Farm, both community leaders were rather clear from the start that they wanted to create projects that would benefit their local communities – they were community leaders who had a vision about the future of their communities (Onyx and Leonard, 2011) and they also had the confidence to voice those expectations and trusted their group's abilities to deliver projects that would benefit the local community. Despite their initial lack of knowledge of sustainable energy technologies, they were keen to see what opportunities they could seek out. In Lyndhurst, the community leader's vision was as much about saving a space where people and community groups from the local area could continue to meet, as well as providing a business opportunity:

“We are a village that has poor public transport and no mainline station and no buses running after 6:30 at night, with a 1500 population. I wanted to be able to offer something to the village that would give them what they want to do for their leisure time, at the same time offering a business opportunity.”

In Hyde Farm too, there was a sense of urgency that especially with climate change, people in local communities had to take action:

“Six years ago I started getting interested in climate change and environment, what I could do about it. I'm quite scared actually. . . . I really didn't know any of my neighbours, and I just felt that, that sense of community was hugely invaluable and that this was something that we could really do as a community together, so I could see Hyde Farm Climate Action Network and see it re-working and doing things together, and that would enhance my community.”

These project initiators, or community leaders, are often people who are either well known in their communities and/or very active. Being visible in the community helps with niche building in a sense that visions can be voiced to a wider group of people (Schot and Geels, 2008), while active engagement ensures better reach for organisations such as intermediaries and funding bodies (Raven and Geels, 2010). As one intermediary described her experience of working with community energy groups and the kinds of people she saw as leading such projects:

“Like that expression if you want something doing ask a busy person. They always seem to be busy people, who've got lots of different things going on yet still manage to give the time to the project in a voluntary capacity.”

For example in the Lyndhurst case, the community leader had lived in the village since the 1970s and he had taken on the part-time management role after retirement. He was a visible and active member of his community – he was a member of the local council, various hobby clubs and voluntary societies. In the interviews with other community members it became clear that he was also trusted, not only because he ‘got things done’, but also for the way he approached various projects, spending a considerable amount of his own time finding information, digesting it and sharing it with others in the community. This shows how he was embedded in both the formal and informal local networks of his community (Onyx and Leonard, 2011).

The Lyndhurst and Hyde Farm cases show that the role of community leadership is likely to matter when initial visions are formed, especially as “*project visions are not fixed*” but they are negotiated with key stakeholders (Raven et al., 2008; p. 467). In terms of community energy projects, this phase can be especially important as project ideas are tested and developed, with the need to get the community's support behind the project idea. Communities are not always harmonious and not everyone always agrees with the initial visions the project has (personal communication with a community energy practitioner), which relates to whether people feel like they have influence and can make a difference in their community (McMillan and Chavis, 1986), also linking to questions such as whose expectations matter. In both Lyndhurst and Hyde Farm, interview data with community members showed that community leaders were operating in an open system, engaging with others and taking their views on board (Onyx and Leonard, 2011).

In the case of grassroots innovations such as community energy, a non-hierarchical community leadership, which forms as a result of interactions between community members and events within the community (Onyx and Leonard, 2011; Uhl-Bien et al., 2007) can aid the delivery of projects. The role of community leaders is key in creating initial project ideas as well as sharing them with the community members in order to mobilise support, also creating a sense of membership within the community (McMillan and Chavis, 1986). However, these expectations need to be also shared with other projects and niche actors, to aid wider niche development (Schot and Geels, 2008; Smith and Raven, 2012). For example the community leader in Lyndhurst worked closely with several intermediary organisations, such as the local transitions town network and local authorities, in the group's quest for information on project delivery. In Hyde Farm, the community leader and a core group of volunteers were keen to learn from other community groups.

4.2. Learning

Learning is another key element of niche development, as both first and second order learning between projects, and intermediaries, aids niche building (Geels and Deuten, 2006; Schot and Geels, 2008). Both Lyndhurst and Hyde Farm had community leaders who were innovative in their quest for finding information and creating knowledge about technology options and funding resources, adjusting the projects' expectations and visions in the process (Raven et al., 2008). For example in Lyndhurst, the community leader was aware of the New Forest National Park Authority (NFNPA) and their Sustainable Development Fund (SDF), so he contacted NFNPA to see whether the community centre could incorporate renewable energy in their project plans and apply funding from the SDF, even though he was not knowledgeable about renewable energy per se. Meanwhile, the NFNPA saw an opportunity in the Lyndhurst case to develop local wood fuel supply networks, thus also creating business opportunities for local forest owners. This shows how learning processes are relevant not only to the projects on the ground but also to intermediary organisations. The Lyndhurst community leader had very straightforward lessons that he wanted to share about the project such as utilising every possible funding opportunity; ensuring good finances before the start of any construction work; having a dedicated project team that shared decision making structures (Onyx and Leonard, 2011), as well as a communications plan from the start; hiring a project manager; using local workmen; and doing everything through one contractor if possible. There were lessons for the NFNPA too. The community centre project provided them an opportunity to see how a community project could be run from an original feasibility study to completion, creating also opportunities for local forest management.

In Hyde Farm, learning processes were related to technology and funding. Especially their funding application for the British Gas Greet Streets programme not only took a lot of time, but also required the understanding of concepts such as what project outcomes could be (in addition to project outputs) and the community leader spent a lot of her time learning new concepts. In other words, the community leader had to be able to grasp new information and concepts and adapt those to the local community's individual contexts (Raven et al., 2008). Guidance and experience from previous projects can be key for grassroots innovations such as community energy (Seyfang et al., 2014), so that groups can avoid 'reinventing the wheel' or making mistakes that other groups might have made in the past. For instance, during the Hyde Farm project, the community leader proceeded to become a Sustainability Officer for a local council. In her new employment role, she was able to take the learning from Hyde Farm and share that with other community groups, providing practical advice on issues such as how to search for funding opportunities, how to fill in funding applications, how to speak to funders and how to meet funders' expectations. In doing so, she also transferred, translated, and transformed her experience from being a member of a 'community energy community' to becoming a member of an 'intermediary community' (Dahlander and Frederiksen, 2012). The Hyde Farm experience shows how the community leader was able to take her learning from a local project and translate that to niche guidance in effect becoming an intermediary actor herself (Geels and Raven, 2006; Raven et al., 2008). In order to provide effective niche guidance, intermediaries need to be able to translate learning from local projects and community leaders are ideally placed to aid in that process. By working closely with intermediary organisations, community leaders could become 'middle-actors' – those who facilitate the actions of other actors due to their "moral, financial, technical or social positions" (Parag and Janda, 2014; p. 104). It is especially the middle actors' expertise and position in relation to other actors that can initiate change (Parag and Janda, 2014).

Community energy groups often rely on volunteers, who bring a mix of skills and resources (Seyfang et al., 2013). While community leaders such as those at Hyde Farm and Lyndhurst had practical management skills (Onyx and Leonard, 2011), both leaders and their teams also utilised tacit knowledge (Wagner and Sternberg, 1985). For instance, community leaders who know their local area and networks well will be able to identify and bring together people with certain skills, knowledge and persona. In both Hyde Farm and Lyndhurst cases, community leaders were able to spot local talent and build a bank of useful skills for the projects. For example at Hyde Farm, the community leader teamed up with a local resident who had a background in sustainability and could help with funding applications, while at Lyndhurst the community leader asked one of the SDF panel members to join the project as he had renewable energy experience, even though it meant that he could no longer make further funding decisions relating to the project. In that instance, his knowledge of renewable energy became more important to the project. Furthermore, the community leader in Lyndhurst had accumulated a range of marketing, PR and organisational skills during his working life, while at Hyde Farm, the community leader was a journalist and together with another journalist group member was able to write 'a good story' of the Hyde Farm project for funding applications. This also shows how the processes of voicing expectations, learning and networking are often interlinked and cannot be necessarily separated from each other. One of the challenges for relying on volunteer effort nevertheless is that if a project relies heavily on one person, or a small group of people, there are risks to projects' continuity if that person, or group, decide to leave. As noted by Onyx and Leonard (2011), community leaders often have a plan in place for their successors. However, this was not explicitly expressed by the community leaders either at Lyndhurst or Hyde Farm.

4.3. Networking

Building networks allows for the circulation of knowledge and capacity between projects, aiding niche-building (Geels and Deuten, 2006; Hargreaves et al., 2013; Raven et al., 2008). As mentioned in Section 4.1, the visibility of community leaders is beneficial in voicing expectations and creating visions and this was also the case in how community leaders created new networks and utilised existing ones in the Hyde Farm and Lyndhurst cases. In Lyndhurst, networking took place

Table 3
Community leadership in Hyde Farm and Lyndhurst.

Case	Hyde Farm	Lyndhurst
Embedded in formal and informal networks	Member of local community energy networks such as Transition Towns Active networking in local area and with other community groups; self-proclaimed 'networker' Later became employee of a local council as Sustainability Officer, working in an intermediary role with community groups	Member of local council and several local societies such as a bowling club Active networking in local and regional community Member of regional community centre managers association
Shared decision making	Decisions made by the community network	Decisions made by the project team
Open system	Climate Action Network meetings open to everyone in the community Everyone able to suggest and conduct project ideas and initiatives	Regular and active communication with project team Communication with local community via newsletters and meetings Community centre open to everyone
Vision of future	Address climate change as a community Start action at home and the local neighbourhood Create community cohesion in the process Confidence in the group's vision	Save ageing community centre Provide a space for everyone to come to with regular activities Meet the needs of the local community Focal point of village life Confidence in the group's vision
Practical management skills	Previous experience in project management, fundraising, journalism and research <i>Tacit skills</i> : spotting talent, bringing people together, using existing networks and creating new ones, working as a group, filling in funding applications, dealing with external bodies such as funders	Previous experience in project management, fundraising, marketing and public relations <i>Tacit skills</i> : spotting talent, bringing people together, creating networks, working as a group, filling in funding applications, dealing with external bodies such as funders
Plan in place for successor	No clear plan	No clear plan Delaying personal retirement
Commitment, persistence and energy	Commitment to the project and local community Urgency to act as a community Persistence in fundraising Energy to mobilise others	Commitment to the project and local community Keeness to provide for the local community Persistence in fundraising Energy to mobilise others

mainly through local contacts and activities such as site visits to other projects, and organising events and holding open days to showcase the newly refurbished community centre. The community leader in Lyndhurst had pre-existing knowledge of local networks and a wide range of his own contacts that he was able to draw on. In the search for suitable funding sources for example, he spent a lot of time talking to his local contacts and friends, while his knowledge of local businesses, such as architects, builders and lawyers were beneficial to the project. Furthermore, he initiated events and campaigns such as a "Buy a Brick" initiative, which allowed the general public to donate and symbolically own a brick in the refurbished community centre, raising the refurbishment project's profile within the local community and creating further emotional connection and shared experience within the community (McMillan and Chavis, 1986).

In the case of Hyde Farm the community energy project also created a community network. The community leader was "more of a networker, get people in and get them talking to one another and learning" (interview comment), with an attitude that anything was possible as long as you had the right people involved. She was also active in utilising online resources such as e-mailing lists and forums, and soon became involved with other community energy networks in London and nationwide. Initiated by the community leader, a "green milieu (i.e. a 'hotspot' for alternative green values and practices)" (Seyfang et al., 2014; p. 34) allowed like-minded people to get together, know their neighbours better and build a network. In Hyde Farm, much of the networking was also based on accidental encounters.

Both community leaders were embedded in both formal and informal networks in their local communities (Onyx and Leonard, 2011), and these networks were used extensively, creating also opportunities for sharing knowledge to other projects and community groups, as well as to intermediary organisations especially to the local authority in Hyde Farm's case and to the NFNPA in Lyndhurst's case. While both cases show that networking also built capacity for the projects, as niche literature suggests (e.g. Geels and Deuten, 2006; Hargreaves et al., 2013; Raven et al., 2008), the formation of networks in the Hyde Farm case especially was largely based on ad-hoc encounters rather than on strategic thinking, and provides further evidence on the point made by previous research on grassroots innovations that they develop in very diverse and non-linear manner (Seyfang et al., 2014; White and Stirling, 2013). Furthermore, while niche literature suggests that networks should be extended to incumbent actors who have "many resources, competence and 'mas'" in order to try to change their visions and main agendas (Schot and Geels, 2008; p. 549), this was less of a case in these community energy projects, which built and used their networks in order to share learning with other community groups rather than trying to change the vision of large incumbent energy companies.

Table 3 summarises key findings in relation to community leadership in Hyde Farm and Lyndhurst. In both Lyndhurst and Hyde Farm, community leadership was embedded in the formal and informal networks of the community; decision

making was shared; the communities operated as open and engaged systems; community leadership contributed to the development of a clear vision about the future of the communities; it benefited from practical management skills; as well as endless commitment, drive and persistency (Onyx and Leonard, 2011). However, in neither case the community leader had plans in place for their potential successors. This shows how grassroots innovations, many of which are often based on voluntary effort (e.g. Hyde Farm) or people committing themselves to them part-time (e.g. Lyndhurst), can be vulnerable if they only rely on one person, or a small group of people, to see the project through. Hence, while groups can benefit from the clear direction, commitment and drive that community leaders can provide, the continuity of community leadership is also closely related to the sustained future of such initiatives.

5. Conclusions

This article set out to analyse the role of community leadership in the development of grassroots innovations using community energy as empirical evidence. The two in-depth UK community energy cases, Lyndhurst and Hyde Farm, were analysed in relation to how key elements of community leadership (Onyx and Leonard, 2011) manifested in the process of nurturing niche innovations: voicing expectations, learning and networking (Smith and Raven, 2012).

Community energy projects are not without challenges, especially in terms of funding, maintaining volunteer effort and sustaining emotional stamina to keep going (see for example Seyfang et al., 2014; Seyfang et al., 2013; Walker and Devine-Wright, 2008; Walker et al., 2010). Furthermore, factors such as local context, pre-existing skills, interpersonal networks and community cohesion all benefit grassroots innovations (see for example Ornetzeder and Rohracher, 2013; Seyfang et al., 2014). This research adds to previous literature on community energy and grassroots innovations by showing that also community leadership has a part to play in their development. Community leadership can be beneficial especially for grassroots innovations such as community energy projects, which operate in niches (Seyfang and Smith, 2007). The role of dedicated community leadership is central when project teams seek funding resources, learn new skills and engage with stakeholders (Seyfang et al., 2014) – activities in which community leaders' practical and tacit skills become useful. Furthermore, community leaders in both projects were able to recognise others' useful skills and utilise those in the projects. The research shows that in addition to practical management skills, tacit knowledge was widely applied by the community leaders, and these skills were also used to aid the processes of voicing expectations, learning and networking.

Both community leaders had the ability and confidence to voice expectations about the project's aim and vision, not only to their immediate communities, but also to other actors such as other community groups and intermediaries. Furthermore, they had confidence that their community groups would be able to deliver on those expectations, which is central when projects seek funding from external partners and have to deal also with their expectations.

In terms of learning, both community leaders were active in their quest for finding information about technology options and funding resources, adjusting their projects' expectations and visions in the process. They also actively shared their knowledge with others, including other community organisations as well as intermediaries. In this sense, community leaders could become middle actors (Parag and Janda, 2014), and could utilise their positions in relation to the members of their communities and intermediaries to trigger change. While intermediary organisations can codify knowledge from niche projects (Geels and Deuten, 2006), codifying the personal qualities, drive, commitment and specific skills of community leaders like those at Hyde Farm and Lyndhurst could prove complex for intermediaries. In this sense, close co-operation with community leaders could aid intermediaries' translating work, especially in a field such as community energy in which projects are often localised and conditioned by specific contextual settings (Raven et al., 2008). While the case of Hyde Farm's community leader later becoming an intermediary could be a rather rare occurrence, it shows how actors can translate experiences from one community to another (Dahlander and Frederiksen, 2012) and how intermediaries themselves can benefit from practical experience 'in the field'.

The Hyde Farm and Lyndhurst cases show that the processes of voicing expectations, learning and networking were interlinked and did not take place in a linear fashion (see also Seyfang et al., 2014; White and Stirling, 2013). The process of nurturing grassroots innovations especially shows that local contextual settings and the ability to utilise tacit knowledge about those settings matter for grassroots innovations such as community energy, as resources are often based on volunteer effort and somewhat uncertain funding streams. The need for emotional stamina, social skills and confidence to keep going in challenging times (Seyfang et al., 2014) could be aided by dedicated community leadership which is embedded in key networks, operates in an open system and enables shared decision making (Onyx and Leonard, 2011).

Following on from the analysis, further research could be developed in relation to the potential role of community leadership as a middle actor (Parag and Janda, 2014) or an intermediary (see for example Bénéit-Gbaffou and Katsaura, 2014), especially within a sector such as community energy, also building on the work by Hargreaves et al. (2013). The role of community leadership within the development of grassroots innovations would also benefit from further conceptualisation and analysis in different empirical domains.

Acknowledgements

This article is based on research, which has been enabled through the Centre on Innovation and Energy Demand, funded by the RCUK's EUED Programme (grant number EP/KO11790/1), and a PhD study which was linked to 'Community Innovation for Sustainable Energy' project, supported by the UK's Engineering and Physical Sciences Research Council and European Centre

and Laboratories for Energy Efficiency Research (grant EP/H051139/1). These funding sources are gratefully acknowledged. Comments provided by Dr Tim Schwanen and Professor Benjamin Sovacool on earlier versions of this paper are greatly acknowledged.

References

- Austin, J., Stevenson, H., Wei-Skillern, J., 2006. Social and commercial entrepreneurship: same, different, or both? *Entrepreneurship Theory Practice* 30, 1–22.
- Béni-Gbaffou, C., Katsaura, O., 2014. Community leadership and the construction of political legitimacy: unpacking Bourdieu's 'Political capital' in post-apartheid Johannesburg. *Int. J. Urban Regional Res.* 38, 1807–1832.
- Bukoski, B.E., Lewis, T.C., Carpenter, B.W., Berry, M.S., Sanders, K.N., 2015. The complexities of realizing community: assistant principals as community leaders in persistently low-achieving schools. *Leadership Policy Schools* 14, 411–436.
- Cheuk, S., Lo, M.-C., Atang, A., 2015. Rural tourism destination performance in East Malaysia: influencing factors from the communities' perspective. *J. Sustain. Dev.* 8, 124–138.
- DECC, 2014. Community Energy Strategy: Full Report. Department of Energy & Climate Change. <https://www.gov.uk/government/publications/community-energy-strategy>. 27.01.2014. (accessed 29.05.15.).
- Dahlander, L., Frederiksen, L., 2012. The core and cosmopolitans: a relational view of innovation in user communities. *Organ. Sci.* 23, 988–1007.
- Darby, S., 2006. Social learning and public policy: lessons from an energy-conscious village. *Energy Policy* 34, 2929–2940.
- Douthwaite, B., Ashby, J., 2005. Innovation histories: A method for learning from experience, ILAC Brief 5, July 2005. The Institutional Learning and Change (ILAC).
- EST, undated. Green Communities case study: Hyde Farm Climate Action Network. Energy Saving Trust.
- Flyvbjerg, B., 2011. Case study. In: Denzin, N.K., Lincoln, Y.S. (Eds.), *The Sage Handbook of Qualitative Research*, 4th ed. SAGE Publications, Thousand Oaks, CA, pp. 301–316.
- Gómez, M.V., Kuronen, M., 2011. Comparing local strategies and practices: recollections from two qualitative cross-national research projects. *Qual. Res.* 11, 683–697.
- Gascogne, N., Thornton, T., 2013. Tacit Knowledge. Durham, Acumen.
- Geels, F.W., Deuten, J.J., 2006. Local and global dynamics in technological development: a socio-cognitive perspective on knowledge flows and lessons from reinforced concrete. *Sci. Public Policy* 33, 265–275.
- Geels, F.W., Raven, R.P.J.M., 2006. Non-linearity and expectations in niche-development trajectories: ups and downs in Dutch biogas development (1973–2003). *Technol. Anal. Strategic Manage.* 18, 375–392.
- Grimm, R., Fox, C., Baines, S., Albertson, K., 2013. Social innovation, an answer to contemporary societal challenges? Locating the concept in theory and practice. *Innov.: Eur. J. Social Sci. Res.* 26, 436–455.
- Gupta, R., Barnfield, L., Hipwood, T., 2014. Impacts of community-led energy retrofitting of owner-occupied dwellings. *Building Res. Inform.* 42, 446–461.
- Hakim, C., 2000. *Research Design. Successful Designs for Social and Economic Research*, second ed. Routledge, London.
- Hargreaves, T., Hielscher, S., Seyfang, G., Smith, A., 2013. Grassroots innovations in community energy: the role of intermediaries in niche development. *Global Environ. Change* 23, 868–880.
- Heiskanen, E., Jalas, M., Rinkinen, J., Tainio, P., 2015. The local community as a low-carbon lab: promises and perils. *Environ. Innov. Soc. Trans.* 14, 149–164.
- Hoppe, T., Graf, A., Warbroek, B., Lammers, I., Lepping, I., 2015. Local governments supporting local energy initiatives: lessons from the best practices of Saerbeck (Germany) and Lochem (The Netherlands). *Sustainability* 7, 1900–1931.
- Keene, A., 2000. Complexity theory: the changing role of leadership. *Ind. Commer. Train.* 32, 15–18.
- Lewis, J., Ritchie, J., 2012. Generalising from qualitative research. In: Ritchie, J., Lewis, J. (Eds.), *Qualitative Research Practice. A Guide for Social Science Students and Researchers*. SAGE Publications Ltd., London.
- Martiskainen, M., 2012a. Lyndhurst Community Centre: An Innovation History, October 2012. <https://grassrootsinnovations.files.wordpress.com/2012/10/lyndhurst-community-centre-innovation-history.pdf>. Report prepared by Mari Martiskainen on behalf of the Community Innovation for Sustainable Energy research team. [Accessed 23.05.16.].
- Martiskainen, M., 2012b. Hyde Farm Climate Action Network (CAN): An Innovation History. https://grassrootsinnovations.files.wordpress.com/2012/12/hyde-farm-innovation-history_final.pdf. Report prepared by Mari Martiskainen on behalf of the Community Innovation for Sustainable Energy research team. [Accessed 23.05.16.].
- Martiskainen, M., Nolden, C., 2015. 'Pro-savers': the role of community in energy demand reduction. In: *Keeping energy efficiency on the top of the agenda, eceee 2015 Summer Study on energy efficiency Proceedings*, Presqu'île de Giens, France, pp. 2039–2047.
- McMillan, D.W., Chavis, D.M., 1986. Sense of community: a definition and theory. *J. Community Psychol.* 14, 6–23 (Special Issue: Psychological Sense of Community, I: Theory and Concepts).
- Middlemiss, L., Parrish, B.D., 2010. Building capacity for low-carbon communities: the role of grassroots initiatives. *Energy Policy* 38, 7559–7566.
- NFNPA, 2010. New Forest National Park Authority, Sustainable Development Fund, Annual Report 2009–2010. New Forest National Park Authority (NFNPA).
- Ofgem, 2015. Non-traditional business models: Supporting transformative change in the energy market. Office of Gas and Electricity Markets, London. <https://www.ofgem.gov.uk/ofgem-publications/93586/non-traditionalbusinessmodelsdiscussionpaper-pdf> (accessed 01.08.15.).
- Onyx, J., Leonard, J.R., 2011. Complex systems leadership in emergent community projects. *Community Dev. J.* 46, 493–510.
- Ornetzeder, M., Rohrer, H., 2013. Of solar collectors, wind power, and car sharing: comparing and understanding successful cases of grassroots innovations. *Global Environ. Change* 23, 856–867.
- Parag, Y., Janda, K.B., 2014. More than filler: middle actors and socio-technical change in the energy system from the middle-out. *Energy Res. Social Sci.* 3, 102–112.
- Parkhill, K.A., Shirani, F., Butler, C., Henwood, K.L., Groves, C., Pidgeon, N.F., 2015. 'We are a community [but] that takes a certain amount of energy': exploring shared visions, social action, and resilience in place-based community-led energy initiatives. *Environ. Sci. Policy* 53 (Part A), 60–69.
- Plowman, D.A., Solansky, S., Beck, T.E., Baker, L., Kulkarni, M., Travis, D.V., 2007. The role of leadership in emergent, self-organization. *Leadership Q.* 18, 341–356.
- Raven, R.P.J.M., Geels, F.W., 2010. Socio-cognitive evolution in niche development: comparative analysis of biogas development in Denmark and the Netherlands (1973–2004). *Technovation* 30, 87–99.
- Raven, R.P.J.M., Heiskanen, E., Lovio, R., Hodson, M., Brohmann, B., 2008. The contribution of local experiments and negotiation processes to field-level learning in emerging (Niche) technologies. *Bull. Sci. Technol.* 28, 464–477.
- Raven, R.P.J.M., van den Bosch, S., Weterings, R., 2010. Transitions and strategic niche management: towards a competence kit for practitioners. *Int. J. Technol. Manage.* 51, 57–74.
- Rey-Martí, A., Ribeiro-Soriano, D., Palacios-Marqués, D., 2016. A bibliometric analysis of social entrepreneurship. *J. Bus. Res.* 69, 1651–1655.
- Riley, K., 2012. Walking the leadership tightrope: building community cohesiveness and social capital in schools in highly disadvantaged urban communities. *Br. Educ. Res. J.* 39, 1–21.
- Rogers, J.C., Simmons, E.A., Convery, I., Weatherall, A., 2012. What factors enable community leadership of renewable energy projects? Lessons from a woodfuel heating initiative. *Local Eco.* 27, 209–222.
- Rogers, E.M., 1995. *Diffusion of Innovations*, fifth ed. Free Press, New York.

- Saunders, R.W., Gross, R.J.K., Wade, J., 2012. Can premium tariffs for micro-generation and small scale renewable heat help the fuel poor, and if so, how? *Case studies of innovative finance for community energy schemes in the UK. Energy Policy* 42, 78–88.
- Schot, J., Geels, F.W., 2008. Strategic niche management and sustainable innovation journeys: theory findings, research agenda, and policy. *Technol. Anal. Strategic Manage.* 20, 537–554.
- Seyfang, G., Longhurst, N., 2013. Desperately seeking niches: grassroots innovations and niche development in the community currency field. *Global Environ. Change* 23, 881–891.
- Seyfang, G., Longhurst, N., 2015. What influences the diffusion of grassroots innovations for sustainability? Investigating community currency niches. *Technol. Anal. Strategic Manage.*, 1–23.
- Seyfang, G., Smith, A., 2007. Grassroots innovations for sustainable development: towards a new research and policy agenda. *Environ. Polit.* 16, 584–603.
- Seyfang, G., Park, J.J., Smith, A., 2013. A thousand flowers blooming? An examination of community energy in the UK. *Energy Policy* 61, 977–989.
- Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M., Smith, A., 2014. A grassroots sustainable energy niche? Reflections on community energy in the UK. *J. Environ. Innov. Soc. Trans.* 13, 21–44.
- Seyfang, G., 2007. Growing sustainable consumption communities: the case of local organic food networks. *Int. J. Sociol. Social Policy* 27, 120–134.
- Smith, A., Raven, R., 2012. What is protective space? Reconsidering niches in transitions to sustainability. *Res. Policy* 41, 1025–1036.
- Smith, A., Kern, F., Raven, R., Verhees, B., 2014. Spaces for sustainable innovation: solar photovoltaic electricity in the UK. *Technol. Forecasting Social Change* 81, 115–130.
- Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., Seyfang, G., 2016. Making the most of community energies: three perspectives on grassroots innovation. *Environ. Plann. A* 48, 407–432.
- Sovacool, B.K., 2014. What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda. *Energy Res. Social Sci.* 1, 1–29.
- Stewart, J., Hyysalo, S., 2008. Intermediaries, users and social learning in technological innovation. *Int. J. Innov. Manage.* 12, 295–325.
- Strachan, P., Cowell, R., Ellis, G., Sherry-Brennan, F., Toke, D., 2015. Promoting community renewable energy in a corporate energy world. *Sustain. Dev.* 23, 96–109.
- Sullivan, H., 2007. Interpreting 'community leadership' in English local government. *Policy Polit.* 35, 141–161.
- Trapence, G., Collins, C., Avrett, S., Carr, R., Sanchez, H., Ayala, G., Diouf, D., Beyrer, C., Baral, S.D., 2012. From personal survival to public health: community leadership by men who have sex with men in the response to HIV. *Lancet* 380, 400–410.
- Uhl-Bien, M., Marion, R., McKelvey, B., 2007. Complexity Leadership Theory: shifting leadership from the industrial age to the knowledge era. *Leadership Q.* 18, 298–318.
- Verhees, B., Raven, R., Kern, F., Smith, A., 2015. The role of policy in shielding, nurturing and enabling offshore wind in The Netherlands (1973–2013). *Renew. Sustain. Energy Rev.* 47, 816–829.
- Verheul, H., Vergragt, P.J., 1995. Social experiments in the development of environmental technology: a bottom-up perspective. *Technol. Anal. Strategic Manage.* 7, 315–326.
- Wagner, R.K., Sternberg, R.J., 1985. Practical intelligence in real-world pursuits: the role of tacit knowledge. *J. Pers. Soc. Psychol.* 49, 436–458.
- Walker, G., Devine-Wright, P., 2008. Community renewable energy: what should it mean? *Energy Policy* 36, 497–500.
- Walker, G., Devine-Wright, P., Hunter, S., High, H., Evans, B., 2010. Trust and community: exploring the meanings, contexts and dynamics of community renewable energy. *Energy Policy* 38, 2655–2663.
- Walker, G., 2008. What are the barriers and incentives for community-owned means of energy production and use? *Energy Policy* 36, 4401–4405.
- White, R., Stirling, A., 2013. Sustaining trajectories towards sustainability: dynamics and diversity in UK communal growing activities. *Global Environ. Change* 23, 838–846.
- Witkamp, M.J., Raven, R.P.J.M., Royakkers, L.M.M., 2011. Strategic niche management of social innovations: the case of social entrepreneurship. *Technol. Anal. Strategic Manage.* 23, 667–681.
- Yin, K.R., 2009. *Case Study Research, Design and Methods*, fourth ed. SAGE Publications, Thousand Oaks.
- Zanbar, L., Itzhaky, H., 2013. Community activists' competence: the contributing factors. *J. Community Psychol.* 41, 249–263.
- van der Schoor, T., Scholtens, B., 2015. Power to the people: local community initiatives and the transition to sustainable energy. *Renew. Sustain. Energy Rev.* 43, 666–675.