

Making the most of community energies: three perspectives on grassroots innovation

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Making the most of community energies: Three perspectives on grassroots innovation



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Abstract

Grassroots innovations for sustainability are attracting increasing policy attention. Drawing upon a wide range of empirical research into community energy in the UK, and taking recent support from national government as a case study, we apply three distinct analytical perspectives: strategic niche management, niche policy advocacy, and critical niches. Whilst the first and second perspectives appear to explain policy influence in grassroots innovation adequately, each also shuts out more transformational possibilities. We therefore argue that, if grassroots innovation is to realise its full potential, then we need to also pursue a third, critical niches perspective, and open up debate about more socially transformative pathways to sustainability.

Keywords

Grassroots innovation, community energy, strategic niche management, critical niches, energy transitions

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Introduction

Throughout the history of modern environmentalism, an insistent undercurrent of grassroots activism has experimented with practical proposals for sustainable development. In areas as wide ranging as renewable energy, agro-ecology, and eco-housing, grassroots initiative has played an important role in the development of sustainable practices (Smith, 2007). Demonstrations of grassroots innovation have been displayed at all the major conferences on sustainable development, from Stockholm in 1972 to Rio+20 in 2012 (Ely et al., 2013). There has also been periodic interest in grassroots activity whenever it impinges on the agendas of policy elites, whether through the creation of programmes and centres for appropriate technology under the auspices of the OECD and other bodies in the 1980s, to Local Agenda 21 agreements in the 1990s, to interest in inclusive innovation currently (Smith and Ely, 2015). Indeed, international policy under the latter has increased elite interest in the grassroots markedly in recent years (OECD, 2015; Smith and Ely, 2015; World Bank, 2012).

Much high-level policy interest is instrumental: grassroots innovation provides an engaging means towards the end of development as understood by policy-makers. Interest rests in scaling-up and rolling-out preferred models of interest to policy but derived from grassroots initiative. Whilst not all grassroots innovation is committed to principles of sustainable development, this article is interested in an area of activity that does, namely, the recent flourishing of community energy (CE) initiatives in the UK. We see this case as emblematic for other instances of policy engagement with grassroots innovation and study it accordingly in this article.

Elsewhere, we have defined grassroots innovations for sustainability to involve

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. In contrast to mainstream business greening, grassroots initiatives operate in civil society arenas and involve committed activists experimenting with social innovations as well as using greener technologies. (Seyfang and Smith, 2007; see also Gupta et al., 2003)

By 'business greening' we refer to ideas and practices under ecological modernisation, and which tend to respond to sustainable development through an emphasis of technology-based innovation centred in firms (Murphy, 2000). Ecological modernisation is not the only area of significant innovative activity for sustainability in society, and needs complementing with analysis of other areas, including grassroots innovation.

CE fits this definition of grassroots innovation. CE in the UK is an area of rapid growth in grassroots innovation, and where policy interest has recently increased. The UK is not alone. Experiences in Germany, Denmark, the US, and elsewhere all point to the possibilities for the grassroots to become of interest to policy-makers (Becker and Kunze, 2014; Hess, 2007; Jorgensen and Karnoe, 1995). What these globally distributed initiatives have in common, as with other areas of grassroots innovation, is commitment to place-specific, community involvement in both process and outcomes.

Policy interest in CE in the UK has reached a point where, on 27th January 2014, the Department of Energy and Climate Change (DECC) launched a national Community Energy Strategy. The Strategy signifies remarkable recognition of grassroots initiative in sustainable energy. DECC is accustomed to operating within energy 'regimes': the actors, networks, and institutions that understand energy as the commodity provision of gas and electricity; dominated by a regulated market of a handful of multinational utilities operating centralised energy systems; distributed to relatively passive energy consumers (cf. active

energy citizens); and where political preoccupation focuses on coaxing investment in energy security and decarbonisation of supplies (Foxon et al., 2010; Shackley and Green, 2007).

Whilst policy support for CE is welcome, it nevertheless attends to developments in particular ways and makes certain demands that are key to our analysis. Hence the DECC Strategy is central to how we approach our empirical material. Given this situation, we ask, *How is the grassroots influencing policy, and how is policy attention shaping the development of grassroots innovation?* As such, our research takes quite a different approach to existing research into CE in the UK that has tended to study developments at project scale: how projects develop, what consequences they have, and how they might spread. Analysis has yet to consider CE emerging as a collective actor, how it is becoming influential, and how it is changing as a result of policy and business attention. Given the DECC Strategy, as well as international policy attention towards grassroots innovation more generally, such analysis and theoretical development are timely.

It is our contention that current policy advances blunt the critical edge of both the practice and analysis of grassroots innovation. Taking the mobilisation of local experimentation in CE as our point of departure, our analysis draws upon ideas from the literature on niche sustainability developments within the context of prevailing socio-technical regimes (Hielscher et al., 2012; Hoogma et al., 2002). We extend analysis by exploring the possibility for a more critical perspective in niche development and provide evidence for the challenges and possibilities of this move in the case of CE in the UK. Our analysis consequently recovers critical potential in CE and suggests a new trajectory of analysis relevant for grassroots innovation more generally.

‘The following section, on theory, discusses the niche literature.’ An analytical framework is developed that proceeds through three distinct analytical perspectives: strategic niche management (SNM), niche policy advocacy, and critical niches. So far as we know, this paper is the first to bring this third perspective into niche analysis. The next section introduces CE in the UK and the DECC Strategy. Our methodology is presented in the fourth section, before analysis in the section titled, ‘Analysis: The development of CE in the UK’ section. ‘Discussion: Sharpening the critical edge in CE?’ section discusses how each perspective emphasises different relations between grassroots innovation and policy. The final section concludes by answering our research question and considering the prospects for more critical niche analysis.

Theory: Three perspectives on socio-technical niches

Innovations for sustainability, understood as novel product, process, or service socio-technical configurations attending to environmental and social goals, often perform poorly compared to the market criteria dominating incumbent regimes for services like energy. Incumbent regimes benefit from years of development and perform better, whether in terms of price, convenience, and alignments with infrastructure and prevailing institutions (Kemp and Rip, 2001). Viewed in this light, grassroots (and other) sustainability initiatives involve organisational forms, technology uses, skills, infrastructures, markets, and other institutional requirements maladapted and challenging to conventional regimes.

Research initially understood the development of sustainable innovation in strategic terms of providing niche protective spaces where practical development and growth render the innovation more compelling and competitive relative to the incumbent regime (Kemp et al., 1998). In recent years, this ‘strategic niche management’ perspective has been complemented by research emphasising the advocacy required to win policy support for niche development (Smith and Raven, 2012). In addition to this ‘niche policy advocacy’

perspective, we bring a third analytical perspective inspired by ideas for ‘critical making’ from design research (Ratto, 2011). Here, niche developments are not promoted solely in terms of instrumental solutions, nor convincing others such solutions matter, but rather in questioning regime conventions and debating the critical implications of sustainable energy understood very differently to the norms in those regimes. As such, our analytical framework consists in interpreting relations between policy and CE through three distinct perspectives.

SNM: Developing sustainability solutions

SNM analyses how experiments in sustainability improve the performance and spread of potentially transformative innovations through networking and social learning that reinforces positive expectations (Hoogma et al., 2002; Kemp et al., 1998; Schot and Geels, 2008). Niche growth proceeds through initiatives developing in a growing variety of locations, each informed by the demonstrated lessons and positive expectations arising from earlier initiatives, and including a wider variety of participants in niche networks. Intermediaries link activity and disseminate lessons through provision of an infrastructure of conferences, guidebooks, web platforms, business models, design, and service support (Hargreaves et al., 2013). The result is a process of standardisation and institutionalisation (including policy support, market creation, and infrastructure provision) around a more efficient and effective trajectory of innovation (see Figure 1; after Geels and Raven, 2006).

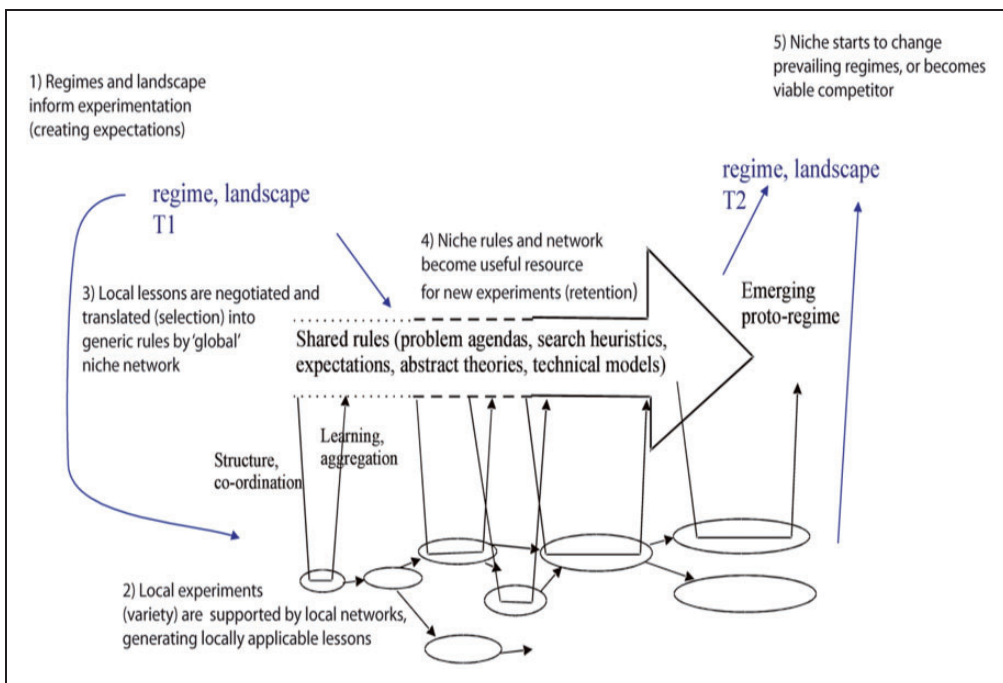


Figure 1. The strategic development of a niche through 'global level' intermediary activity (Geels and Raven, 2006).

SNM understands CE influence arising through the development of proven sustainability solutions. Niches are constituted by networks of local experimentation, facilitated and co-ordinated by an intermediary infrastructure of shared knowledge, guidance, and resource provision. Influence arises through workable knowledge taken up by an increasing number and variety of actors, which becomes increasingly standardised and institutionalised.

Critics claim the SNM view is limited and lacks political analysis and strategy (Meadowcroft, 2005; Shove and Walker, 2007). Criticism generally relates to unease over: (i) sustainable innovations seen as self-evidently desirable, and (ii) inattention to structural power shaping the terms of niche development (Smith and Stirling, 2007). In practice, 'second-order' lessons contending the framings and purposes of regimes and niches become eclipsed by technical, 'first-order' lessons that selectively appropriate promising niche innovations into incumbent regimes with little transformation (Smith and Kern, 2009).

Niche policy advocacy: Making sustainability solutions matter

More recent contributions have attended to the political dimensions of niche development (Smith and Raven, 2012). Smith et al. argue niche advocates have to do a considerable amount of political work to build supportive alliances for niche development (Smith et al., 2013b). Niche spaces have to be constructed through advocacy work that selectively represents niche socio-technical performance in narrative terms favourable to influential discourses in the wider social world. So rather than hoping for self-evident social learning about niche performance, there is knowledge politics and dispute over the interpretation and future significance of such performance, as well as arguments for mobilising support that will develop niches further. If successful, this advocacy work empowers niche actors by drawing in new participants, mobilising additional resources, and gaining wider social and political legitimacy as a voice that counts in reforms for sustainability.

A niche policy advocacy perspective sees influence arising through targeted lobbying that positions niche performance as something that matters for agendas prevailing in wider regimes. Explanatory emphasis builds on niche developments identified in SNM, but influence is attributed more to intermediary organisations mobilising evidence of improving performance and advocating in terms satisfying broader socio-political discourses. However, any commitments won for grassroots innovations in this way will bring agendas and criteria that shape future development possibilities.

However, the policy support and resources won through outward-oriented advocacy and discursive alignment contain conditions in their deployment. Particularly where support comes from organisations situated more powerfully in the wider regime, and who work to a different agenda, then conditional support can pull niche development towards that agenda and away from original aims (Clausen and Yoshinaka, 2007).

Critical niches: Unsettling and debating sustainability

Our third analytical perspective conceives of niche influence not so much in improvements to material solutions – the instrumental innovation of products, processes, or services – but rather in challenging prevailing discourses and shifting the terms of debate by generating critical knowledge (Smith et al., 2013a).

Here ideas from 'critical making' in design research become interesting for niche theory (Ratto, 2011). Critical making aims 'to use material forms of engagement with technologies to supplement and extend critical reflection and, in doing so, to reconnect our lived

experiences with technologies to social and conceptual critique' (Ratto, 2011: 253). Critique is understood in terms familiar to Critical Theory: a process that makes apparent the social structures dominating an issue, and suggests actions people might take to liberate themselves from such dominance (Feenberg, 2002).

So in contrast with preceding perspectives, which frame the principal influence of niches in terms of instrumental growth, critical making takes a more antagonistic stance towards policy, and sees influence in debates engendered by grassroots initiatives that are unsettling towards regimes, and, ideally, help mobilise a more transformational politics (Hertz, 2012; The Corner House, 2013). Practically oriented sustainability groups can be wary of being construed as political. Nevertheless, all grassroots developments soon encounter impediments arising from social structures inherent to regimes. Influence is seen arising through the shared discussion, awareness, reflection, and points of action towards these social structures. Consequently, even grassroots innovations that 'fail' to scale-up have value so long as they mobilise critical insight: how choices, trade-offs, and social as well as material activity is structured, and how these limited freedoms for manoeuvre might be overcome in future mobilisations of political agency beyond the niche. It is the spread of critical insight, and transformative politics, that becomes the indicator of success.

Summarising, we draw three distinct analytical perspectives from the niche literature: SNM (in which niche influence operates through self-evident improvements in the performance of an innovation), niche policy advocacy (where influence arises by aligning niche innovations with prevailing policy discourses), and critical niches (where influence changes the terms of debate and mobilises transformative action). Table 1 summarises the three perspectives by comparing them in niche terms of: (a) the roles played by local experiments, (b) the knowledge priorities involved, (c) the kinds of intermediation sought, and finally (d) presumptions about the nature of politics.

CE in the UK

CE projects involve a variety of sustainable energy practices, singularly or in combination. In the UK, these include relatively small-scale renewable energy projects – such as neighbourhood solar energy; projects dedicated to retrofitting energy efficiency measures – such as solid wall insulation in homes in a neighbourhood; activities aimed at supporting sustainable behaviour changes whether through publicity, support groups, or other means; and initiatives for the collective purchasing of sustainable energy. Organisationally, the groups driving this activity take a variety of forms, including formally constituted co-operatives, social enterprises, volunteer organisations, as well as informal associations of neighbours or interest groups (Seyfang et al., 2013a, 2013b).

Walker and Devine-Wright (2008) identify two distinctive dimensions to CE: the *outcomes* of a project – the extent to which significant benefits flow to the community hosting that project; and the *process* for developing the project – the form and depth of community involvement in design and implementation. Ideally, CE involves high community control over the process for the project and receives substantial benefits from project outcomes. In practice, ambiguity, ambivalence, and improvisation characterise use of the term 'community energy'. Some projects and policies are labelled CE when only the outcomes contain a community element: such as utility projects that provide energy insulation measures to local communities in return for hosting a wind farm. Other projects, such as the sustainable refurbishment of heating systems for community facilities, involve processes run entirely by and for the community (for an analysis of variety of CE in the UK see Seyfang et al., 2014).

Table 1. Three perspectives on sustainability niches.

Perspective	Local experiments	Knowledge priorities	Niche intermediation	Politics
<p><i>Strategic niche management</i> Attention focuses on the processes by which social learning, expectations, and networks enable novel socio-technical configurations to spread through practical improvements in performance</p>	<ul style="list-style-type: none"> • consist of novel socio-technical configurations • demonstrate performance • are instrumental • focus on technical work 	<ul style="list-style-type: none"> • objectifying socio-technical solutions • improving efficiency and competitiveness • focus on know how • outputs relate to technical performance 	<ul style="list-style-type: none"> • knowledge accumulators • disseminating best practice • developing toolkits • facilitating further experiments/projects • focus on standardising and institutionalising 	<ul style="list-style-type: none"> • evidence-based • singularly rational • objective
<p><i>Niche policy advocacy</i> Attention focuses on the discursive activities that are required to convince policy-makers that these are performances that matter and which deserve support</p>	<ul style="list-style-type: none"> • exemplify a narrative • mobilise arguments • speak to policy • focus on discursive work 	<ul style="list-style-type: none"> • use of evidence selectively to develop favourable narratives • improving argument and building legitimacy • outputs relate to policy priorities 	<ul style="list-style-type: none"> • outward-oriented advocacy • brokering relevance for policy discourses • empowering niche actors • facilitating policy dialogue • focus on policy reforms 	<ul style="list-style-type: none"> • pluralist • argumentative • pragmatic
<p><i>Critical niches</i> Argues the developments that really matter are those that challenge regimes and point to alternative, emancipatory possibilities regardless of elite policy agendas. Workable solutions are not the priority: rather material critique that unsettles and debates prevailing terms for societal issues</p>	<ul style="list-style-type: none"> • challenge norms and resisting object solutions • symbolise alternative values • reveal structural issues • focus on antagonistic work 	<ul style="list-style-type: none"> • critical awareness that reframes issues • social structures dominating an issue • changes required to transform structures • outputs relate to societal issues 	<ul style="list-style-type: none"> • facilitating critical reflection • challenging the terms of debate • revealing power and its operations • mobilising political programmes 	<ul style="list-style-type: none"> • structural • antagonistic • transformative

Definitional flexibility in the UK has permitted experimentation into different varieties of CE projects. DECC's Strategy adopts the looser and broader meaning under the Walker et al. scheme and expands it to include activities *led* by other local partners such as local authorities and utilities. A project can be defined (and supported) as CE if it has some outcome benefits and low process involvement, or vice versa, or both. On the basis of network databases and a commissioned survey, DECC estimates over 5000 CE initiatives already exist in the UK (Databuild Research & Solutions, 2013).

Amidst this diversity, CE in the UK has nevertheless moved away from isolated initiatives to more networked activities supported by dedicated intermediary organisations that share an increasingly coherent identity and discuss common pathways for development (Hargreaves et al., 2013). Table 2 provides an illustrative example of how intermediary activities related to CE in the UK have evolved over time.

Table 2. Intermediary activities and examples in the development of community energy in the UK.

Intermediary activity	Example organisations, networks, and platforms		
	First wave (1970s onwards)	Second wave (1990s onwards)	Third wave (2010 onwards)
<i>Technical advice</i>	Centre for Alternative Technology Alternative Technology Group	Community Renewables Initiative Severn & Wye Energy Agency Energy Savings Trust Centre for Sustainable Energy Thames Valley Energy Marches Energy Agency Building Research Establishment	Centre for Sustainable Energy Community Energy Scotland Marches Energy Agency Severn & Wye Energy Agency Environment Agency Energy Savings Trust
<i>Information exchange</i>	Network for Alternative Technology and Technology Assessment	Community Action for Energy Agencies funded under the Community Renewables Initiative, e.g. Severn & Wye	Low Carbon Communities Network Community Energy Scotland Community Energy England Climate Exchange Local United Communities and Climate Action Alliance Energy Share Project Dirt
<i>Policy advocacy</i>	Friends of the Earth	Friends of the Earth Nesta – Big Green Challenge Ashden Awards	Co-operatives UK Forum for the Future ResPublica Community Energy Scotland/England Community Energy Practitioners Forum

(continued)

Table 2. Continued.

Intermediary activity	Example organisations, networks, and platforms		
	First wave (1970s onwards)	Second wave (1990s onwards)	Third wave (2010 onwards)
<i>Policy support</i>		Department of Trade and Industry Department of Environment Food and Rural Affairs Regional Development Agencies Local authorities Clear Skies Photovoltaics Demonstration Programme	Scottish Government Department of Energy and Climate Change Local authorities Low Carbon Communities Programme Community Energy Strategy
<i>Business partnerships</i>			Good Energy EdF Energy British Gas Energy4All Scottish and Southern
<i>Professional services</i>			Pure Carbon Leapfrog Highlands and Islands Enterprise Community Powerdown Changeworks

DECC's Strategy builds on what it considers to be a wealth of real-world experimentation in CE projects in the UK. CE development has involved groups creating project opportunities out of uncertain contexts, exploiting resources and contacts to hand, and continually adapting to shifting circumstances. Research identifies what it typically takes to put a project in place, and how intermediaries have developed toolkits and guidance on how to replicate that activity (Seyfang et al., 2014).

So, for example, groups have to study technical information about different energy activities, constitute themselves as a legal entity, apply for grants, seek loans, raise money, think about insurance questions, permissions under planning and building regulations, marketing strategies, and so on; as well as the less technical, more emotional matters of sticking with a demanding project, having to work at maintaining commitment and good will (often voluntary) within the team in the face of setbacks; whilst simultaneously honing their negotiating skills with the various agencies and organisations that help provide all the elements that makes a project come together. The experience generates important social and technical know-how and which an increasing variety of CE intermediary organisations gather, support, and suggest how policy might be designed to help. Case studies and toolkits have become a popular means for codifying and sharing this knowledge. Figure 2 presents our analysis of 58 third-party case studies for the kinds of topic this knowledge focused upon. Most topics relate to practical matters of gaining community support, planning a project, and implementing it (Hargreaves et al., 2013). Wider policy and market issues account for only 5% of the lessons conveyed from case study projects, and as with other topics, these lessons were how to fit within the system, rather than challenge it.

The DECC Strategy gives an impulse to the development of CE based on co-ordinating, scaling-up, and rolling-out models that have worked particularly well for some groups.

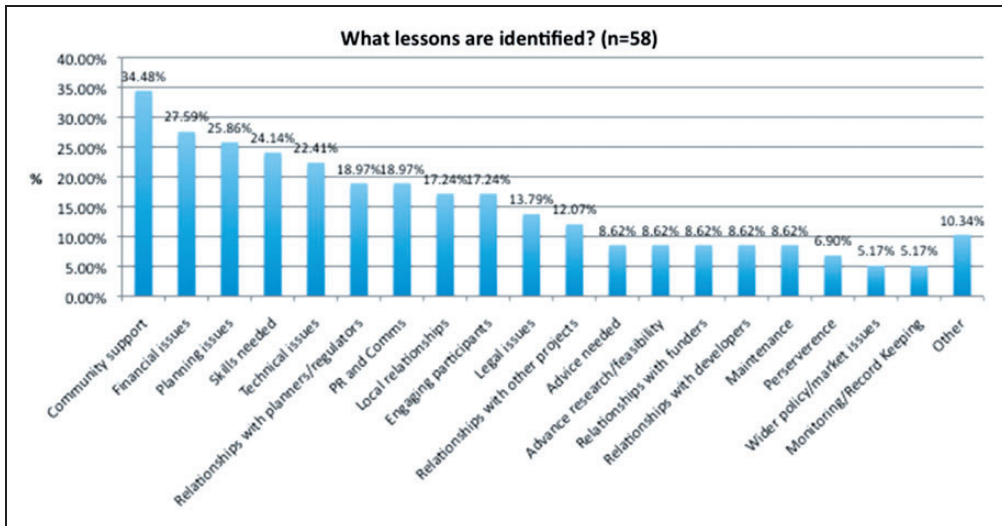


Figure 2. CE project development topics covered in third-party intermediary case studies (Hargreaves et al., 2013).

Prior to the Strategy, a series of policies going back to the early 1990s had provided limited opportunities for CE development. Support ranged from the provision of advice services under the Community Renewables Initiative for a short period in certain regions of England, to £10m worth of grants for 22 flagship CE pilot projects under the Low Carbon Communities Programme. There were also various general-purpose grant-funding programmes, such as Clear Skies, available for smaller scale energy supply and demand reduction measures that community groups could bid into (for a good account of this policy history see Walker et al., 2013).

Policy measures were often uncoordinated, poorly designed, hurriedly implemented, and truncated (Walker, 2008). CE groups have had to be very nimble, entrepreneurial, and resilient in seizing opportunities amidst a shifting policy landscape (Seyfang et al., 2014). Groups and intermediary organisations had repeatedly to overcome setbacks as specific measures closed. Under this equivocal and uncertain policy situation, a piecemeal development of CE projects and supportive infrastructure took place *in spite of* a coherent policy strategy rather than *because of* policy: the accumulation, codification, dissemination, and mobilisation of experience, guidance, and evidence that the DECC Strategy relies upon.

Introducing the Strategy, Secretary of State for Energy, Ed Davey, M.P. admitted that ‘for too long, community energy has been a policy footnote’ (Department of Energy and Climate Change, 2014: 3). He said the Strategy signalled ‘a step change for the sector’ unlocking ‘huge potential’ by providing help for ‘existing groups to grow and to inspire more to set up and expand’. DECC ‘want to enable communities and individuals to exercise real market power and add a further dimension to our wider energy market reforms’ (Department of Energy and Climate Change, 2014: 4). DECC envisages CE electricity supply projects reaching over one million homes by 2020 (Department of Energy and Climate Change, 2014).

The Strategy supports growing interest in partnering CE activity amongst energy utilities, investors, service professionals, non-governmental organisations, local authorities, and others in the UK. There are concrete measures: Ed Davey described the Strategy as

‘unapologetically practical’ and ‘ruthlessly pragmatic’ (Department of Energy and Climate Change, 2014: 3). The Strategy includes new money for CE groups, support networks, a dedicated unit within DECC, the promotion of partnerships with local authorities and utilities, and platforms for sharing information. Leading figures from CE were involved in the development of the Strategy, which was further informed by prior research and commissioned evidence, as well as a public consultation.

Seen from a longer term perspective, the concrete proposals in the DECC Strategy are an attempt to bring some strategic coherence to policy engagements with CE. In this respect, the desire to learn from existing successes, but also difficult barriers, and implement an improved support infrastructure for new groups and future projects appears analogous to analytical insights coming from SNM. As such, DECC is becoming a significant intermediary and joining a rapidly developing field of actors dedicated to CE development. However, analysis needs to also attend to what experiences are being omitted by policy and strategic development, and that can complement SNM insight with a more critical sensibility.

At the time of writing (June 2015), a new Conservative government has taken office in the UK. The new Secretary of State for Energy, Amber Rudd, has attended CE events in the past and has expressed support for the sector. Indeed, CE has received cross-party support. Hence, whilst the Strategy was developed under the Liberal Democrat leadership of Ed Davey as Secretary of State for Energy, it was Conservative MP Greg Barker who was most visibly enthusiastic about CE as Minister of State for Energy. Moreover, as noted above, policies like the Low Carbon Communities Programme under the Labour government helped in the development of the sector. Outside Parliament and government, think tanks of various political orientations have promoted CE, including ResPublica and Co-Operatives UK.

For the time being at least, the Strategy appears to remain in place, though as with other policy areas, the Conservative government’s austerity measures are likely to bring deep funding cuts to DECC. Beyond reductions in direct support, however, it should also be noted that other areas of government policy have and will galvanise CE activity. One example is the further promotion of fracking for shale gas by the new Conservative government and which, in sites of exploration like Balcombe, has prompted not just resistance, but the development of CE initiatives as an alternative. Historically too, community action on energy has been motivated as much by inattention by government as direct support from it. So as party political and government attention waxes and wanes, grassroots action will endure, as will the issues of concern to the analysis here.

Research methodology

Given our analytical approach, the unit of analysis is the CE ‘niche’. Our research used mixed methods to gather evidence of CE developments across the full variety of niche processes (Figure 1). We conducted an online survey of 190 groups asking questions about the development of their projects, as well as questions about the kinds of interaction and support they had with other community groups and CE intermediaries (for survey methodology see Seyfang et al., 2013b). In-depth interviews, open-ended were held with 25 key intermediary actors, ranging from advisors and advocates to policy-makers and utilities. The interviews were complemented by a content analysis of 113 third-party CE case studies. Our content analysis coded and analysed the kinds of lessons and expectations being promoted in the case study reports of third-party intermediaries (see Figure 2). We worked with 12 CE groups to develop in-depth case studies of their innovation histories. The case study groups (see Table 3) were selected as

Table 3. Community energy groups studied in depth (Seyfang et al., 2014).

Name	Description	Energy domain	Country/ setting	Started	Current status
Barley Bridge Weir Hydro Scheme	Cumbrian project to use a local weir for community owned hydro-electricity generation	Supply and demand	England Rural	2007	On hold
Brighton Energy Coop	Aims to run and finance renewable energy projects in Brighton and Hove. Recently established a cooperatively owned 145kWp solar PV project funded by public share issue	Supply and demand	England Urban	2010	Growing
Bristol Green Doors	A community interest company that promotes energy efficiency through retrofit measures on existing home. Organises open eco-homes events in Bristol	Demand	England Urban	2009	Growing
Carbon Conversations	Runs community-based programmes etc facilitated meetings in which participants discuss the practical and emotional challenges of low-carbon living and design strategies to reduce their carbon footprints	Demand	England Urban	2005	Growing
Glasgow Carbon Rationing Action Group	Members calculate their annual carbon emissions and self-impose rationing; reductions through efficiency improvements and behaviour change; penalties for not reaching reduction targets; support and advice in group context	Demand	Scotland Urban	2006	Continuing
Dyfi Solar Club	Sought to make solar water heating technology cheaper and more accessible to residents of the Dyfi valley and later across Powys more widely. Member of the National Network of Solar Clubs	Supply	Wales Rural	1999	Finished
Hyde Farm Climate Action Network	Raises awareness about energy consumption in the home. Draught-proofing measures, installation of loft insulation, and renewable energy generation to improve the energy efficiency of local housing stock	Demand	England Urban	2007	Growing

(continued)

Table 3. Continued.

Name	Description	Energy domain	Country/ setting	Started	Current status
Isle of Gigha Heritage Trust	Completed a community buy-out of their island in 2002 and as part of the regeneration programme installed three wind turbines and conducted various energy efficiency projects	Supply and demand	Scotland Rural	2006	Growing
Lyndhurst Community Centre	The first community centre in the New Forest to install a biomass heating system, creating opportunities for local wood fuel supply networks to develop	Supply and demand	England Rural	2001	Continuing
Reepham Green Team	An informal social network that aims to develop and deliver a wide range of projects to tackle issues of concern to the local community, e.g. school refurbishment and renewable energy generation	Supply and demand	England Urban	2002	Growing
South Wheatley Environmental Trust	Generating energy from their 15 kW wind turbine, selling it to the grid and investing the surplus in local household energy efficiency projects, renewable energy projects, and energy education at local schools	Supply and demand	England Rural	2003	Continuing
Student Switch Off	Behaviour change campaign that uses prizes and competition between student halls of residence to encourage students to undertake small energy-saving actions	Demand	UK-wide Urban	2005	Growing

presenting a wide diversity of CE initiative in terms of location, status of development, focus on energy supply, demand reduction, behaviour change, or mix. The selection logic was that maximising variation in this way would strengthen the generalisability of patterns observed across such diversity (Flyvbjerg, 2006). Participant observation in CE events, as well as our organisation of two stakeholder workshops enabled issues arising from our other methods to be explored further. We also observed policy developments first hand through our provision of advice to DECC in the form of policy seminars, meetings, and consultation responses.

The evidence gathered in this way was originally coded, organised, and interpreted for themes relevant to the first two niche perspectives (see Table 1). Specific aspects of this analysis have been published elsewhere: conceptualising CE as a niche, survey findings

about the characteristics and aims of CE, the roles of intermediaries in CE, and how specific CE projects interact within niches (Hargreaves et al., 2013; Park, 2012; Seyfang et al., 2013a, 2013b).

However, as research proceeded, we noticed discussion in the field was tending to bracket out more critical questions arising from CE development experience. We do not mean evidence about the difficulties of doing projects, of which there was plenty, and where SNM and policy advocacy perspectives helped. Rather, we mean critical debate about transforming energy regimes so that they become more open to some of the originating aims of community involvement and control, rather than CE becoming an adjunct to marginally reformed energy regimes. Critical issues cropped up in conversations with practitioners, yet neither our framework nor policy developments were exploring them in depth. Practitioners rarely persisted in these issues for fear that it would not help their cause in seeking policy support. This prompted us to develop the critical niches perspective and led to us going back through our empirical material to apply and test this new perspective.

Analysis: The development of CE in the UK

In this section, we consider the development of CE through each of our analytical perspectives.

The strategic niche management of CE

In consulting about its Strategy, DECC (2013) sought evidence about the benefits of CE in terms of: tailoring energy solutions to local needs; engaging people in energy issues; how CE brings local economic, social, and health benefits; and CE contributions to community cohesion and vitality. DECC also wanted to understand the barriers to developing more CE, whether through replication of initiatives, scaling-up, or hybrid forms of energy partnership with business, local government, or the third sector. Finally, DECC invited information about solutions for overcoming these barriers and growing the CE sector.

SNM analysis argues the Strategy has only become possible because a CE niche developed that offers practical and credible energy solutions. There is considerable evidence for the accumulation of practical knowledge and technical experience in CE over the years (Hargreaves et al., 2013). The facility with which CE initiatives can be developed, and their scope, has improved considerably. And as a result, CE does provide helpful solutions for policy-makers and utilities concerned about the challenges of sustainable energy.

The ‘ruthlessly pragmatic’ tone celebrated by the Secretary of State for Energy when launching DECC’s Strategy has been a hallmark of the practical attitude amongst CE groups. Initiatives have concentrated on the technical, organisational, and financial travails of making CE projects work. A growing number of intermediary organisations facilitate work between groups and provide support services for their projects (Hargreaves et al., 2013).

A key task of intermediary networking has been the collection and dissemination of practical knowledge about CE. Information has been gathered into a variety of online repositories about the different kinds of CE projects; how to do them; how they organise, operate, and perform. The benefits of CE as well as the challenges confronting its development are reported (Hargreaves et al., 2013). Conferences, events, newsletters, and online forums share and distribute these materials. Such knowledge has also been turned into handbooks, guidance, and toolkits for taking groups through the process of creating a

CE initiative. Mentoring programmes have been established. Web-based knowledge repositories pull together case studies and online tools like carbon footprint calculators. Other sites contain news bulletins, survey results on the development of the sector, and step-by-step toolkits that outline in detail particular project-related activities.

Intermediaries operate at different local, regional, and national scales. Some receive core funding to help administer public grants and programmes, some rely on funding from public agencies for specific projects to support CE, other intermediation works through more grassroots, voluntary associations between networks of CE groups. Dedicated investment funds have been established, access to legal advice, accounting services, and independent technical advice. The numbers of organisations offering services for CE have increased. In addition, staff in utility companies, Ofgem (the energy markets regulator), DECC, the Scottish government, Welsh Assembly, local authorities, and other bodies are increasingly engaging with CE.

More established CE groups have been scaling-up their activities and professionalising their operations, in some cases becoming an influential voice advocating for CE (Seyfang et al., 2013a). Partnerships are being forged with utilities. Such professionalisation and scaling, increasingly through social enterprise models, is seen as a promising avenue for developing CE. Combined with the toolkits, knowledge resources, and other niche infrastructure it is resulting in standard models for rolling out CE.

From this perspective, therefore, CE is considered influential through furnishing appropriable solutions for policy-makers to promote, utility companies to partner, and new social enterprises to undertake. The Strategy acknowledges and supports this activity. Amongst the first initiatives after the launch of the Strategy has been DECC sponsorship of a mentoring scheme between established and prospective CE groups. Other initiatives include creation of a Shared Ownership Task Force with representatives from the renewable energy industry and CE sector, as well energy regulator Ofgem developing policy in non-traditional business models.

All this activity provides evidence that supports an SNM perspective on recent developments. The DECC Strategy draws lessons from earlier CE experimentation, it supports further networking, and is articulating positive expectations for a growing CE sector. However, what this perspective overlooks is evidence for the activities that led to the current interest in strategically supporting CE. In successfully making their bids for funding and support, CE groups have always had to be adept at positioning and highlighting their projects in terms that spoke to wider policy and funder agendas. Historically, CE in the UK has involved groups reading between the lines of more general policies to identify hooks for CE to be presented as a promising solution (Seyfang et al., 2013a, 2013b). But how did CE itself become the policy agenda?

Niche policy advocacy for CE

Coalitions of groups advocating for CE have developed over time. Coalitions now include think tanks, utilities, investors, politicians, local authorities, housing associations, environmentalists, network operators, researchers, the co-operative movement, and others. Recognition in DECC's Strategy was won through the organisation of policy-oriented events, production of reports, and lobbying that argued the benefits of CE in terms relevant to a variety of shifting policy commitments in government. These commitments included some specific to energy, most notably promoting low carbon energy, energy demand reduction, and opening energy markets to smaller competitors; as well as more general policy commitments to civic governance and local economic regeneration.

As such, intermediary organisations, and now including the DECC Strategy, have had to undertake the political task of developing credible and compelling narratives about how well CE is performing in terms attractive to existing policy agendas and future policy aims. Moreover, the promise of CE becoming a trusted, grassroots conduit for government sustainability initiatives in energy efficiency (e.g. boosting up take of the Green Deal); or as social enterprises growing in competitive strength, appeals to DECC agendas for opening energy markets; just as reductions in energy demand and increases in renewables appeal to carbon emission obligations; or mobilising community support appealed to earlier Big Society and New Localism agendas when they were politically salient in government.

Since as far back as 2010, sympathetic civil servants at DECC have recommended CE develops a more coherent voice through the creation of representative bodies. Such bodies enable DECC and other agencies to communicate more easily with the sector. In large measure, this is what has happened. CE umbrella bodies have formed and advocated for CE policy. These bodies have responded to policy consultations on behalf of the sector, and leading figures have participated in the Community Energy Contact Group created by DECC to develop its Strategy. Similarly, CE representative bodies help other groups to engage with the CE sector, such as utilities when thinking about partnerships with trusted organisations, professionals offering technical services, and local authorities and others wanting to learn more about CE.

The niche policy advocacy perspective highlights how influence has been won by skilfully aligning CE performance with prevailing policy discourses, utility needs, and local authority interest. Advocates developed legitimacy by pointing to performance measures consistent with salient policy discourses, e.g. around rising energy bills, climate change, and energy security, and to which policy responded. However, this mutual accommodation reaches its limits over more challenging issues of opening markets, re-distributing investment, re-scaling infrastructure planning, and other changes that decentralise energy regimes. The response to DECC's Strategy across the CE community has been a mixture of gratitude for policy recognition but disappointment in the extent of its support. In responding to the Strategy, the Chief Executive of the Centre for Sustainable Energy (a leading national charity committed to sustainable energy) argued that decentralising institutional reforms 'will demand a far wider coalition of interests to push it forwards than was assembled to help secure these first few steps [in the DECC Strategy]' (Roberts, 2014). The critical question is how those coalescing interests will decentralise the energy regime and/or transform CE itself. Not everyone in the field wishes CE influence to be won through further scaling, professionalisation, and alignments with conventional energy policy discourses. Critical voices are concerned that CE developments are narrowing rather than improving community involvement, and making what involvement there is instrumental to energy policy, rather than transforming energy systems. As a result, space for debating energy alternatives and community development objectives diminishes. It is this evidence that becomes more apparent under the critical niches perspective.

Critical niches unsettling energy regimes?

The terms of the Secretary of State's commitment to CE in the UK are indicative of instrumentality in the Strategy, as well as elite interest in grassroots innovation more generally (Fressoli et al., 2014). The Strategy frames CE as something with potential for energy policy goals, rather than as having value in and of itself; CE needs to scale-up and become bigger, implying less interest in smaller initiatives; and CE has to exercise market power, because policy remains committed to a market-based understanding of

Table 4. Objectives of CE projects (Seyfang et al. 2013b).

Objectives of community energy projects	% of CE
Economic	96
Saving money on energy bills	83
Generating income for community	52
Tackling fuel poverty	47
Improving local economy	36
Skills development	31
Local job creation	27
Environmental	88
Reducing carbon dioxide emissions	80
Improving local environment	48
Social	73
Community well-being and health	43
Improving education	40
Social cohesion	39
Social inclusion	37
Creating volunteering opportunities	29
Political	73
Community empowerment	57
Influencing sustainability/energy policy	44
Community leadership	27
Infrastructural	68
Improving energy independence	60
Community building refurbishment	33
How well have you achieved objectives?	
Very well	22
Quite well	53
Neither well nor poorly	19
Quite poorly	5
Very poorly	2

energy in society. Not everyone sees CE in those terms. CE activists are not necessarily nor only developing sustainable energy solutions for problems of carbon emissions, demand reduction, and market competition. Whilst these goals are important to groups, and have provided a useful basis for advocacy, activists have other objectives also. Our survey of 190 CE groups identified political, social, economic, and infrastructure objectives that are either absent or secondary in both Strategy and intermediary toolkits (Table 4).

The reasons groups form around sustainable energy do not line up comprehensively with policy aims. Whilst overlaps make DECC Strategy possible, there are also differences that beg questions about the way the Strategy perceives community interest in energy and future pathways for sustainable energy. As a recent report from The Corner House, a research group committed to environment and social justice, argues:

They [local communities] are far from indifferent to technical issues – for example, how to learn about, develop, experiment with, install and pay for wind technology – but tend to understand the development of technology as entwined from the outset with issues of local democracy, local concerns, exploitation, and, often, local resistance to the energy projects that the state consistently seeks to justify on economic grounds. (The Corner House, 2013: 25)

Energy is not always the starting point in complex community projects, even if it becomes a focal activity. Projects may, for example, begin in community health with questions of access to fresh foods; move into questions of food waste, and explore possibilities for biogas schemes in the community. Any emerging energy project activity remains part of a wider vision and practical figuring out of what a vibrant sustainable community requires (Seyfang et al., 2013a, 2013b). In following this path, community groups find themselves working between regimes with authority over aspects of the community project – food, waste, planning, and finance. None of these has an individual remit or focal interest in the goal as framed by the community group. The critical point, borne of situated knowledge, is that CE within a broader social fabric is not served by current governance structures. Moreover, it is critical knowledge that could usefully inform deeper-seated reforms in governance.

In other cases, we found CE projects identifying limits to changing energy systems through voluntary action. Initiatives creating mutual support groups helping participants reduce personal energy demand and carbon emissions, for instance, found their ability to go beyond certain levels through individual action to be constrained by wider infrastructures for housing, mobility, energy, food, and water. The energy and carbon designed into these infrastructures provoked reflections on the systemic causes of energy demand and carbon emissions, and questions for policies that individualise responsibilities rather than mobilise collective responses (Hielscher, 2013). The critical point arises when confronting the limitations of (worthwhile) CE projects, and realising the significance of wider material and social structures affecting sustainability.

The overarching question, however, is how strategies for mobilising this critical knowledge into politics resisting incumbent regimes and their designs for the future. Discussions on critical issues were evident in events we attended, yet feature neither in the toolkits developed by intermediaries, nor in policy strategies (Seyfang et al., 2013a). Examples of absences included, what is meant by ‘community’ and questions of inclusion and exclusion in groups; the social justice of utilities enclosing local renewable resource commons; the technical narrowness of funding criteria and performance indicators (cf. any cultural significance in CE); or debate about the political economies responsible for energy-intensive infrastructures. These are difficult issues to raise for CE groups seeking official support, even if many initiatives are motivated by more transformational objectives (Murphy and Smith, 2013; Seyfang et al., 2014). This points to another critical insight, about the material basis of energy policy discourse.

Analysis commissioned by DECC prior to the Strategy, and drawing upon CE databases, did find CE projects to be distributed fairly evenly across the least to the most deprived areas of England (Scotland and Wales were not analysed). The urban–rural split was also quite even (Databuild Research & Solutions, 2013: 25–26). Encouraging as this is, it is unclear what the specific community processes and outcomes are for the 2627 projects that could be postcoded in this way. The continued use of a broad and flexible definition in the Strategy leaves open questions about the community development involved. Our research found policy towards CE makes a number of assumptions about the baseline interests and capacities that groups need in order to engage in the support offered. Eligibility includes presumptions about neighbours, say, meeting criteria as a legally constituted group, or being able to articulate aims according to the criteria and standards expected of good application writing, or being able to convene more powerful partners into a project and meet their expectations (Park, 2012).

CE projects in the UK, like those elsewhere (Radtke, 2014), tend to be led by committed people with high levels of formal education. Reaching out to people from a wider variety of class, ethnicity, and other demographic and socio-economic backgrounds, where requisite

capabilities are oriented to priorities other than sustainable energy, poses a challenge that goes right to the heart of economic and social issues in society (Johnson and Hall, 2014). Even small things, such as utility partners calling meetings during office hours, or holding them in London, far from many communities (as we found in our case studies), become discussion points about failing to appreciate community realities and insensitivity to the voluntarism and free labour involved.

Critical evidence should inform debate about the meanings, limitations, and expansion of community involvement in energy transitions, currently and in future. Community development insight could inform the forms of participation required, and whether they become even more difficult under policy engaging communities too instrumentally in the scaling-up of model energy partnerships (Eadson and Foden, 2014; Walker et al., 2010). It is striking how lightly the Strategy touches on questions of community development and social purpose. Whilst diffuse social benefits from CE projects are acknowledged in the Strategy, they are dismissed as difficult to quantify and attribute systematically and comparably, and so are not afforded the same consideration as financial, energy, and emissions monitoring.

Not all CE projects wish to scale-up and correct the failures of incumbent energy regimes. Community activism borne of frustration with energy regimes can be considered symptomatic of problems with centralised, corporate energy systems, and where institutional reforms to decentralise and democratise energy services would be welcomed. The critical niches perspective highlights experiences provoking debate about what energy is for in society and how citizens are involved (Shove and Walker, 2014).

Discussion: Sharpening the critical edge in CE?

CE development in the UK has arisen through committed groups of people experimenting practically with different sustainable energy configurations. In doing their projects, groups express a range of aims, not all of them related to policy discourses. As CE aspirations struggle to take a material form, so the adequacy with which motivating social issues are addressed will become a topic of debate. Our analytical framework makes points of contention apparent through each perspective identifying differently with CE projects, the knowledge priorities involved, the roles of intermediation, and the kinds of politics implied. Table 5 summarises that analysis.

Local experiments

Under SNM, CE projects are understood to demonstrate the practical viability of community forms of energy. The emphasis is on working projects providing energy benefits. Projects bring together technical, organisational, administrative, and financial elements into a working configuration. Projects learn from one another and improve performance over time. Public policy drew selectively from years of experience configuring CE in the UK. However, policy interest in CE is not automatic. It arises through lobbying and niche policy advocacy. Advocates emphasise evidence that aligns with salient policy discourses and which, over time, lead to policies whose expectations shape further prospects. What gets overlooked is the critical implications of CE projects for wider energy regimes and even institutions in society and economy. The critical niches perspective understands CE projects as provoking debate about these social and economic issues, such as the decentralisation and democratisation of energy regimes, or inequalities that affect participation in community projects.

Table 5. Niche analysis of community energy in the UK.

Perspective	Local experiments	Knowledge priorities	Niche intermediation	Politics
<i>Strategic niche management</i>	A variety of CE projects have spread throughout the UK: demonstrating practical viability. Some projects scale-up their activities. Technical, organisational, and financial evidence are gathered. Models develop. New groups are expected to replicate earlier groups.	Technical, legal, financial, planning, organisation, and other practical knowledge is prioritised. Case studies have been gathered and toolkits developed. Some preferred models for CE social enterprise are emerging and a portfolio of appropriate CE energy solutions has developed.	Intermediaries consist of specialist advisors, investors, supportive platforms, and various networks. Organisations offering specialised professional services are emerging, as are partnerships with utilities and local authorities. The overarching aim is to scale-up.	DECC strategy indicates a coming of age of the CE sector in the UK. Strategy drew practical evidence from CE projects. There is a pragmatic tone amongst groups, and who seek to get on with growth in CE. CE will flourish by becoming more enterprising.
<i>Niche policy advocacy</i>	Intermediary organisations collect evidence from local projects for key policy issues: emissions reduction, energy supply/demand, and economic benefits. Partnerships with energy utilities and local authorities are being explored. Projects following policy move from grant-funded to revenue-based models.	Emissions, energy, economic, and participation knowledge that aligns with a variety of salient policy goals, including climate change, energy security, empowering energy users, and introducing competition. Knowledge that underpins the credibility of compelling narratives and promoted using real-life success stories from CE.	Organisations and networks that speak for CE have been established. Spokespeople liaise with DECC and other policy agencies. Similarly in regional assemblies and Scottish government. Policy forums have been established. Intermediaries have to be nimble and skilful in presenting CE as solution to elite concerns.	Policy for CE has developed as an adjunct without disrupting the main thrust of energy policy. CE-relevant policies are more coordinated now. Recognition in the CE sector that further policy reforms more central to energy sector are required. Winning this argument will require a broader coalition.
<i>Critical niches</i>	CE projects encounter structural impediments that shape their development. Critical issues do arise, about terms such as community, ownership, resource access, and local development. However, policy developments do not see local projects in this way.	Critical experience is generated but rarely formulated into targeted knowledge. Groups discuss inequities, representation, and participation in CE and energy regime. Making an issue of this is seen as unhelpful for winning policy support. Some independent research does generate such knowledge.	Little mobilisation exists that feeds critical insights into a broader programme of change. Networks and platforms for debating what energy is for in society remain marginal. Community development workers and social justice activists remain largely absent from CE.	Any political discussion amongst CE groups is kept backstage and muted publicly. An antagonistic politics for CE in relation to energy regimes is possible but not pushed. Instead, CE intermediaries negotiate a tricky policy insider–outsider position.
<i>Unsettling and debating regime conventions</i>				

Knowledge priorities

Knowledge about CE is different under each perspective. SNM focuses upon the codification and dissemination of practical knowledge relevant to the doing of CE projects: technical, legal, financial, organisational, and motivational knowledge. The niche policy advocacy perspective emphasises two forms of knowledge relating to insights arising from SNM. First is knowledge about the energy, environment, or social performance of CE projects. Second is knowledge about tractable barriers to the successful development of more CE projects. For both, political skill is required in using evidence persuasively for policy. What tends to get left out in these processes, and which the critical niches perspective emphasises, is the knowledge generated about more challenging issues, such as ambiguities about the form and depth of community involvement in CE, or the structural impediments to radically transformed energy regimes, or the way that policy attention prioritises certain performance criteria over others.

Niche intermediation

Under SNM, intermediaries gather knowledge and provide services that make it easier for other groups to develop CE projects. Case studies, toolkits, and advisory services are popular forms of intermediation. With niche policy, advocacy intermediaries create networks and advocacy groups whose target audience is policy. Events are organised, lobbying undertaken, representative voices articulated. Case studies demonstrate the benefits of CE for policy agendas, and insight into CE is presented in ways that call for reasonable support or help. Whilst policy advocacy and SNM intermediation overlap, the former requires the mobilisation of additional actors, such as think tanks, utilities, and, as we see with the Strategy, brings supportive government actors in too. Each brings agendas to the common ground that needs to be advanced. The power relations in play, and compromises that are struck, become evident; something that intermediation for critical niches makes more apparent. Critical intermediation is the least developed in terms of an infrastructure of organisations, networks, activities, and materials that challenge the deeper structures underpinning energy regimes and that CE projects reveal. The actors, activities, and audiences are different: organisations that convene spaces for critically constructive deliberation; activities that support reflection on challenging issues and capable of imagining energy and society differently; and audiences amenable to critical insight and mobilisation (Light, 2014; Smith and Seyfang, 2013; Wilkie et al., 2014).

Politics

SNM presumes a singularly rational form of politics: every one learns the same, self-evident lessons. Consensus exists over the sustainable energy problem framing, which is that CE is beneficial, and policy will develop on the basis of evidence about the way to do CE better. Politics under niche policy advocacy takes a pluralistic approach in arguing why CE matters to policy-makers. CE analysed from this perspective identifies the work necessary to convince policy-makers that CE relates to their agendas. Arguments advance by drawing upon evidence from practical CE experience. Reforms can be pushed pragmatically; they should not depart radically from what prevailing regimes deem reasonable. Critical niches, in contrast, see reason in demanding the impossible. That is, they point to limitations under current policy discourse and seek to mobilise for something more transformative. The critical niches perspective sees politics in much more antagonistic terms. It insists upon issues side-lined by the power relations in CE niche advocacy and the exigencies of

strategic development. CE projects that are a poor fit or unworkable under current energy regimes can orchestrate debate about restructured energy regimes under which the same projects are very sensible.

Our analysis has found that much visible CE activity in recent years can be explained through the SNM and policy advocacy perspectives. They are perspectives that complement one another. However, as advocates seek to widen and deepen their coalitions, they will find themselves in a dilemma: whether a CE niche will exercise more influence by following a strategy of policy advocacy in relation to the energy regime or by seeking more fundamental changes by pursuing more critical approaches. Even if CE has developed in spite of policy, it has taken a form recently that speaks closely to policy expectations. The voices for CE that have been heard are those presented in terms of scaling-up through professionalisation and partnership, or scaling-out through provision of models for replication by new social enterprises – a process reinforced by the Strategy.

Welcome as these developments are, and won only after considerable effort and skill on the part of advocates, our analysis nevertheless makes clear why a critical niches perspective needs to also develop – precisely because advocacy and strategic action are proving successful. Under the critical view, the CE sector must seek alliances capable of complementing a flexible and sensitive portfolio of CE support with measures to restructure energy regimes in radically decentralised forms. A critical perspective leads to different kinds of advocacy and strategic development. It recognises community development processes as essential: such as the face-to-face activity, diverse and tacit forms of knowledge, expertise in local experience and history, solidarity through struggling to bring together the materials required to realise projects, managing conflicts, debating the purposes of energy projects, and ownership of issues and resources, as well as other understandings and capabilities generated in challenging projects (Abramsky, 2010).

Seen in this way, our three perspectives exist in dynamic relations with one another. At times, these relations can be constructive, such as the gradual ability of CE to seek reforms in energy policy thanks to the build-up of a practical track record. At other times, the relationships are uneasy. CE has to skilfully work across criticism, advocacy, and demonstration. Critical issues have to be introduced and presented carefully as points for further policy advocacy, e.g. pursuing more palatable themes like social inclusion in energy, cf. social ownership of energy. Intermediary organisations are adept at pushing policy-makers each time for a bit more, whilst at the same time remaining reliable carriers of solutions for current policy.

Ultimately, a critical niches perspective refuses to side-step profound issues arising from practical CE projects that are unpalatable to regimes. It is a difficult position to maintain, since responses to critical insights can appear unrealistic in the short term, or even be taken as failures in CE, and thereby harm its credibility, when really these are issues that challenge the inability of energy regimes to support democratic involvement in energy transitions. A critical niches perspective looks to CE initiatives as embodying a material critique of energy regimes that calls for alternative discourses about energy in society. Yet, whilst critical niche analysis can bring deeper issues to the surface, it remains unclear just how this insight will subsequently mobilise material influence. Arguably, project-oriented CE initiatives have limitations in terms of lacking the organisational and economic resources to drive through the implementation of critical insights. One should not be naïve over the facility with which participant re-conceptualisations can be carried through into public discourse and everyday practices. Moreover, CE has weak institutional links to the kind of structural changes required for deeper-seated transformations (Hillgren et al., 2011).

Practitioners and intermediaries are aware of critical issues. However, they also rely on opportunities provided by energy regimes: funding mechanisms effectively frame and shape CE initiatives. This raises important methodological implications. Had we limited research to a single perspective and method, such as a survey of SNM processes, we would not have picked up the more guarded critical voices. Working between perspectives with multiple methods meant, for example, that critical issues identified during participant observation at an event, could be pursued in one of our workshops, and become a question in interviews. Multiple methods enabled us to return to developments through different analytical perspectives and, especially for critical niches, notice evidence marginal in many toolkits and intermediary support, and absent in the DECC Strategy.

Conclusions

Our question was: *How is the grassroots influencing policy, and how is policy attention shaping the development of grassroots innovation?* In seeking answers we drew upon ideas from the niche development research literature, and considered the evidence through three analytical perspectives. Each perspective has shed some light onto the different processes and forms through which CE has been influential. Analysing the evidence through our frameworks, we find CE has attracted policy attention through the development of workable solutions that have been shown to matter for prevailing energy policy discourses. The basis of this attention was explained best through the SNM and policy advocacy perspectives.

As CE develops along a trajectory that allows it to win influence from policy-makers and energy utilities, so it takes on more professionalised, micro-utility, and energy service forms. As CE changes further through partnerships, hybrid models, and attempts to scale (Strachan et al., 2015), it becomes important not to lose sight of what CE has done well and does differently, such as explorations of alternative values for developing energy in society and working on issues of community development. A critical niches perspective helps keep in view the more challenging pathways for sustainable energy transformations.

Curiously, the critical niches perspective links back to some original features in SNM. SNM was conceived as convening space for experimentation that valued different cognitive frames and conceptual assumptions, and some of the more critical implications of niches for prevailing institutions. Application of SNM since then, however, has tended to emphasise the more pragmatic, technical lessons about how to make sustainable innovations fit into and better conform with prevailing regimes (Raven et al., 2015). Calls for radical rethinking will always struggle when criticising the social structures reproducing vested economic interests, positions of political authority, cultural privileges, social norms, technological designs, and research agendas.

Nevertheless, retaining a critical edge is vital. In the case of CE in the UK, this means not solely focussing instrumentally on drivers and barriers to the evolution of the sector into micro-utility form, nor how CE initiatives might gain influence through closer alignment with the particular political imperatives dominating the moment. Rather, research needs to open up discussions about how CE initiatives embody new ways of thinking about and acting upon energy questions. CE practitioners might be understandably wary, and policy-makers institutionally uneasy, about such critical approaches. Nonetheless, our analysis suggests that making the most of community energies demands an agenda that looks beyond instrumental imperatives and explores how socio-political programmes can develop that are more transformational than those currently prevailing in energy regimes.

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