Powering Social Innovation through Community Energy Initiatives?

Towards a Conceptual Framework

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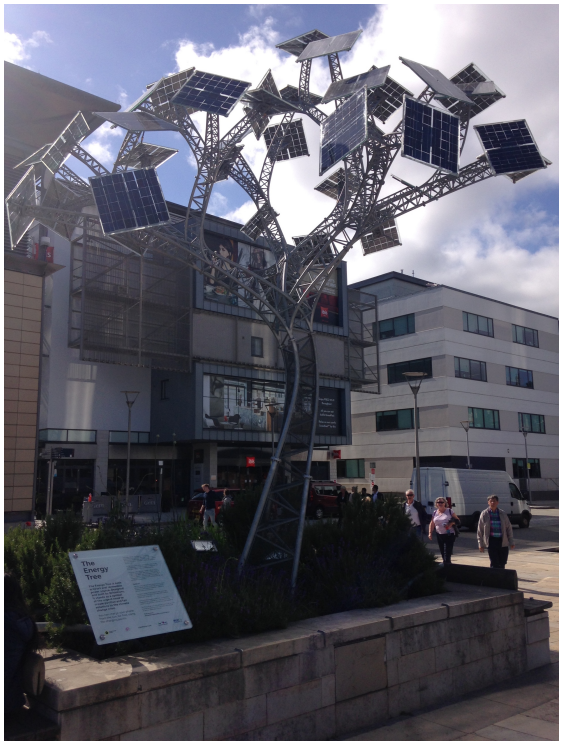

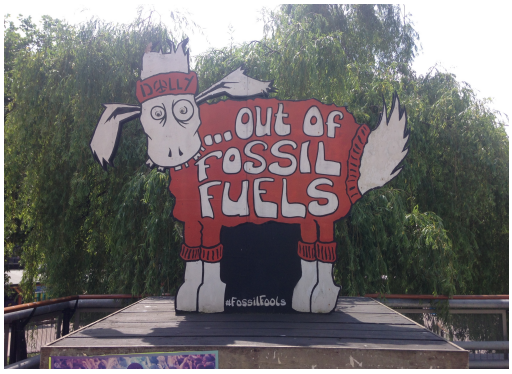

Submitted September 1, 2018 to Josh Grigsby (first reader)
and Prof. David Bassens (second reader)

Abstract

This thesis applies an inductive research approach for studying how community energy initiatives can support social innovation in local energy transitions. A combination of grounded theory and case-study methods are applied through an examination of the community energy sector in Bristol, United Kingdom. This methodology leads to an iterative and emergent analysis grounded in the experiences of various community energy initiatives in the city. The culmination of this analysis is a conceptual framework that captures dynamics of social change surrounding and realised by these initiatives. The framework offers a visual tool that reinforces an understanding of social innovation as involving more than just *outcomes*. A more holistic view is provided that considers these outcomes as the end point of *process(es)* in a particular *situation*. Power relations within local energy governance are brought to light through the framework, drawing attention to the effects of both agency and structure in determining community actors' capacity to foster a more inclusive energy transition. By *integrating* fragmented efforts and *contesting* local Council's approaches to energy planning, community energy initiatives are able to empower otherwise marginalised groups. Yet, these initiatives are also shown to be hampered by the *containing* actions of Council, who are subjected to powerful institutional forces with roots at higher scales. In highlighting these various dynamics, there is potential for this framework to be integrated or tested against existing models related to social innovation and/or energy transitions; it also hopes to inform the strategies of community energy initiatives whose visions of change might not align with those of local state bodies.

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Thank you…

To my loved ones: For affording me the physical and mental space needed to complete this work, but being *there* when I needed you.

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To my classmates: For an unforgettable two years.

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Chapter 1: Introduction

> "Communities are often more effective in reaching the vulnerable in society and may be more trusted by sceptical consumers. They are better placed to maximise the benefits of certain renewable technologies, such as district heat networks, and can gain wider benefits such as local economic regeneration and a stronger sense of community."
>
> *Edward Davey, former UK Secretary of State for Energy and Climate Change (2014)*
>
> "As it stands there is nothing stopping a well-resourced, well-meaning middle class, in areas with healthy municipal finances, from capturing much of the value offered by community energy schemes."
>
> *Johnson and Hall (2014)*

Community energy is a polarising subject in the UK. While community energy schemes are touted as empowering communities through greater local control, they are simultaneously critiqued due to concerns over inequity. As the opening two quotes suggest, government intentions have not necessarily translated into reality. But why is that?

While the thought of energy transitions conjures up images of solar panels, wind turbines, electric cars, and various other clean technologies, such elements are just one part of the story. Energy infrastructures are socially produced, and therefore are intertwined with numerous social processes. Hence why energy systems are considered socio-technical systems, involving interactions between political, social, cultural, and technological elements (Rutherford and Coutard, 2014). Despite such recognition, a troubling trend exists within policy and planning circles: the meaning and consequences of energy system changes across different sections of society are either poorly understood or overlooked (Miller et al., 2013). This includes how policies around clean technologies and community energy might reshape social practices at a local level to create or reinforce unequal distributions of power and wealth (Ibid., pg. 136). Given critiques of top-down community energy schemes perpetuating inequity and exclusion (Johnson and Hall, 2014; Middlemiss and Parrish, 2010), one can question the thinking behind these schemes.

At the same time, however, community energy is not solely a top-down phenomenon. Community energy projects and initiatives are grounded in localities and rely on the resource and motivation of civil-society actors. The UK is replete with grassroots energy developments (Seyfang et al., 2014), and although many of these rely on government support schemes, they develop their own platforms for contributing to local sustainability. Their visions often target deeper changes to social relations, sometimes alongside technological adoptions, making them challengers of mainstream logics embraced by government. As such, these initiatives develop

a politics of community energy and broader energy transitions based on demands for collective decision making and more equitable distributions of energy's costs and benefits (Becker and Kunze, 2014). Such politics are the crux of this research.

This project evaluates the role that community-led energy initiatives play in the governance of local energy transitions. Specifically, it examines how community energy initiatives originating within civil-society can contribute to *social* rather than technological innovation. Although a comprehensive definition of social innovation will be provided later on, in broad terms, social innovation is conceived as changes to social practices that enhance social justice. The goal of the project is to support a conceptualisation of social innovation processes in local energy systems using an inductive research approach. A methodology based on grounded theory methods and case-study analysis is applied to examine the experiences of community energy initiatives in Bristol, United Kingdom. In following grounded methods, an emergent analysis draws on theoretical perspectives from several disciplines and compares them with data from Bristol in order to produce a final conceptual framework. The main research output is a visual tool that illustrates the dynamics of social innovation within Bristol's energy system, coupled with additional situational insights. These elements help demonstrate how the potential of community energy initiatives to enact social change is mediated through power relations defined by a context-specific dualism of social structures and agency.

Thesis Structure

This thesis takes on a unconventional form due to its inductive, grounded-theory-based approach. In deductive research studies, the author's starting point is developing a hypothesis based on existing theory and then building a research strategy for testing that hypothesis. By contrast, inductive research aimed at theory-building should begin "as close to possible to the ideal of no theory under consideration and no hypothesis to test." (Eisenhardt, 1989, pg. 536). The rationale behind this stance is that the researcher should move into the field of research with an open mind so as to not stifle the emergent nature of theory building. As part of this effort, the researcher must also avoid getting locked into a narrow frame for evaluating the phenomenon under study. This starts at the project's outset with the development of a research question that is broad enough to allow for the exploration of numerous possibilities, while understanding that this question may be refined or changed as the study progresses (Birks and Mills, 2015; Bryant and Charmaz, 2011; Charmaz, 2008).

The above advice for conducting inductive research has had a few significant bearings on this project. First, the research question is deliberately broad to allow for the exploration of various social processes surrounding community energy. Second, existing literature has been purposefully been incorporated into this paper in an iterative fashion, and a substantial initial literature review will be noticeably absent to readers. The role of existing theories in studies using grounded theory methods is a contested matter, with some authors advocated a complete avoidance of literature prior to fieldwork (Glaser and Holton, 2004), and others suggesting that literature is needed for orientation and to provide sensitising concepts that support theory building (Clarke, 2005). As will be revealed in the section on methodology, such debates rest on philosophical

positions that have resulted in different iterations of grounded theory methods. With this project guided by a constructivist paradigm, I use a concise literature review at the project's outset to provide a general overview of relevant developments and concepts pertaining to community energy and social innovation. Existing theories are then incorporated into the emergent analysis and the final section positions the study's findings in the context of relevant, ongoing theoretical debates. Finally, because data collection and analysis occur concurrently under the grounded theory approach, this presents some challenges for organising research findings and their interpretation. As such, both are included under a Findings and Results section, which is written in manner so as to show how core theoretical concepts emerged from data.

With these considerations in mind, the structure of this paper is based on distinct chapters. This introductory chapter concludes with the study's research problem and question. Chapter 2 offers a short literature review that will contextualise the relevance of this research. This is followed by Chapter 3, which is devoted to methodology and explains the chosen research methods and how they have been employed. Chapter 4 traces the findings and analysis that emerged using grounded theory methods and introduces the conceptual framework (theory) constructed from these findings. The concluding chapter highlights broader situational considerations that may be influencing governance processes in Bristol, adding clarity to certain elements in the framework and helping answer the research question. Finally, theoretical constructs are positioned within existing debates around community energy and social innovation; some project limitations are identified; and the paper closes with a brief summary of research outputs.

Problem Statement & Research Question

Bottom-up community energy initiatives are heterogenous in form and purpose. Some seek diffusion of sustainable technology within their surrounding locality; others treat energy transitions as an opportunity to reach marginalised social groups and build a more just energy system. Typologies aside, community energy initiatives are situated within an elaborate system of governance defined by uneven power relations. They must navigate a terrain of established energy system interests and governance practices to realise their goals, often relying upon the support of government to do so. Whether they receive that support depends on a degree of alignment between their goals and those of the state. Initiatives that strive to disrupt existing social relations by challenging these are subject to various forms of resistance from the prevailing "regime" (Geels, 2014) that can stifle their progress or dilute their potential. Yet overcoming this resistance to cement social practices that equalise access to energy decision-making processes and distributions is not impossible.

To address the problem outlined above, this project centres on the following research question:
How can community energy initiatives support social innovation in local energy transitions?

Chapter 2: Literature Review

This literature review unpacks this project's research question to discuss existing work in the areas of community energy and social innovation. More importantly, it illuminates the intersection between these two distinct areas of study.

So, what is the connection between community energy and social innovation? An appropriate starting point for this explanation lies in the definition of energy itself: the ability to do work (Huber, 2009, pg. 106). Energy has been considered as a "basic factor" of modern society, similar to water or air, thereby structuring the social, temporal and spatial organisation of societies and life itself (Urry and Tyfield, 2014). As such, Huber (2009) views energy not as a thing or resource, but as a social relation enmeshed in dense networks of power and socio-ecological change. Particular energy systems are therefore intertwined with specific social relations and power structures. Take fossil fuels for example. Processes of rapid urbanisation and economic growth that characterise modern capitalism have relied on the material possibilities brought about through cheap fossil fuels (Urry and Tyfield, 2014). Under this fossil-fuel-based energy system, social practices have come to rely on intensive energy usage, with social relations increasingly defined by uneven access to and control over these resources.

It is no secret that existing carbon-intensive energy systems are in a state of crisis, propelled by concerns related to finite supply, climate change, and social justice. Regarding the latter, social movements have brought attention to how the global economy's insatiable thirst for fossil fuels has supported wealth generation for select groups, while the rest of the world is left dealing with the deleterious effects of a changing climate and social inequality (Fuller and McCauley, 2016). The task of addressing this socio-environmental crisis has been described as a "super wicked problem," (Levin et al., 2012, pg. 123) because energy is, among all policy fields exhibiting global externalities, the most complex, path dependent, and embedded one (Goldthau and Sovacool, 2012, pg. 232). Yet there are many signs that transitions away from fossil-fuels are taking place, and these are occurring at various scales through multiple forms of action.

Burgeoning grassroots initiatives have developed in order to support low-carbon living and bring energy systems under local control. Numerous authors have documented the emergence of civil-society innovations in sustainable energy, which promote socio-technical alternatives that harness new energy technologies, energy behaviours and governance models (Becker and Kunze, 2014; Pesch et al., 2018; Seyfang and Haxeltine, 2012). Together the cases in this body of work demonstrate how individual households and communities are no longer just passive consumers of energy but are increasingly becoming active participants in shaping new energy futures based on principles of democracy. 'Energy democracy' is a term that has been used to describe a growing social movement aimed at shifting the power structures of energy systems away from privatisation and corporate control (Burke and Stephens, 2017, pg. 38). Under this vision, energy system restructuring results in community empowerment and a capacity to control these systems through ownership of energy resources and infrastructures, as well as public involvement in energy planning decisions (Ibid.). Denmark's wind cooperative model and re-municipalisations of power grids in Germany have been held up as examples of how energy

democracy is being put into practice, hinging on the efforts of civil-society and state support (Cumbers, 2012).

Amidst this growing wave of grassroots activism and initiatives, government policy has shifted towards viewing the community scale as an important site of energy system governance. New policy levers that encourage the development of decentralised renewable energy sources as well as energy efficiency measures represent an institutional adoption of community energy. Germany's *Energiewende* (Energy Transition) is the most recognised example of a concerted government effort to support the uptake of renewable technologies at a community level (Moss et al., 2015). Meanwhile, "community energy" has gained somewhat of a buzzword status in the UK, with more than 1,000 projects labelling themselves under this moniker (Seyfang et al., 2014), coupled with national government support through various funding schemes under its Community Energy Strategy (Department of Energy and Climate Change, 2014). Walker et al. (2007) consider such policies as fundamental to a new community-based localism agenda adopted by government, which is promulgating the potential benefits of more localised energy generation and the involvement of local people in its development.

The mainstreaming of community energy in the UK has led to several critical perspectives questioning its usage as a concept and how it is being applied through projects. In a survey of projects across the UK, Walker et al. (2007, pg. 75) find their interviewees to be critical of how the community concept had been appropriated and distorted by government programmes, which offer little in terms of demonstrable local economic or social benefits. Definitional flexibility in the UK has meant that some projects or policies are labelled community energy when only the outcomes contain a community element (e.g. infrastructure upgrades), while others entail community involvement in the process of developing or running a project (Smith et al., 2016). Such accounts suggest that the notion of community must be treated with caution: one should not fall into what Catney et al. (2014, pg. 716) deem the "local trap," where initiatives may be misconstrued as socially just simply because they are community-based. These authors argue that UK energy policies following a localism agenda have emphasised self-activated communities, failing to recognise fundamental differences in social groups' capacities to act, and thereby reinforcing rather than redressing socio-economic injustices (Ibid.). Viewed through this lens, government-led community energy schemes may only be serving the interests of a select group of society rather than supporting new social relations compared to those established under a centralised, fossil-fuel-based energy system. Such an account of community energy appears to be in tension with one that sees these initiatives as supporting energy democracy. There appears to be room for further empirical evidence on community energy's transformative potential in terms of delivering social justice.

Social innovation is fundamentally concerned with matters of social justice (Martinelli, 2012, pg. 72), and it has proven to be a popular theme in various disciplines, including urban governance research (see for example Gerometta et al., 2005; Moulaert et al., 2005). As a trans-disciplinary concept, a multitude of definitions for social innovation exist. Cajaiba-Santana (2014, pg. 44) argues that too often social innovation is conceived as a normative instrument used to solve social problems through the establishment of new services or products. In her view, the answer to a social problem is not necessarily a social innovation since this is also true of technical

innovations. Instead, social innovations are non-material in nature, manifesting in changes of attitudes and perceptions, resulting in new social practices that produce observable social change (Ibid.). This perspective of social innovation as differentiated from technical innovation and focused on establishing new social practices is shared by Hölsgens et al. (2018). However, a fixation on the altering of social practices does not provide a comprehensive explanation of how social innovation might support justice, inclusion, and cohesion within society (Martinelli, 2012). Moulaert et al. (2005, pg. 1976) view social innovation as involving three dimensions occurring in interaction with one another: 1) the satisfaction of human needs that were previously unsatisfied; 2) changes in social relations, especially pertaining to governance, which enable the satisfaction of the above needs; and 3) the empowerment of people by increasing their socio-political capability and access to resources. In combining all of these elements above, we arrive at an extended of definition of social innovation as the process(es) of establishing new social practices that contribute to the aforementioned three dimensions concerning human needs, social relations, and empowerment. This conceptualisation of social innovation will be used in evaluating the community energy sector in Bristol.

Locating processes of social innovation is tricky business given the multi-scale governance dynamics that contribute to the inclusion or exclusion of particular groups. However, the local scale has drawn particular attention for its innovative potential, with Moulaert (2010) arguing that communities are "the loci and drivers of social innovation." Communities are considered as prevailing life-experience settings, where citizenship right are contested, where mobilisations against social exclusion and injustices are initiated and staged, and where new political rights are defined (Ibid.). The concentration of exclusionary forces in urban neighbourhoods makes them the most likely space for reactions to occur, sparking a search for alternative, bottom-up solutions that provide improved outcomes to local residents. Many grassroots community energy initiatives, in their various guises, can be viewed as pursuing such alternative visions predicated on enhancing social justice. The challenge these initiatives face is in negotiating their aims for social change within an established framework of governance that is resistant to shifts in power dynamics due to path dependency. Changing relationships between state, market economy and civil society are therefore a central focus in evaluating pathways of social innovation (Moulaert et al, 2005). Examining these relations can reveal multiple, sometimes contradictory processes that enable and constrain the potential for social innovation to develop through community mobilisations. For example, Swyngedouw (2005) outlines how grassroots movements seeking greater inclusiveness have contributed to the formation of new governance arrangements encompassing civil-society and private economic actors, along with sections of the state-apparatus. While this new form of "governance-beyond-the-state" appears socially innovative in terms of empowering community actors by bringing them into decision-making processes, Swyngedouw (Ibid.) cautions that such arrangements are in fact Janus-faced: they are deployed under an illusion of democratic practice when in reality the political power of elite interests is rarely challenged within these governance formations. This illustrates the potential risks that community initiatives face in interacting with state bodies, yet such engagement is inevitable if they wish to reach a higher scale of influence – a point that holds especially true for community energy given the financial and regulatory requirements inherent in the sector.

With these insights concerning social innovation in mind, studying how actors in the community energy sector mobilise and interact with one another as well as with local government seems like a fruitful avenue for exploring the types of change they can bring about. Of course, studying these social actions must also involve attention to the context under which they arise, particularly to their interplay with existing social structures, which are seen as being key determinants in social innovation (Cajaiba-Santana, 2014).

There is already a wide body of work examining local energy initiatives or grassroots initiatives in terms of the types of social change they promote, and some of these studies refer to such change as social innovation (Hölsgens et al., 2018; Seyfang and Haxeltine, 2012). However, these studies do not give close attention to the variety of social processes that enable and constrain community actors based on grounded insights from those involved in these initiatives. Therefore, there appears to be room for inductive work in this area, which can help illuminate these processes for the sake of understanding the true potential of community energy.

Chapter 3: Methodology

The goal of this project is to develop a conceptual framework that articulates how community energy initiatives support social innovation in local energy systems. As has already been established, social innovation involves changes to existing social relations, thereby disrupting the status quo. This, of course, requires negotiation between different social actors who are implicated by change. Assessing social innovation therefore demands attention to political processes and how power relations shape the degree and types of change that may occur. From a standpoint of local energy governance, community energy initiatives are positioned in a broader arena defined by a network of power relations between human and non-human elements, including governments, policies, infrastructures, etc. For this reason, this analysis centres on understanding the power relations that influence and are affected by community energy initiatives. Of course, power has been conceived in all number of ways across different disciplines. Borrowing from Stirling (2014), I view power as "asymmetrically structured agency," which accounts for the agency of rational actors pursuing individual self-interest, while acknowledging how particular social structures may enable or constrain this ability. The methodological framework developed for this project is guided by this conceptualisation of power in that it is designed to produce a research output that articulates the effects of both agency and structure vis-à-vis community energy initiatives. This approach has allowed me to capture the politics of energy governance based on actors' interactions while highlighting how broader structuring forces may be guiding observed behaviours, and vice-versa.

The strategy undertaken in this project is an inductive approach to theory building. Therefore, the starting point of analysis is the actual lived experiences of those involved in community energy. Grounded theory methods are applied through a case study of the community energy sector in Bristol, United Kingdom to create a holistic view of community actors' experiences while accounting for broader situational forces. The following pages offer a more complete

explanation of these methods, why they were chosen for this project, and how they have been applied.

Grounded Theory Method: An Overview

The grounded theory method (henceforth GTM) is recognized as the most widely used qualitative research method across a wide range of social science disciplines (Bryant and Charmaz, 2011). This method entails a research process where data collection and analysis reciprocally inform and shape each other in an emergent iterative process (Charmaz, 2011, pg. 360). The output of this process is a theory reached through a successive conceptual analysis of data. Thus grounded theory can refer to both the method of inquiry and the result of this inquiry (Ibid). GTM begins as an inductive approach to inquiry by studying processes in the field through data collection. It progresses towards abduction as researchers come across interesting findings, at which point they begin to consider theoretical accounts, ask questions and form hypotheses that are then tested (or compared) against further data (Ibid). It is a highly interactive and comparative method because it requires the researchers to be in constant interaction with their data: for example, in comparing data with data to develop conceptual categories in early stages of the research, or in comparing these conceptual categories with one another at later stages in order to support the construction of theory.

Because grounded theory is intended for studying social phenomenon it is a contested concept on both epistemological and ontological grounds. Therefore, there are different ways of *doing* grounded theory. Notably, classic grounded theory as developed by Glaser and Strauss in *The Discovery of Grounded Theory* is seen as following a positivist paradigm whereby the research project centres on uncovering a universal, objective truth, leading to development of substantive and formal theory (Kenny and Fourie, 2015). This required that researchers strive for objectivity throughout their projects, leading to certain requirements in research design, such as approaching the study as a *tabula rasa* and avoiding existing literature in the substantive area so as to not sway them in their engagement with data (Clarke, 2005, pg. 294). Researchers like Charmaz (2006) have challenged the positivistic assumptions of classic grounded theory, eschewing the pursuit of an objective reality that can be found in data. With constructivist grounded theory, realities are multiple and the researcher is part of the research situation, requiring attendance to positionality and reflexivity in interpreting data. This data is understood to reflect historical, social, and situational locations. It is therefore problematic to generalize this data through formal theory. Instead, constructivist grounded theory aims for interpretative understanding, leaving any generalisations as partial, conditional and situated (Charmaz, 2011, 360).

Oscillations between positivism and constructivism in grounded theory have led to different frameworks for carrying out analyses, yet certain procedures remain core to any grounded theory study. The pillars of any grounded theory study include coding data to develop theoretical categories; writing memos to capture analytical insights; engaging in constant comparisons between data, categories and memos to advance theory development; and sampling for the

purpose of building theory (Kenny and Fourie, 2015, pg. 1286). How these various steps have been applied in the context of this project will be explained in a subsequent section.

Justification for Grounded Theory

A grounded theory approach has been chosen for this project for several reasons. For one, the initial literature review revealed that much of the existing literature concerning community energy initiatives followed deductive approaches and centred on explaining variations across different types of projects, their governance dynamics, and diffusion potential (see for example (van der Schoor and Scholtens, 2015; Walker et al., 2007; Walker and Devine-Wright, 2008). Where I seek to contribute to this existing body of work is in supporting a nuanced understanding of the social processes encircling community energy initiatives based on accounts from community actors, i.e. treating data as a starting point. This may yield insights otherwise overlooked in deductive studies.

Meanwhile, applying GTM permits greater sensitivity to the situatedness of both energy governance and social innovation, a point that has been stressed by numerous authors in these respective fields. For example, Rutherford and Coutard (2014) explain how urban energy transitions occur within socio-technical systems encompassing various interconnected political, cultural, social, technological and economic systems that are woven together in a specific time and place. Similarly, González and Healey (2005) suggest the significance of locating socially innovative practices in their geographic and historical contexts. Using an inductive method such as grounded theory allows for situational factors that may have otherwise been overlooked to emerge from data collected from participants and then incorporated with other methods as part of a broader contextual analysis. Of course, this emphasis on situational factors in shaping social innovation and local energy governance leads to questions about the validity of developing formal theory, a point that will be addressed in the next section.

Which Grounded Theory Methods and Why?

As already described, GTM has different iterations. The one followed in this project is aligned to the constructivist paradigm advocated by Charmaz (2006) because of its relativist ontology, and flexible and interpretative methodology (Kenny and Fourie, 2015, pg. 1283). Pursuing more positivist versions of grounded theory would entail a search for some sort of absolute truth in how social change may come about through energy systems, a logic that I reject based on a recognition that actors across time and space are confronted with dramatically different social contexts. Furthermore, speaking to community energy actors about their experiences while relating them to broader situational factors entails a high degree of interpretation, leaving the analysis open to the effects of my own positionality. Given these considerations, I stress the need to consider the situatedness of my research and its outcomes. The goal of this project is not to produce a formal theory but instead to develop what Clarke (2005, pg. 294) terms “sensitising concepts” and “theoretically integrated analytics”. Any conceptual tools are open to the scrutiny of other researchers with differing positionalities than my own. Likewise, the output may not be reflective of the social processes occurring in other situations of local energy governance. With

this in mind, my research findings are open for testing in other cases involving community energy initiatives.

Another advantage of following a constructivist grounded theory paradigm is that it affords greater flexibility in how methods are deployed, such as the coding framework, as well as how existing theories and conditional insights are integrated into the analysis. As Charmaz (2006, pg. 9) explains, GTM is viewed as a set of principles and practices, not as prescriptions or packages. Several researchers have taken this message to heart in incorporating GMT into their research designs by combining it with other methods (Urquhart, 2011, pg. 347). A good example of this is Clarke's (2005) development of situational analysis tools which leverage the conventional processes of coding and memo-writing into constructing a series of situational maps that outline the relations between all elements in the studied situation, human and otherwise. The premise here is that studying "action is not enough" for understanding social processes (Clarke and Friese, 2011, pg. 368). Of course, capturing the situation of action is a primary concern in earlier versions of the GTM, notably that of Strauss and Corbin (1991) who sought to specify structural conditions through the use of conditional matrices that outlined eight levels of influence ranging from the micro to macro scale (Kenny and Fourie, 2015, pg. 1277). These matrices were critiqued by Strauss and Corbin's constructivist reactionaries for creating a rigid framework with an overly complicated architecture that confounds the data (Ibid). As an alternative, Charmaz (2006, pg. 80) offers a more straightforward approach to capturing conditions through the process of memo-writing whereby the researcher notes how structure and context may influence observed actions in an interpretative fashion. Situational insights from a variety of data sources can be incorporated into this memo-writing, which then help guide theory construction. This is the approach I adopt for contextualising the actions of community energy initiatives in Bristol.

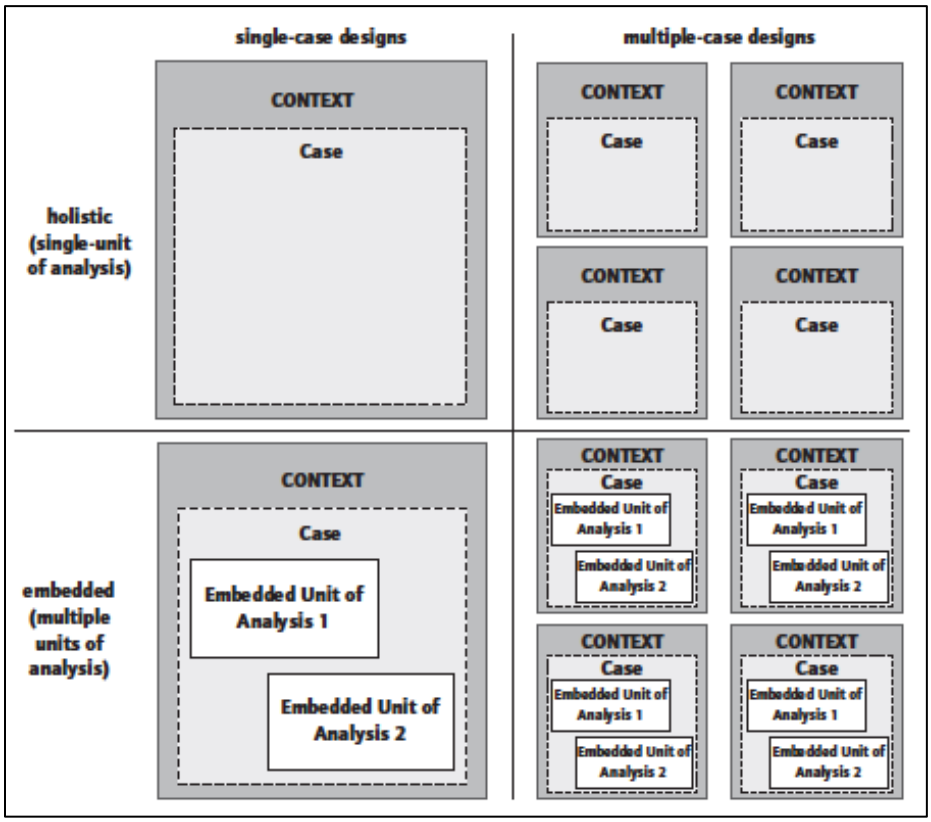
Case Study

A case study is considered to be "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." (Yin, 1994, pg. 13). A key element of case study analysis is therefore illuminating contextual conditions and their relationship to the phenomenon under study (Ibid.). Having just reviewed the logic and application of grounded theory, it would appear that case studies and constructivist GTM share the common goal of illustrating these phenomenon-context relations. However, what distinguishes the two is that the case study is viewed as a comprehensive research strategy comprising an all-encompassing method – with the logic of design guiding the specific approaches to data collection and analysis (Ibid., pg. 13). Meanwhile, grounded theory is a separate set of methods, which are seen as compatible with certain case study research: inductive, theory-building case studies can use the procedures and tools of grounded theory (Eisenhardt, 1989).

Since the purpose of an inductive case study is to construct theory, case selection is a pivotal step. Cases must be chosen based on their potential contribution to theory construction following the study's research objective or questions (Ibid., pg. 537). In other words, the research question is at the heart of the case selection process. Adding to the complexity of case selection is the number

of cases the researcher may choose to study. Yin (1994) identifies four basic types of designs involving both single and multiple-cases, with the possibility for multiple units of analysis within each (see Figure 1). Again, the choice of a particular design depends on the overall project direction.

Figure 1: Basic Types of Designs for Case Studies



Source: Yin, 2009

Rather than elaborate upon each of these four designs, I wish to highlight the applicability of Yin's embedded, single-case design for this project. Given the stated research question, the project is a case study of Bristol's community energy sector. That being said, this sector is made up of numerous sub-units serving different objectives and functions within the sector as whole. Therefore, these individual initiatives are considered as embedded in the case itself. One of the challenges identified by Yin (1994, pg. 44) in pursuing this case design is that often the analysis focuses only on the subunit level and fails to return to the larger unit of analysis. However, as will be demonstrated through this study, such concerns can be alleviated by clearly articulating the relations between sub-units and the broader case.

Selecting the Case

As already mentioned, case selection in theory-building projects should be guided by the research objectives. In this study, the goal is to conceptualise how community energy might support social innovation in local energy transitions, which means the chosen case study must offer opportunities for gathering rich data around this phenomenon. A logical step was to search for a research context with an abundance of community energy activity. The preliminary literature review offered some direction towards this aim by highlighting the growing number of community energy activities taking place in the United Kingdom (Walker et al., 2007). As this project is being conducted under an urban studies programme, the frame for case selection was then reduced to a city level in order to identify a British city with an established community energy sector. Further Internet-based search revealed a great deal of community-based energy projects underway in Bristol as well as a specific Community Strategy for Energy that was developed by a network of these community groups (Bristol Energy Network, 2013). Bristol's community energy sector was therefore selected as the case study for this project, with the intention of exploring the dynamics between its various underlying initiatives and the broader context of local energy governance.

Bristol's Community Energy Sector

The community energy sector in Bristol is composed of a plurality of local groups with different scopes of work ranging from renewable energy development to energy saving advice to efficiency retrofits. Energy cooperatives, charitable organisations, community-based associations, and financing mechanisms are all part of this burgeoning sector. In terms of the sector's origins, it is worth noting Bristol's long-established history with environmental and sustainability issues. As Torrens et al. (2018, pg. 9) explain, the city is home to a "concentration of green, countercultural movements which sustain a distinctive cultural environment and political orientation." Brownlee (2011) provides an extensive, chronological account of Bristol's "green roots" dating back to the late 1960s and the emergence of the environmental movement, which manifested in new activist groups, such as Bristol Friends of the Earth, that provided a seed-bed for new ideas and projects. One of these was the Urban Centre for Appropriate Technology (UCAT), which developed in response to the 1970s oil crisis and concerns over a continued reliance on fossil fuels (Ibid., pg. 56). The centre's main focus was highlighting the benefits of low-carbon living through community-based energy efficiency demonstration projects and advice (Ibid., pg. 57). As such, the centre can be seen as a true pioneer of the community energy sector in Bristol. Meanwhile, grassroots efforts eventually came to be complemented by the Local Agenda 21 sustainable development goals adopted City Council in the early 1990s, which treated energy as a key theme (Torrens et al., 2018).

Despite these developments, and with the exception of the Urban Centre for Appropriate Technology, a distinct community energy sector did not become recognisable in Bristol until the late 2000s (Lacey-Barnacle and Bird, 2018, pg. 73). In the context of heightened awareness of energy issues brought about by local activist groups, UCAT (renamed Centre for Sustainable

Energy in 1994), and City Council, numerous community-based energy groups began developing across the city (Brownlee, 2011). Some focused specifically on energy, while others treated energy as a key theme under a broader sustainability mandate. This overlap, along with different organisational structures and functions (technological development, energy advice, etc.) makes delineating the Bristol community energy sector somewhat difficult. The community energy landscape is further obfuscated by government-led community-based projects. As Walker et al. (2007) express, the community label is utilised in a diversity of ways by different actors. For the sake of clarity, this project considers the community energy sector to encompass all organisations or projects that are led or owned within civil society. Individual entities that fit this description are referred to as community energy initiatives, four of which are described below.

Community Energy Initiative Overviews

The community energy initiatives under investigation were selected strategically to reflect the diversity of this sector. An alternative strategy would have been to collect data from actors involved in initiatives that closely resembled one another in size and functions. This, however, would be conducive to studying these initiatives as cases themselves, ignoring the heterogeneity of community energy and how different actors are networked as part of a broader sector. As such, the four initiatives being studied do not fit into the same mould: they vary in both scale and scope of operations.

Bristol Energy Cooperative

The Bristol Energy Cooperative (BEC) is a community-owned energy cooperative dedicated to "growing Greater Bristol's local energy supply and making benefits available to all" through renewable energy and energy efficiency projects (Bristol Energy Cooperative, 2018). The cooperative was started in 2011, and has grown into one of the UK's largest energy cooperatives in terms of renewable generation (Ibid.). Projects are funded by investing members who receive interest on their investment through the cooperative's sale of power generated through its projects; strategic decisions are made on a one-member-one-vote basis (Ibid.).

Easton Energy Group

This community group describes itself as a "social enterprise" based in the inner-Bristol community of Easton that tries to "help local residents reduce energy use and assist people in fuel poverty find grants or other means to aid with their home energy costs." (Easton Energy Group, 2018). Easton Energy Group (EEG) is a resident-run group and has implemented a number of building retrofits and energy advice projects across Easton since its inception in 2008 (Ibid.).

Bristol Energy Network

Bristol Energy Network (BEN) is "an umbrella organisation for individuals and community groups with an interest in energy in Bristol and the surrounding area." (Bristol Energy Network, 2018). The organisation has 25 member groups from across Bristol, including 13 neighbourhood

energy groups, nine city-wide energy groups, and three advice agencies (Melville, 2016). The other three initiatives under study are network members. BEN's vision expresses a need for a bottom-up, community-driven approach to building a clean, green, and affordable energy system (Bristol Energy Network, 2018).

Centre for Sustainable Energy

The Centre for Sustainable Energy (CSE) evolved out of the Urban Centre for Appropriate Technology (UCAT), which was established in Bristol in 1979. Since 1994, this Bristol-based national charity has been operating under the CSE title, and it has a broad portfolio of energy activities, not only in Bristol, but across the UK (Centre for Sustainable Energy, 2018). Community-based projects are just one way the charity pursues its vision of "a world where sustainability is second nature, carbon emissions have been cut to safe levels and fuel poverty has been replaced by energy justice." (Ibid.).

Research Process

In following Charmaz's (2006) constructivist iteration of GTM, the first steps of the overall research process involved conducting a brief literature review to gain a general familiarity with relevant concepts pertaining to community energy and social innovation. From there, a research problem was identified, a general research question was established and the aforementioned case selection and initial sampling process unfolded. It was at this point that the iterative process of grounded theory construction began through data collection and analysis.

Data Collection and Analysis

As a reminder, the process of conducting grounded theory is not linear but cyclical: the researcher cycles between data collection, analysis, conceptualisation, and then goes back to additional data collection (Bryant and Charmaz, 2011). The ongoing analysis directs what types of further data are collected, and how. As data is coded and categorised, commonalities or relationships emerge across the data, leading to their analysis and corroboration, until eventually theoretical concepts begin to crystallise, allowing for theory construction. At the core of this process, and indeed any grounded theory study, is a rich pool of data. How data is collected depends on which phenomena is being studied, so the research problem should shape the methods chosen (Charmaz, 2006). This opens up the study to numerous potential data sources and collection methods, including interviewing, questionnaires, document analysis, and researcher observations. Intensive interviewing is viewed as a particularly valuable data-gathering method as it permits an in-depth exploration of a topic and the experiences of individuals (Ibid., pg. 25).

The above considerations served as guidelines for this study's framework of data collection and analysis. This framework is aligned with, but not identical to, the process outlined by Charmaz (2006), who also stresses the flexibility of her constructivist methods. In-depth interviews were used to solicit experiences and opinions from individuals representing the four community energy

initiatives mentioned above. These interviews were unstructured, following a few key themes devised ahead of time, but allowing for divergence based on the respondents' answers. Interviews were immediately transcribed and analysed through constructivist coding procedures (Charmaz, 2008). A first stage of "open coding" (Ibid.) involved going through the entire transcript line-by-line and marking segments with gerunds that conveyed the action or process taking place. A second stage of coding called "refocused coding" (Ibid.) involved comparing the numerous open codes with one another in order to identify recurring codes that appeared to illuminate a significant process related to the research question.

Based on these refocused codes, analytical memos were written to capture insights and propose theoretical categories. This process was repeated for each interview, with conceptual categories from previous interviews helping to focus the coding and memo-writing for subsequent interviews. Figure 2 provides a sample of a coding and memo-writing matrix that was used to analyse interviews (all matrices can be found in the Appendices).

After compiling all the memos from the four interviews, a series of proposed theoretical categories was developed and compared with existing literature and theoretical insights. As part of this process, theoretical gaps were identified, leading to collection of additional data through interviews with other local energy actors, notably senior members from Bristol Council's Energy Service team and the municipal energy company Bristol Energy. The interview with Council was coded and compared to statements made by other interviewees, while the Bristol Energy interview served as supporting material along with other energy planning documents. Theoretical memo-writing, again informed by existing literature, was then conducted in order to make sense of how all of the theoretical concepts might fit together. Finally, the common grounded theory practice of diagramming (Kenny and Fourie, 2015) was conducted in order to illustrate the relations between concepts, creating a visual output.

In compiling findings, the exact identities of interviewees have been kept anonymous given the sensitivity of information that individuals shared regarding their relationships with other actors. However, organisational names are used as attribution.

Figure 2: Sample of Coding and Memo Matrix Used for Interview Analysis

Coding and Memo Matrix – CSE		
OPEN CODING **How did CSE get its start?** Evolving from sustainable technology focus towards energy advice Focusing on fuel poverty Engaging in political activity across different scales Relying on project-based funding model Expanding mandate to focus on energy justice issues **How did your shift from technological demonstration to energy justice occur?** Interacting with individuals bearing consequences of energy system Realising need for balancing climate progress with social consequences Following lines of public discontent for problems arising from privatised energy system **Why has Bristol been a good fit for CSE?** Grounding efforts in local experiences	**REFOCUSED CODING** Depending on outside resources (financial and knowledge) Grounding efforts in communities Learning through experimentation Taking long-term view Mediating between communities and government	**MEMO-WRITING** Dependence on mainstream sources of funding, which is limited. Meanwhile, project-based funding model serves as constraint on several grounds: • Shrinking government pots (austerity) • Short-term funding arrangements not enough to establish change processes • Risk aversion of funders – want to see immediate results Experimentation with new approaches for engagement in low-income has led to several learnings and skepticism about whether CE can emerge organically within deprived areas. Expecting these communities to organise themselves to develop projects has proven faulty. This relates to points raised by Middlemiss and Parrish (2010) around community capacity. Lack of recognition that these communities suffer from deep-rooted injustice. For projects to gain traction in low-income areas, collaboration with community-based groups is viewed as key to success.

Source: Author

Chapter 4: Findings and Results

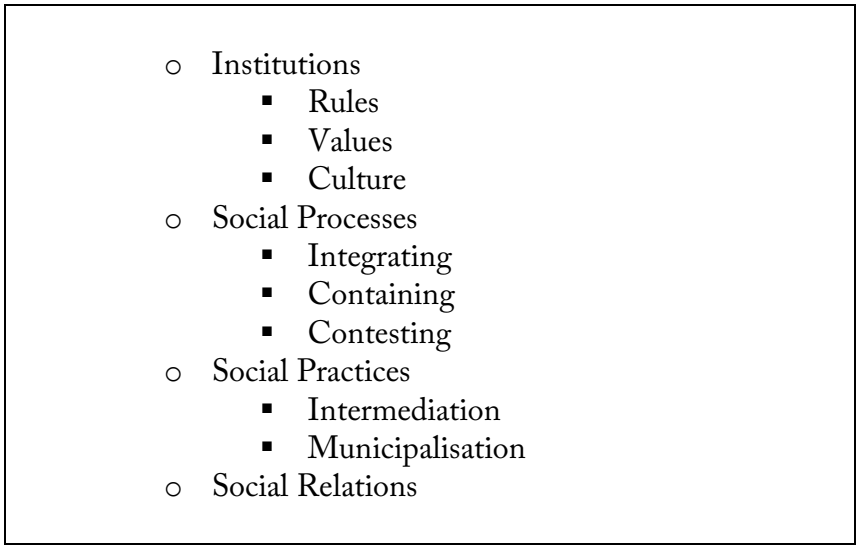
One of the challenges in writing up grounded theory studies is to illustrate how large amounts of data are interpreted, while doing so in a manner that is still engaging to readers (Charmaz, 2006). Many grounded theory studies produce hundreds of pages of transcripts, coding matrices, and memos, all of which is done for the purpose of theory construction. Hence why deciding what to include in the final write-up becomes a predicament. Fortunately, there are various strategies that have been proposed. Glaser (2002) suggests that writing should focus on concepts and conceptualised relationships rather than lengthy descriptions of the data. Glaser's approach is guided by a belief that the overall objective of grounded theory is conceptualisation rather than description of participants' experiences, and that a focus on descriptive capture can inhibit this conceptual nature (Kenny and Fourie, 2015, pg. 1279). By contrast, Bryant and Charmaz (2011, pg. 24) highlight how many grounded theory researchers employ a narrative style that tells their interview subjects' stories. This description-based approach has been criticized for failing to reflect a process of theory abstraction; constructivist grounded theorists argue that abstraction is not neglected because the concluding story encompasses conceptualisation by describing categories, conditions, conceptual relationships, and consequences (Kenny and Fourie, 2015).

The writing strategy used for this project finds middle ground between concept-based and description-based approaches. I use the theoretical categories developed through coding and memo-writing procedures as focal points for discussion, while using portions of raw data to exemplify these categories. Existing theoretical insights, which were consulted and captured during the memo-writing process are also included in this discussion of categories as a form of justification.

Conceptualising the Data

Data analysis produced numerous conceptual categories, which were refined through comparison with one another and by consulting existing theories. Charmaz (2006, pg. 115) uses the term "sorting" to describe this process of theoretically integrating categories. In this case, sorting involved a two-step process. First, a hierarchy of categories (see Figure 3) was constructed based on their perceived relations, which is a popular strategy in grounded theory (Kelle, 2011, pg. 191). Once this was established, a diagramming exercise was undertaken in order to construct a logical model for explicating the situation of community energy initiatives in Bristol. In line with these two phases, I first demonstrate the theoretical categories and explain how they were chosen based on data analysis; then I introduce the theoretical framework and describe the perceived relations between categories. This approach allows the reader to follow the iterative 'journey' of grounded theory, as pieces (categories) of the puzzle start in isolation and slowly come together.

Figure 3: Hierarchy of Theoretical Categories



Source: Author

Institutions

Interviewees from community energy initiatives alluded to how their actions were shaped by personal values (EEG respondent), desires to "make a difference" (BEC respondent), and the need for adopting different mindsets (BEN respondent). They also mentioned constraints associated with political, regulatory, and financial systems (CSE respondent), as well as the diverging interests held by different energy actors. All of these responses share a common thread in that they relate to the power of institutions.

Institutions are considered to be the "regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life." (Scott, 2014, pg. 56). They are enduring social structures that arise through interaction and are preserved and modified by human behaviour (Friel, 2017, pg. 212). The latter point concerning modification is emphasised among institutional theorists, who stress that the norms, rules, conventions, and values associated with institutions are susceptible to shifts as a result of exogenous forces and agents' actions (Cajaiba-Santana, 2014). However, institutionalised practices are seen as constraining such action, and therefore institutional theory views institutions and actions as inextricably linked in a dynamic, on-going process of social construction (Ibid, pg. 46).

If power is conceived as the ability to influence the actions of others (Smith et al., 2005, pg. 1503), then any conceptualisation of power must account for institutions since these are the elements that guide behaviour. It is for this this reason that institutions feature as a main category in the conceptual framework being developed. Specifically, there is a need to consider how community energy initiatives might challenge institutionalised logics and practices within local energy governance in order to provoke social innovation. In comparing data to the three inter-connected pillars of institutions – regulative, normative, cultural-cognitive systems –

described by Scott (2014), there are signs of all three in the experiences described by participants in the Bristol energy system. As such, the three pillars have been developed as sub-categories in the conceptual framework and have been labelled as Rules, Values and Culture.

Rules

The Rules sub-category follows the regulative pillar described by Scott (Ibid. pg. 62), which relates to the production of formal and informal rule systems, including their coercive mechanisms manifested through the enforcement of laws with sanctions. Regulative institutions are mechanisms of societal control with strong connections to political economy and the roles of the state and market in establishing particular rules systems through policy. With regards to the case study, community energy actors in Bristol have been influenced by formal rules such as local Council's tender requirements (BEC respondent) and shifting national policies around the feed-in-tariff and cuts to government funding (BEC respondent; CSE respondent).

Values

This pillar of institutions pertains to "normative rules that introduce a prescriptive, evaluative, and obligatory dimension into social life." (Scott, 2014, pg. 64). These define how certain social functions are to be achieved based on particular norms and values. In doing so, roles and rights are ascribed to different individuals or specified social positions, with commensurate allocations of resources (Ibid.). Considering the recurring mentions of resource constraints by community actors in Bristol, it would appear that they have a pre-assigned role as fringe participants in local energy governance; Council's involvement in managing energy projects is reflective of an established norm of government-led service provision.

Culture

Cultural-cognitive institutions are defined by Scott (Ibid., pg. 67) as "the shared conceptions that constitute the nature of social reality and create frames through which meaning is made." This perspective sees the meaning of objects and activities as socially constructed through the use of symbols, such as discourses, gestures, and signs (Schmidt, 2010a; Scott, 2014). These symbols exist as external to actors, but they are interpreted internally, leading to how individuals make sense of the world around them. Shared interpretations and beliefs crystallise into powerful cultural frames which become reinforced as individuals interpret and subscribe to their dominant meanings (Scott, 2014). Cultural-cognitive institutions appear particularly salient in the context of Bristol's community energy sector because of the processes of building shared understandings that interviewees expressed. For example, in discussing the creation of the Bristol Community Strategy for Energy, the interviewee from BEN stated the following:

> "All of a sudden you could see that people who could never seem to meet eye-to-eye were starting to align. You could see that alignment happening. And that alignment led to the strategy being endorsed by everyone. So, you know we took ages with Bristol Community Energy Strategy. People took ownership of it and the words had meaning."

One final point regarding cultural, and indeed all institutions, is that they operate in a nested framework comprising multiple interacting levels. Cultural systems stretch from the individual to the global, so they simultaneously shape shared definitions of local situations, common frames and patterns of belief that make up a group's culture, and even the shared ideologies that define preferred political and economic systems at national levels and beyond (Scott, 2014, pg. 68).

Social Processes

Returning to the categorical hierarchy, Social Processes was identified as another primary category. With a view that power relations are determined through a dualism of structure (e.g. institutions) and agency, it should come as no surprise that attention be given to the agency of community energy initiatives in the emerging conceptual framework. Their agency can been gleaned from the actions described by interview respondents, particularly how community initiatives interact with one another and other energy system actors. In evaluating the many interactions respondents described, it became clear that several interactions could be grouped together as social processes. This is in line with a definition of social processes as "observable and repetitive patterns of social interaction that have a consistent direction or quality." (Bardis, 1979, pg. 148). Social Processes is the primary category, but it is the sub-categories that identify the different observed processes and hold explanatory power for the research question under study. Integrating, Contesting, and Containing were deemed to be the three prominent social processes that enable or constrain community energy initiatives from establishing social practices that would be defined as social innovation.

Integrating

The studied community energy initiatives all articulated the importance of collaboration with other actors in establishing, sustaining, and growing their mandates. However, not all collaborations are formed for the same purposes. The term integrating is used to describe strategic actions undertaken by community-based energy initiatives aimed at enhancing the collective power of the sector. It refers to acts of consolidation stemming from a realisation of a shared interests and goals – i.e. following similar institutional logics. Such actions were described by the BEC representative as underpinning the cooperative's formation:

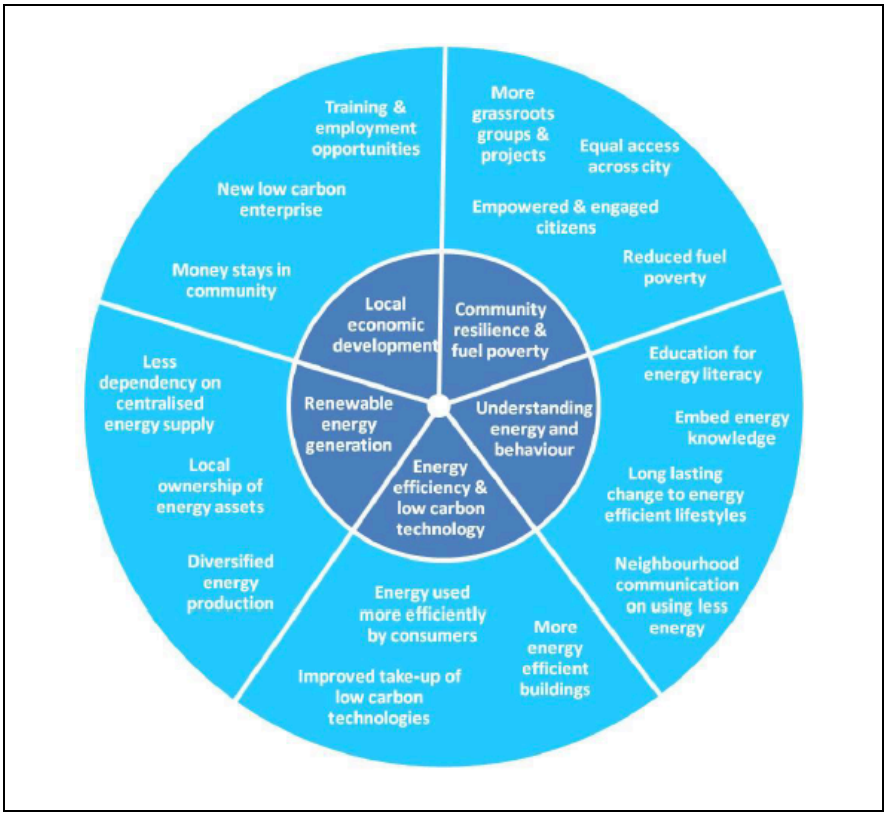
> "There were various people trying to do different initiatives and projects and such. And they were getting quite frustrated with the difficulties that arose, so there was a meeting in a pub, somewhere in Easton, I believe, with a lot of the movers and shakers of this scene and what had become clear to everyone through their trouble was that they needed something that needed to operate on a citywide scale. There was stuff that could really only be addressed at the city level, as opposed to the useful stuff being done at a neighbourhood level … And the other element that was necessary was to have some sort of formal, established structure…. So as a result of that discussion people went off and formed a cooperative."

The picture this description paints is one of several individual initiatives establishing a new entity that would reflect their collective values and to enhance their power for achieving shared goals. Drawing on existing theories relating to sustainability innovations and transitions, such individualised grassroots initiatives are considered to be socio-technical "niches", and a major challenge for these niches is to diffuse over wider society (Geels, 2004; Pesch et al., 2018). Assuming a niche has a strategic goal of infiltrating an incumbent socio-technical regime, it can follow three different diffusion routes: replication, scaling up, and translation, with the latter reflecting an adoption of the grassroots practice at a higher institutionalised level (Pesch et al., 2018). In the case of the BEC, its establishment reflected an integration of people and resources around a goal of scaling up to a city-level, creating the prospect of more widespread influence and social benefits.

As mentioned, integrating encompasses strategic actions aimed at enhancing the relative power of a particular group. The experiences of community energy initiatives in Bristol can therefore also be considered through the theoretical perspective of Strategic Action Fields developed by Fligstein and McAdam (2011). These authors' theory targets an explanation of collective action in society, arguing that society is made up of nested Strategic Action Fields (SAFs), wherein actors interact with the knowledge of one another under a set of common understandings about the purposes of the field, the relationships in the field, and the field's rules. (Ibid., pg. 3). Under this framework, the community energy sector in Bristol might be considered a field nested within a broader field of local energy governance. SAF theory suggests that a field may follow an evolutionary path from an unorganised, emergent field to a more stabilised one based on the efforts of individual or collective "institutional entrepreneurs" who exhibit social skills capable of creating and maintaining collective identities among field actors (Ibid., 2011). This process of "institutional settlement" is dependent on the ability of actors to move beyond their own cognitive frames and consider the role of others in order to establish consensus (Ibid.).

These processes of field formation appear to be reflected in data collected from interview respondents regarding the formation of BEN, as well as the collaborative effort it spearheaded towards establishing a Community Strategy for Energy. Similar to the case of BEC, skilled actors working in community energy came to realise the fragmented nature of their efforts, and that creating a more cohesive, stable field would aid their efforts in supporting local people around energy issues. The label of 'institutional entrepreneurs' could be applied to the founders of the BEN, who were able to rally community groups from across the city, and establish an intermediary body and political coalition under a common institutional frame. This also manifested in the development of a singular, vision-setting strategy for the community energy sector, which required negotiating the priorities of different groups, whereby actors were forced to step outside their owns heads and consider other perspectives. As such, the Community Strategy for Energy weaves together a multitude of practice areas undertaken by community groups, including renewable energy generation, energy efficiency/low-carbon technology, local economic development, community resilience and fuel poverty, and energy literacy (see Figure 4). Whereas before the strategy's development these themes were being pursued in isolation, the process of collective vision-setting ended in these activity areas being viewed as complementary.

Figure 4: Bristol's Community Strategy for Energy Thematic Areas



Source: Bristol Energy Network, 2013

Contesting

> "I would say that there is a lot of work that CSE has tried to do with Bristol Council over the years, but maybe that relationship is…troubled I think." (CSE respondent)

The above quote is just one of many accounts provided by community energy respondents indicating a conflictual relationship with Bristol City Council. Based on the data, there is a shared struggle to gain support and resources from Council for projects, as well as a lack of autonomy in establishing the directives of these projects. It is a theme that is common in literature on social innovation and socio-technical transitions as well. The governance dynamics between civil society and the state are a focal point for Swyngedouw and Moulaert (2010) in evaluating how community initiatives support social innovation. They highlight how many initiatives take an oppositional stance towards institutionalised power embodied in existing modes of governance – they arise out of defiance to the "place and the functions allocated to them in the existing social and political configuration by the state or by the economic or cultural elites." (Ibid. pg. 222). Certainly, the description provided by the EEG respondent reflected a dissenting position towards government:

> "We have something called the energy trilemma in this country and energy policy is drafted on that. But they are missing a key point. It's democracy […] The problem with our society is that we don't listen to poor people."

Community initiatives like EEG challenge the approaches for low-carbon transitions advanced by governments, and in doing so, they often advocate for more transformative social change in support of the disenfranchised. They can be seen as politicising issues like climate change through several means, recognising it as more than an environmental problem that requires technological solutions, but rather as a side-effect of systemic social injustice. Their politicisation of such issues calls into question the legitimacy of the state and markets in supporting public good. The mere activation of grassroots initiatives in addressing energy-related problems like fuel poverty politicises state authority, as it serves as an example of how communities are able to function without the state or at least without certain state functions (Swyngedouw and Moulaert, 2010, pg. 222). This is not to say that community initiatives like EEG seek complete autonomy from the state; quite the contrary. Instead they seek to reconstruct social relations in local governance to achieve greater recognition and outcomes for previously excluded groups (Gerometta et al., 2005), as demonstrated in the above quote regarding democracy. This actually requires direct, constructive engagement with the state, as opposed to operating in a distant field. For one, the state is a crucial provider of resources and regulation in energy systems, making it hard to bypass. However, as initiatives seek to move their influence out of a limited, grassroots field of action through state engagement, they run the risk of capture through co-optation and/or pre-emption (Swyngedouw and Moulaert, 2010, pg. 229). Such processes will be discussed under a subsequent theoretical category dubbed Containing, but the point of emphasis is that community initiatives often find themselves struggling to balance the needs of integration with the state and maintaining autonomy. As Swyngedouw and Moulaert (Ibid, pg. 226) explain, in co-operating with either the market or the state, they must maintain oppositional tactics which "pre-empt full incorporation, generating a continuous innovative dynamic allowing the relationships with state and market to be revisited continuously."

Balancing co-operation and opposition is a dynamic that appears to have taken hold in Bristol, where community actors like BEN continue to collaborate with Council on the execution of energy projects around the city, but with a heightened degree of caution and a willingness to push back on Council impositions (BEN respondent). Doing so in the face of potential co-optation asserts their freedom to act, which Gibson-Graham (2006, pg. xxvi) sees as being at the core of a "politics of possibility." This raises a key point about the political nature of these initiatives. Their politics may not take on an overt form of contestation, such as protest, but their continued existence provides a counter-point to the Council's techno-managerial approaches to energy issues, as suggested by respondents' criticism of "tick-box exercises" (BEN respondent) and top-down logics. Initiatives like CSE use energy justice as their guiding vision for their community work (Centre for Sustainable Energy, 2018). Their projects are predicated not only on distributive outcomes, like reducing people's energy bills, but also on enhancing the recognition of underprivileged groups and making them apart of energy governance processes. By bringing these goals with them to collaborative arrangements with the local state, or other regime actors, they present powerful ideas that can force new ways of thinking.

Containing

On the flip side of the contestation presented by community energy actors are the restrictive, or containing, actions of local Council. As mentioned, community initiatives are subject to pre-emptive and co-optative measures by the state. The institutionalised role of the state as society's legitimate "rule maker, referee, and enforcer" (Scott, 2014, pg. 62) is a powerful constraint to efforts which seek to challenge the state's authority. Meanwhile, the state does not act alone in constructing and upholding dominant institutions, especially in a capitalist-based economy that gives such prominence to the role of the market. Kuzemko et al. (2016, pg. 99) highlight how the liberal market paradigm has shaped energy policy in the UK, leading to an ideological commitment of placing markets rather than governments at the centre of issues like fuel poverty, renewable development, and energy security. As such, Geels (2014) concludes that the state and market-based firms together form a core alliance in an incumbent socio-technical energy regime that is orientated towards maintaining the status quo. This conclusion has been used to explain the persistence of the fossil fuel industry in the UK, but it is also useful in understanding why non-technological innovations encounter resistance when they confront the state about reconfiguring relations between state, market and civil-society.

Resistance to community energy is driven by a goal of containing the power of these initiatives. Multiple signs of this process can be observed in the Bristol case study. In fact, an interview conducted with the Council's Energy Services team, which oversees all energy planning in the city, offered the most telling proof, as the interviewee stated, "I know that we're perceived as taking over, swamping community initiatives, I'm well aware of that." Of course, this came after several accounts by community-based actors that suggested a containment process was taking place. In fact, two interviewees referred to the now-defunct Warm Up Bristol energy efficiency programme as an example of Council failing to relinquish control of a community-based project. Warm Up Bristol was a domestic retrofitting project established in 2014 using Green Deal funding from the UK national government (Melville, 2016). The scheme was conceived by Bristol Council in collaboration with community groups around the city. However, as respondents from CSE and BEN both explained, the voices of community groups in the project's planning were largely overlooked. Despite these groups expressing concerns around a lack of control measures in the contracting out of the retrofits, Council rolled out the programme through BEN's members in neighbourhoods across the city. As the BEN representative explained, "we delivered this project but it quickly became apparent there were problems with it." Unrealistic recruitment targets handed down from national government to Council resulted in the hiring of non-local, unqualified contractors to conduct retrofits (BEN respondent). Much of the work done was done poorly or incomplete, and the project became a money pit in order to rectify these faults. Two of the contracted companies also went into receivership, leaving further jobs unfinished. Under these circumstances, the programme was shut down in 2017 (BBC News, 2017). The top-down project stands as an example of how community groups are brought into new folds of energy governance, but their insights are ultimately bypassed by the state. An illusion of project participation provided a useful avenue for Council to co-opt community networks without actually transferring power over to communities.

The indication from Bristol's community energy groups is that Council is willing to support their work so long as it serves the Council's own agenda. In terms of what that agenda looks like, the most obvious analogy would be one of green growth that weaves together local economic development with environmental imperatives. Transitioning to a low-carbon economy is treated as an opportunity for attracting investment into the city by way of clean and smart infrastructure. Signs of this agenda are abundant in Bristol and date back to the late-2000s when local Council began pursuing the Green Capital of Europe designation (Brownlee, 2011). The Green Capital initiative provided an opportunity to showcase Bristol's existing environmental progress and 'green' assets while attracting additional investment from private and public bodies to build on this momentum. Formally, the thematic goals of Green Capital 2015 were local empowerment, sustainability leadership, international profile, and securing significant resources from the UK government (Bundred, 2016, pg. 8). From the standpoint of community energy initiatives, the element of empowerment was left unfulfilled (BEN respondent). As Bundred (2016, pg. 21) reflected, "There is clear evidence that the eventual overall shape of the programme was largely determined by what partners, including and perhaps especially DECC [the national government's Department of Energy and Climate Change], were willing to fund." Despite BEN efforts to serve as a liaison between Council's grant scheme and marginalised communities, the needs of these communities were largely overlooked in favour of pre-established, commercial opportunities (BEN respondent).

The Centre for Sustainable Energy's work in vulnerable areas has also suffered from a lack of consistent financial support from government (CSE respondent). The interviewee from CSE indicated that developing locally based energy projects in deprived communities is especially difficult because these areas suffer from such low capacity for action. Initiatives that seek to involve residents in all phases – from design to execution to upkeep and ownership – and hence build social capital, unlike one-off, top-down interventions, require extra time and resources to overcome this lack of capacity. Unfortunately, government has proven unwilling to fund such projects, which undoubtedly carry a higher degree of risk, and may not provide any financial return (CSE respondent). Austerity in the UK has disempowered local authorities from financing community energy projects unless they carry an obvious potential return on investment, as acknowledged by the Council interviewee:

> "You know we need to find alternative sources of income because government funding is cut. So do I ask my team to spend time supporting a community group which is not going to generate us any income but is a really good thing for the city and is a positive thing … Having a more direct interest in their energy system is a good thing from a public engagement perspective, and I think it's a good thing for Bristol to have a strong community energy sector, but it doesn't earn us any money. In fact, it may cost us. Because we are spending time and resource on something that is going to have zero benefit for the Council directly."

Given these austerity circumstances, it should perhaps not come as a surprise that Council's most harmonious relationship within the community energy sector appears to be with the BEC, the energy cooperative. Developing the city's solar PV infrastructure has been a Council priority since 2011 when it underwent a city-wide mapping project to determine the city's solar energy

generation potential (Melville, 2016). The Council was also applying for European Local Energy Assistance (ELENA) funding at the time and made solar installations on city-owned properties a major proposed activity. When the national government began scaling back the feed-in-tariff in 2011, the city reneged on its plans to develop its own solar projects, and instead engaged with the already-established cooperative, who were keen to develop more projects (Ibid.). Since that time, BEC has developed several projects on Council-owned land under lease agreements, with these proceeds padding state coffers. Working with BEC has been a useful collaboration for Council since it yields financial return while absolving themselves of risk. In doing so, the Council also reinforces its own image of community support and environmentalism. Meanwhile, the feed-in-tariff has continued to be reduced by national government, to the point where BEC does not see new solar projects as viable and has discontinued its contributions to its community benefit fund – a key vehicle to ensuring its work supports more than just its shareholders (BEC respondent). This reality suggests that state containment of community energy is generated at higher scales but filters down to affect local government actions.

Social Practices

To recall, our research focus is concerned with how community energy initiatives may support new social practices that contribute simultaneously to the satisfaction of human needs previously unsatisfied; to changes in social relations, especially in governance, which enable the satisfaction of those needs; and the empowerment of people by increasing their socio-political capability and access to resources (Moulaert et al., 2005). Given social innovation's definitional emphasis on practices, this has justified making it a main category of analysis. With Bristol's community energy sector following processes of integrating, contesting and containing, it is necessary to ask how these processes have led to new social practices in Bristol, and whether these practices are indeed socially innovative.

Social practices are considered to be "activity patterns across actors that are infused with broader meaning and provide tools for ordering social life and activity." (Lounsbury and Crumley, 2007, pg. 995). A significant element in this definition is that practices carry particular meaning, and are therefore bound with institutions. The term institutionalised practices may be used to describe those practices which hold regulative, normative, and cultural-cognitive legitimacy. Based on this description, we can view social innovation as a process of institutionalising new social practices. However, an additional requirement would be that these new practices demonstrate the three dimensions outlined by Moulaert et al. (2005) (i.e. the institutionalisation of new social practices is not enough). These dimensions emphasise modified governance practices as an avenue towards social innovation, although governance must be seen as interwoven with numerous other practices within a socio-technical (energy) system, which includes consumer, technological and cultural practices, among others (Hölsgens et al., 2018). Since we are concerned with collective action in Bristol's energy system, governance practices remain the main focus of our analysis, although their intersection with other areas is also considered.

In the earlier descriptions of social processes, several social practices have already been alluded to. This section builds on this discussion by highlighting two major new developments in local energy governance in Bristol, which have emerged from interview findings as well as a review of local energy planning documents. These two themes, or governance practices, are intermediation and municipalisation.

Intermediation

As already discussed, the process of integration has led to closer ties between community groups, fostering new partnerships and the ability to address certain energy issues in a more holistic way. Take fuel poverty as an example. In the UK, fuel poverty describes a situation whereby a household's required fuel costs are above the national median level, or when a household is left with a residual income below the official poverty line after dispensing required fuel costs (Department for Business, Energy and Industrial Strategy, 2018). In simpler terms, it pertains to access to affordable energy. An estimated 25,000 households suffer from fuel poverty in Bristol (Bristol Energy, 2018).

The integration of community energy groups into a network, BEN, has created an innovative governance arrangement in the form of an intermediary, which has led to a more concerted effort against fuel poverty within the community energy sector. BEN facilitates knowledge-sharing between network members, while providing a trusted touchpoint for other community groups to engage with around fuel poverty. This has allowed small-scale projects based in one community to replicate and diffuse to other areas of the city. The following summarises an example provided by the BEN respondent concerning a pilot project involving thermal imaging for identifying heat loss in domestic households. The Cold Homes Energy Efficiency Survey Experts (CHEESE) project was initiated in Easton, but drew the attention of a community group called Ambition Lawrence Weston that represented one of the poorest communities in Bristol. The group was attending a workshop on fuel poverty hosted by the network, and shortly thereafter became a member of BEN, and signed on to have Lawrence Weston be the second CHEESE project community. Now, in an area of the city where fuel poverty is common, CHEESE provides free surveys that identify faults in people's homes contributing to energy inefficiencies, as well as consultation on how to remedy these faults with cheap and easy Do-It-Yourself solutions. In addition to being a significant energy efficiency intervention, CHEESE supports energy literacy by educating people on how to reduce their energy consumption. All of this is underpinned by existing community support networks established by Ambition Lawrence Weston, allowing for greater penetration into the community at large. CHEESE provides a telling example of the importance of trust within community energy in developing meaningful community interventions that provide vulnerable people access to resources, while empowering them with new forms of knowledge around energy. BEN can be seen as mobilising an inclusive form of governance within the community energy sector that recognises the need to empower those who are less fortunate by influencing their energy consumption practices.

Significantly, practices of intermediation have not only become institutionalised at the scale of the community. If such were the case, their potential for social innovation would be quite limited

because they would occur at a distance from mainstream or regime actors. As already presented, significant changes to social relations must ultimately involve interaction with the state because of a dependence on resources and legitimacy. Of course, it should be clear by now that community energy initiatives are actively involved in collaboration with the state in Bristol. Integrating into a network has enhanced the agency of Bristol's community energy sector, allowing it to break into mainstream policy circles and decision making processes within local energy governance. This is reflected in the interviews held with Bristol Council and its energy company, Bristol Energy. The city's key energy planning document even states its support for the Bristol Community Strategy for Energy and a desire to facilitate its execution (Bristol City Council, 2015). With this mainstream embrace of community energy, intermediation between Council and community groups has become pivotal towards a productive, though shaky, relationship. BEN serves this intermediary role by bringing community interests in front of Council, and helping Council develop projects in communities. Proof of such is provided by the Council respondent:

> "Whenever we apply for funding, and we do try to apply, depending on what we do we almost always have a conversation with Bristol Energy Network just to see who they think is the most appropriate member to engage around that, because it might be around a specific activity or a specific location in the city."

The fact that Council sees BEN as a crucial conduit can be perceived in different ways, especially given the frustrations expressed by BEN around project control. While these accounts paint Council in an antagonistic light, they do show several signs of supporting community energy in the city without a strong controlling presence. An example of such would be the Bristol Community Energy Fund, a pot of £880,000 established by Council that provides grants and loans to individuals and community groups developing energy projects in the city (Bristol City Council, 2015. The fund is managed by BEN and CSE who work with their members to help them secure finances, as well as reach out to groups who are underrepresented in the local energy movement (Melville, 2016). A total of 39 projects dealing with energy efficiency schemes and clean energy development have been developed through the fund, many of them located in some of Bristol's most deprived areas (Bristol Community Energy Fund, 2018). It is unclear whether community-based management of the fund is the direct result of groups like BEN contesting Council's typical top-down attitude; however, in interviewing the Council's Energy Service team, the interviewee acknowledged its controlling reputation and an effort to change this perception. The fund's governance structure might be considered a step in that direction, and it offers a strong example of a shift in the relations between state and civil-society brought about through intermediation. Bird and Barnes (2014) have highlighted the importance of intermediary organisations like BEN or CSE in scaling up community energy activities because of their ability to be seen as a legitimate uniting force for diverse groups within civil-society, while also holding credibility with external bodies. Intermediaries can help ensure equal access to the resources that these external bodies offer; for example, by ensuring grants like those under the Community Energy Fund don't just go to the usual, middle-class suspects who often have greater societal recognition and access to grant-awarding processes. In this regard, BEN and CSE are seen as

cementing practices of intermediation in local governance that promote energy justice (Lacey-Barnacle and Bird, 2018) and social innovation.

Because of their approximated position and recurring engagement with local Council, intermediaries have also played a significant role in reshaping the overall conversation of a local energy transition. Specifically, they have contested a narrow focus on environmental aims and renewable development, mainly in reaction to the UK government's 2008 Climate Change Act. The Act's commitment towards reducing carbon emissions and increasing clean energy production caused nationwide concern over how the costs of an energy transition might be borne by consumers (Liddell et al., 2012). As the respondent from BEN expressed, becoming involved in community energy came from a realisation that society was looking "at the tailpipe of the problem," hence overlooking what climate change adaptation meant for a majority of individual households. The founding of BEN was therefore motivated by a perceived need for alternative strategies to government policies, focusing on practical, affordable solutions to alleviating fuel poverty at the individual or community level. CSE also undertook a shift in activities towards energy efficiency and advice for marginalised groups: the CSE respondent indicated, "Now it's much more about climate change, and the environmental side still, but also energy justice, and how you can weave those two together." Such stances can be contrasted against the Council's carbon-focused energy planning, such as its 2009 Citywide Sustainable Energy Study and 2012 Climate Change and Sustainability Strategy, neither of which emphasised fuel poverty as a major issue (Bristol City Council, 2012; Centre for Sustainable Energy, 2009). Yet, with mounting national attention around fuel prices, and a concerted effort by Bristol's community groups in lobbying for Council commitment to the issue, a gradual institutionalisation of action on fuel poverty occurred. A change in political leadership has also fostered this commitment, with current the current mayor embracing a fight against fuel poverty as part of a broader vision for curbing social inequality in the city (BEN respondent; BEC respondent). This rise of fuel poverty into Bristol's formal policy circles has further reinforced the importance of intermediary organisations in local energy governance because Council realises their role in garnering community support and trust for top-down projects. While this places these intermediaries at the bargaining table, it does not always mean that they are seen as equal partners, especially since the Council has established its own vision for how to help Bristol's citizens with the cost of energy.

Municipalisation

Another striking example of change in governance practice is local Council's move to establish its own energy supply company, Bristol Energy. Given the company's expressed aim of being "a force for social good" and its strategic focus on fuel poverty, it is a clear manifestation of how fuel poverty reduction has become institutionalised practice in Bristol. The company was established in 2015 during Bristol's year as European Green Capital and was made possible by a 2.5 million Pound ELENA grant to Council. Bristol Energy was conceived to support several social, economic, and environmental aims, all mobilised by giving Bristol's citizens the option of switching to a locally based, clean energy supplier as an alternative to the UK's "Big 6" (Bristol Energy respondent). Fuel poverty is addressed through measures like an advice line, subsidised tariffs to low-income customers, and a designated fuel poverty fund for reinvesting revenue into

local initiatives (Ibid.). The company also partners with community groups such as CSE and BEN on energy-related events around the city in an effort to try and attract customers.

At first glance, the establishment of a municipal energy company represents a transformative change in energy governance since it can be contrasted against three decades of sector privatisation (Hall et al., 2013). In fact, Bristol Energy can be seen as part of a growing movement of re-municipalisation of public utilities. A return to publicy owned energy involving varying degrees of state involvement has proliferated in recent years, most notably in Germany. (Becker et al., 2017, pg. 63). The label of public ownership in energy can be applied to a broad number of intitiatives, some of which are quite common, such as community-based cooperatives, while instances of a city establishing its own supply company are more rare (Cumbers, 2012). Becker et al. (2015) view such acts of re-municipalisation as being post-neoliberal assertions grounded in enhanced democracy; however, Cumbers (2012) urges a more careful inspection of public ownership, particulary around state control. He suggests we "aspire towards examples of democratically controlled forms of public ownership that are technically necessary at higher levels while relinquishing control of other activities as far as possible to the local level…the aspiration should be towards democratic decision-making in which employees and user groups have a voice." (Ibid., pg. 164).

Evaluating Bristol Energy from a perspective of social innovation is limited by the fact that the company is still in its infancy phases. Many signs suggest it is fundamentally committed towards empowering Bristol's residents through the provision of affordable energy, consumption advice, and efficiency measures, as well as facilitating greater engagement around energy issues in the city. For example, the company has launched a collaborative partnership with other Bristol energy organisations called No Cold Homes to co-produce a 10-year action plan to ensure no Bristol resident is suffering a cold home by 2028 (Bristol Energy respondent). Such plans would suggest that Council has introduced an innovative new actor in energy governance that redresses the exploitative, profit-seeking practices of private energy suppliers. Yet, one should consider the motives behind this new entity.

Bristol Energy's website, and two interviewees, highlighted how the company was set up as a source of potential revenue for the Council. Of course, this intention is not problematic considering profits can flow back into city coffers and be reinvested into various services in the city. Such redistributions have not come to fruition thus far, as the company is yet to have a profitable year (Bristol Energy respondent). Financial flows aside, the governance of this company has drawn criticism from energy actors around the city because of a lack of transparency – although Bristol Energy is publicly owned, there are no mechanisms for direct accountability, such as citizen representation on the board (Melville, 2016). Under such a governance structure, the power to determine the strategic direction of the company and how its revenue gets allocated to different activities remains in the hands of a limited group of board members rather than distributed to "employees and user groups" as Cumbers (2012) suggests is requisite for enhancing economic democracy.

A critical perspective sees Bristol Energy as an example of Council depoliticising fuel poverty and the wider energy transition. Depoliticisation is used to describe processes of closing down issues

as subject to deliberation, decision-making and human agency (Bues and Gailing, 2016). Such processes can take different forms, but they typically involve the shifting of issues between governmental, private and public spheres. Swyngedouw's (2005) critique of governance-beyond-the-state targets a form of "governmental depoliticization" (Bues and Gailing, 2016, pg. 77) whereby traditional state-centred forms of policy-making are delegated to new institutional spaces at arm's length of government and obfuscated to the public. Swyngedouw sees this shift as "a profound restructuring of the parameters of political democracy" and "leading to a substantial democratic deficit." With Council delegating the majority of its fuel poverty reduction activity to Bristol Energy, this can be seen as shutting out opportunities for public scrutiny. This is occurring in conjunction with a type of "societal depoliticization" (Bues and Gailing, 2016, pg. 77) that has made fuel poverty a matter of individual responsibility rather than a collective social challenge. Instead of questioning dominant energy governance practices and power relations as being at the root of the issue, fuel poverty is instead represented as a matter of individual behaviour and choice. Solving social inequalities are therefore reduced to measures such as insulating one's home or switching energy providers (Shove, 2010; Bues and Gailing, Ibid.). Such actions are pre-emptive in that they establish consensus around a specified pathway for change that is aligned to incumbent interests (Geels, 2014), undermining political activation around alternative visions that contest these very interests and the social relations they are built upon.

Social Relations

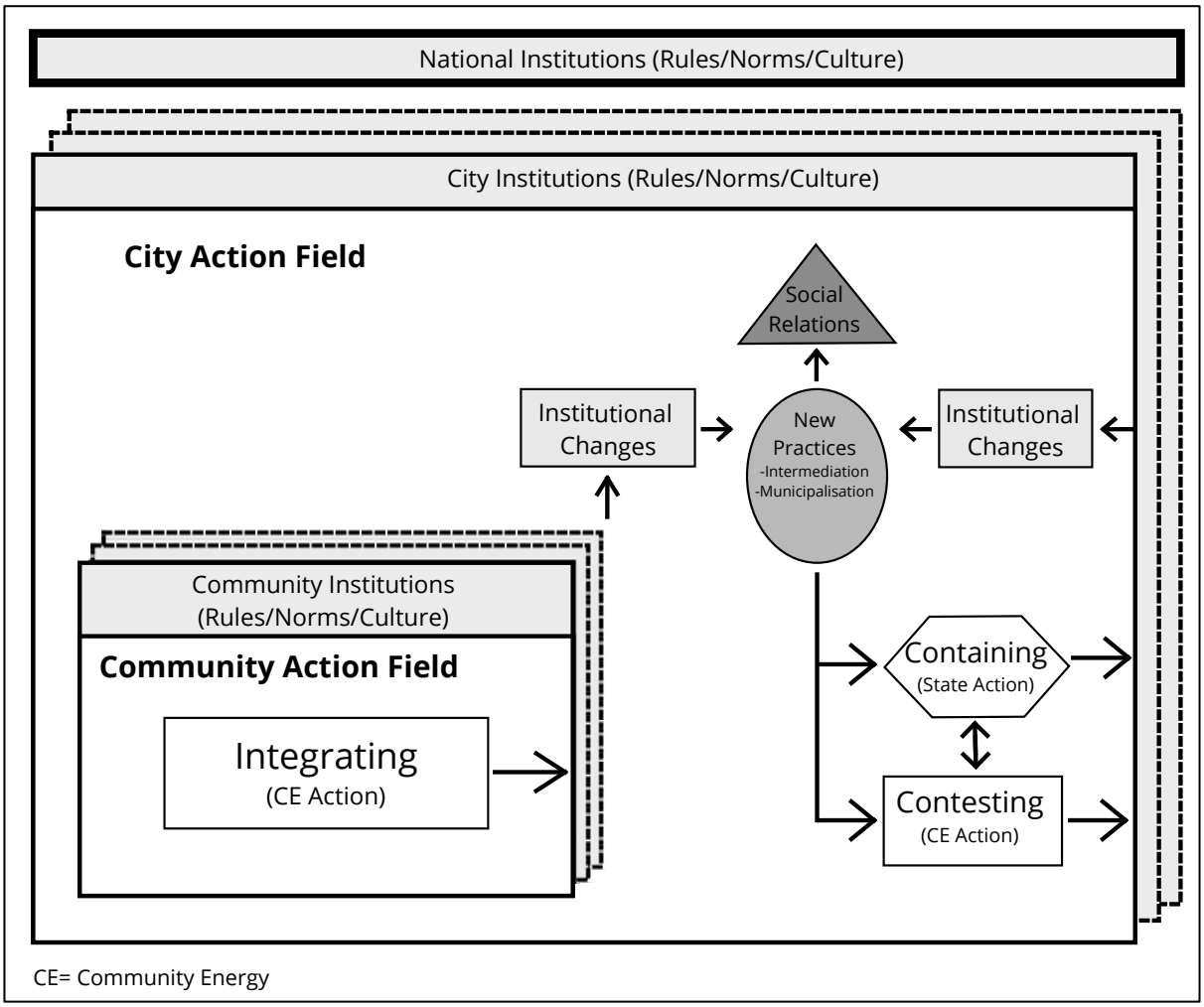
This category builds on the above discussion of social practices because social relations are considered to be the output of practices in our definition of social innovation. In fact, this category was pre-assigned to the conceptual framework because of the research question being pursued. Fundamentally, this study is about uncovering the dynamics that produce social innovation through community energy initiatives. Therefore, the end point must be an evaluation of how social relations have changed as a result of their efforts.

Drawing conclusions around how practices of intermediation and municipalisation have affected social relations in Bristol is open to multiple interpretations. For example, in examining Bristol Energy it was revealed that the company can at once be seen as creating a new governance arrangement that contributes to fighting fuel poverty and makes Bristol's citizens more involved participants in their energy system; or it can be viewed as a way for Council to further cement its power and managerial approach to the local energy transition. Similarly, intermediation by BEN and CSE can at once be seen as empowering Bristol's communities and giving them greater access to much-needed resources though mechanisms like the Bristol Community Energy Fund; or the recurring complaints by these intermediaries around Council bringing rigid conditions to their collaborations can run counter to an impression of civil-society empowerment. Regardless of the stance taken, there is no arguing that community energy initiatives have impacted social relations in Bristol to some degree. The emergence of new actors and governance arrangements within and beyond the community energy sector has resulted in new forms of interaction between social actors. What is of primary interest is the degree of transformation, and whether this has enhanced the satisfaction of human needs and empowered new segments of society.

Undoubtedly this is a complicated answer, and one that is given greater attention under the section titled Discussion and Conclusions. Before that, however, I present the conceptual framework that is based on all categories touched upon in this section in order to better articulate the relations between them, and to help guide the final discussion.

Connecting Concepts, Building a Framework

Figure 5: Dynamics of Social Innovation through Bristol Community Energy



Source: Author

Standalone theoretical categories hold minimal explanatory power for conceptualising how social change comes about. While several thematic relations have already been mentioned, this section shows how all of the 'pieces' described above fit together in a conceptual framework (See Figure 5). Doing so allows us to visualise the multiple elements involved in social innovation, which is better conceived as situated innovation in process, as opposed to a singular outcome (Cajaiba-Santana, 2014). Some of the relations between elements bear no further explanation, as they have

been covered extensively already, such as the causal relationship between new social practices and social relations. Meanwhile, certain elements may come as a surprise given that they were not explicitly outlined in the previous section. These components are used simply as a tool for highlighting certain processes whose visual representations may be less obvious. An example of such is the labelling of Institutional Changes and designated Action Fields.

The framework has been segmented into two action fields following a similar terminology as Fligstein and McAdam's (2011) organisational theory of Strategic Action Fields. This theory was touched upon previously in the section on social processes, but its core contribution is the belief that society is made up of a series of overlapping and nested action fields involving different groups of actors pursuing certain goals. Actors coalesce within fields based on common institutional frames, and they act strategically to alter institutions in order to expand their own field (Ibid.). Comparing this conceptualisation to the collected data resulted in the decision to segment the framework into two fields: community and city. Not only did interviewees express different scales of action (e.g. grassroots interventions in Easton); they also alluded to the "alignment" of interests, particularly between community-based actors. This suggested that the observed process of integrating was supported by a common institutional framing: shared rules, norms, and culture. In this sense, cultural institutions like Bristol's history for collaborative grassroots environmentalism (Brownlee, 2011), or informal rule sets and cognitions favouring community ownership of the local energy transition were enabling forces for actors to integrate. At the same time, however, an understanding of institutions as nested and transcending place suggested that the community action frame was subject to the effects of institutions from other places or scales. What corroborated this line of thinking was the common viewpoint that urban energy transitions occur through a system of multilevel governance (Haarstad, 2016), as well as respondents' mentions of national and city-level policies (rules) and entrenched styles (cultures) of governance. With this in mind, a crucial takeaway from this framework is that the nesting of institutions and action frames is not meant to convey that action at a given scale occurs in complete isolation from the influence of other scales. Here the analogy of grassroots niches taken from transitions research offers value, as these niches are considered to develop in a "protected space" because of a certain distance afforded to them by an established regime (Geels, 2004). In Geels' view, it is the rules or institutions of the incumbent regime that create opportunities for niches to develop in the first place (Ibid.). Although Geels does not address the scalar dimensions of this phenomenon, the logic can be applied towards understanding how community energy initiatives are subject to institutional influences coming from a national or city level. Each of these levels might exhibit slight differences in prevailing rules, norms, and cultures. Such differences can be attributed to the agency of human actors, who are not powerless to society's structures and therefore act to change the world around them. The way they do this is by acting to alter institutions. Collective action is represented in the framework through the three social processes of integrating, containing, and contesting.

Through their interactions, actors co-construct a shared understanding of their social context, which facilitates collective action aimed at establishing new social practices that will serve their collective goals. However, for new practices to solidify, they must be viewed as legitimate by other actors in the social context. This legitimacy is mediated by institutions, so collective action is directed towards changing institutions in such a way to enable new social practices (Cajaiba-

Santana, 2014). Alternatively, collective action can work to uphold existing institutions in order to thwart the establishment of new social practices. All of these processes are reflected in the conceptual framework: integrating is shown as collective action within the community action field since it represents purposeful actions among community energy actors to alter their own institutions. However, the outcome of institutional change was that they were able to break out of their own action field, and establish new practices within a broader city action field.

The processes of containing and contesting reflect similar action towards institutions, but also demonstrate how such actions are no longer occurring in the community action field. These processes occur on a different playing field, involving a broader scale of action and institutions. Here community energy initiatives have stepped into the mainstream because of the power they have drawn from the process of integrating. By doing so, they have more direct engagement with the local state through new governance practices, such as intermediation. By entering into such collaborative arrangements, two reflexive collective actions (social processes) develop, each associated with a different actor group. The state engages in containment efforts and community energy groups engage in contestation as part of an unfolding power struggle. Such actions can be viewed as reactionary, hence why they are connected by arrows in the framework. However, once again, each form of action is directed towards altering social practices and therefore must be mediated through institutions. As institutional change unfolds, so do new social practices related to energy governance, such as new types of intermediation (E.g. Bristol Community Energy Fund) and municipalisation (E.g. Bristol Energy). Using municipalisation as an example, it can be seen as an outcome of containment because it sought to establish the state's own approach to fuel poverty that was contrasted against community energy approaches, thereby serving to legitimise state power relative to community initiatives. In doing so, it altered the 'rules of the game' and produced a new normal in the form of a Council-owned energy company.

Finally, social relations are shown as emerging from the new practices category. As already mentioned, new governance practices are bound to have some effect on social relations, either because of changes in relative power within existing relations, or through the production of new sets of relations because of a new actor/entity entering the fold. What is of main importance for social innovation is how these transformed social relations might enhance social justice. The next section is devoted to discussing this quandary in the context of Bristol.

Chapter 5: Discussion and Conclusion

In this final section, some conclusions are drawn around the conceptual framework that has been developed using grounded theory methods. These are combined with additional discussion of the situatedness of social innovation in order to better answer the research question under study. The contributions this work has to offer existing theoretical debates around social innovation and community energy are also outlined, before a short recap of the overall project.

Tracing Social Innovation through Community Energy

To recall, the question anchoring this research project is this: How can community energy initiatives support social innovation in local energy transitions? Up until now, attention has been paid to outlining the process of social innovation in Bristol's energy system through the involvement of the city's community energy sector. Therefore, part of the answer to the research question is provided by tracing the components of the framework. Social innovation is brought about by community energy initiatives when they are able to challenge and transform existing institutions in their social context (city), causing new governance practices that help to empower and satisfy the needs of local people through progress on issues like fuel poverty. These processes occur in conjunction with state containing efforts, both co-optative or pre-emptive, that can undermine the abilities of community energy groups to achieve their objectives. They are dynamic processes involving ongoing interactions between structure and agency manifested through actors, policies, discourses, and other non-human elements. As new practices emerge from either community or state circles, social relations are undoubtedly altered in some way. What has emerged from this analysis is that the ability of community energy initiatives to affect both scale and scope of social change is dictated by-and-large by power relations with local government, which are defined by situational factors. This last point cannot be emphasised enough, as it leads us to appreciate the situated nature of social innovation and prompting us to put concepts like institutions, social relations, and practices into context. Thus, a complete view of social innovation – based on the definition provided – must combine situation, process and outcome. While grounded theory methods have helped illuminate the process that community energy actors in Bristol have followed, establishing links between this process to the outcomes expressed by interviewees, knowledge of the broader situation of local energy governance may supplement the conceptual framework in answering the research question.

The section on Social Practices explained how new governance practices of intermediation and municipalisation observed in Bristol can be traced back to the efforts of community energy actors for addressing fuel poverty. Here we return to this discussion to help illuminate the determining impact of power relations in shaping pathways of change within local energy systems. The focus on fuel poverty governance is retained since this is an issue that has clearly become institutionalised in the city. Evidence from interviewees shows that it transcends all organisational boundaries between the actors interviewed for this project, with the most powerful actor, City Council, making it a major priority and attaching it to a variety of other policy areas. When asked why fuel poverty was the main metric used to gauge social outcomes of energy planning decisions, the respondent from the Council replied:

> "Residents in the city that are in fuel poverty are from our perspective, they overwhelmingly rely on our services. Far more so that the majority of the population. So there's a benefit [to alleviating fuel poverty] from our perspective. Because if they are spending less money on their energy bills, than they have more money for food or for heating their home to a comfortable temperature, so they are less likely to be ill and be

> able to work, so they are less likely to rely on council services and other public health services."

These words are telling in that they exemplify Council's framing of fuel poverty as a matter of distributive justice. It is certainly a positive sign that Council is committed to the well-being of Bristol's population; however, seeing fuel poverty strictly as a distributive issue overlooks other forms of justice, such as procedural and recognition. Energy justice, or even social justice, is often considered to involve a triumvirate of these three justice forms (Heffron and McCauley, 2017; Jenkins et al., 2016). While distributive justice focuses on the fair distribution of costs and benefits in society, justice theory has evolved past this Rawlsian conception of justice to consider processes of maldistribution. According to Young (1990, pg. 22) distributional injustices come directly out of social structures, cultural beliefs and institutional contexts. Achieving social justice therefore begins with eliminating institutionalized domination and oppression of the un- or mis-recognized (Young, 1990). Recognition is essential to participatory parity, that is inclusion in democratic decision making around the distribution of social benefits and costs (Schlosberg, 2009, pg. 15).

In comparing these theoretical insights with interview findings that suggest a tense relationship between community energy groups and Council, it would appear that the root of their conflict might be two disparate conceptions of justice. The emphasis that both the EEG and BEN respondents placed on democracy and recognising the need for including vulnerable in economic and political process demonstrates their broadened perspectives of justice in energy systems. Similarly, CSE expressed a view of energy justice as covering both distributive justice as well as procedural justice, with the latter conceived as "who's involved (and how) in discussions and decisions about what happens and why and in whose interests." (Centre for Sustainable Energy, 2017). In terms of what shapes these diverging perspectives, Young's (1990) point around injustices being produced through institutional contexts leads us once again to examining institutions. This is a logical step when considering institutions as providing stability and meaning to social life through normative elements, including values and moral judgments (Scott, 2014, pg. 60). It begs asking, why has Council has taken up its particular stance on fuel poverty? Why does it act the way it does?

Asking the above questions requires us to expand our view of Council as a monolithic agent that simply acts in its own interest to maintain power. Contextualising the Council's actions in a broader system of energy governance helps identify several institutional influences. With Bristol nested within a national political and energy system, the institutions associated with these systems can serve as enabling and/or constraining forces for all energy actors in Bristol. It has already been mentioned that the UK's political economy follows that of a liberal market economy, which privileges the role of the market over the state in responding to social needs. The effects such a system have on state functions are so complex that it is impossible to cover their intricacies here. However, two related trends in governance bear mentioning because there are clear traces of them in the data collected in this study. The first is fiscal austerity, which several interviewees mentioned as influencing their actions. In particular, the Council representative emphasised being in a position "where our budgets are being squeezed," and this having a direct effect on the projects the Energy Service undertakes or supports around the city.

Ironically, at the same time, local government is being delegated more responsibility in social service and welfare provision as part of a new localism agenda in the UK (Catney et al., 2014). Localism represents a reassignment of responsibility away from national government onto local actors, which includes municipal councils, but also third-sector organisations and individual citizens. This decentralisation was driven by a rationality of added efficiency, democracy, and fairness, all of which support the empowerment of local communities (Williams et al., 2014, pg. 2800). Yet this new approach to governance has been criticized as further diluting the traditional welfare state, supporting "market-led individualism and politicised subjectification of the charitable self." (Ibid., pg. 2798). While local government is subject to further budget cuts, they are tasked with developing and managing a governance infrastructure that involves an increasing number of community groups, charities, and NGOs that look to them for resources. Indeed, local councils are caught in the crossfire as civil-society groups become increasingly critical of their governance and financial practices.

Looking at the experience of Bristol Council and community energy initiatives, strained relations between them may be traced back to institutions constructing at a higher scale of governance. Notably, national policies have been built on rules, values, and assumptions that perpetuate capitalist social relations, favouring economic growth with minimal state intervention. Fiscal austerity and decentralisation have sparked a transition from managerialism to entrepreneurialism in urban governance (Harvey, 1989): local councils seek to offset their lack of financial capacity with new revenue streams and by looking to market-based solutions to fill in gaps in public service provision. Meanwhile, the governance of social concerns like climate change or fuel poverty falls victim to a post-political condition that essentialises economic progress within an envisioned sustainable future (Swyngedouw, 2009). The result: only a limited set of solutions that are beneficial to the 'bottom-line' hold weight in the eyes of decision-makers, while alternative viewpoints that prioritise democratic practices are marginalised. Bristol's tilt towards green growth, exemplified by its European Green Capital award, offers a strong example of this governance dynamic. And depending on one's perspective, the city's new energy supply company, which is intended to both curb fuel poverty and provide a revenue stream back to Council, may also fit the same bill. Resource dependent community energy initiatives pursuing social innovation have a hard time surviving in such institutional folds where their demands are incompatible with the techno-managerial style of governance that is incumbent of councils under austerity circumstances in the UK.

There is still hope for community energy initiatives. While institutional theory stresses the stability of dominant institutions and there propensity for controlling behaviours, they are by no means immune from agency and change. As Scott (2014, pg. 58) aptly points out:

> "Much of the impetus for change occurs through endogenous processes, involving conflicts and contradictions between institutional elements, but institutions can also be destabilised by exogenous shocks, such as wars and financial crises."

These words highlight that so long as community energy initiatives can assert their freedom of expression and action by avoiding assimilation or suppression from the state, they will challenge the very institutions that make social change so difficult to achieve. In doing so, they establish

and maintain a "politics of possibility" (Gibson-Graham, 2006, pg. xxvi). Ironically, the very institutions that prove so dominant in thwarting their efforts are also the ones that create space for this politics of possibility to develop. Consider the UK's push towards localism for example. As mentioned, localism has been critiqued as being a new face of neoliberalism, mobilising an anti-state ideology that places the onus of welfare on individualised subjects or communities, ignoring how existing social inequalities inhibit these social actors from providing for their own needs (Catney et al., 2014). Yet there is an inherent contradiction in this subjectification of individuals and communities: by delegating responsibility down to localities and communities, new spaces of governance are created where alternative visions and social innovation can take shape through the agency of those who reject subjectification. In other words, institutional cracks are opened up with potential to be exploited by community initiatives. This contradiction is exemplified by the aforementioned Janus-faced collaborative governance arrangements articulated by Swyngedouw (2005). Although Swyngedouw suggests these are spaces for further domination by elite interests, Williams et al. (2011, pg. 2805) argue that they should be re-read as windows of opportunity for local resistance to neoliberal rationalities, technologies, and subjectivities from the inside. When community initiatives step into such spaces their politics of possibility is extended through communicative action. Their visions for social change are conveyed to other actors through discourse, giving new power to their ideas.

Neo-institutional theorists give great attention to the power of discourses, to the point where a distinct discursive institutionalism has emerged. Discursive institutionalists are fundamentally concerned about the expression of ideas and their relations with institutions (Schmidt, 2008). Although society's rules, values and cultures are embodied by actors, they are negotiated and constructed through interaction. On a practical level, discursive institutionalists emphasise focusing on "who talks to whom about what when how and why, in order to show how ideas are generated, debated, adopted, and changed as policymakers, political leaders, and the public are persuaded, or not, of the cognitive necessity and normative appropriateness of ideas." (Schmidt, 2010b, pg. 60). The power of discourses is determined through these social processes, and the outcome serves to either reinforce or destabilise existing institutions. An appreciation of this discursive power helps us conceptualise community energy initiatives as producing seeds of change in Bristol's energy governance, not only moving forward, but historically. By adopting and propagated fuel poverty as a necessary discourse in the governance of Bristol's energy transition, they challenged a previous fixation on renewable technology among several local actors. This is not to argue that community energy initiatives *invented* the concept of fuel poverty, but rather, they recognised that this existing discourse was not being given adequate attention in their local context. The discourse was aligned with their own normative and cultural beliefs, and represented a mechanism for them to channel their ideas towards other energy actors in Bristol. While their interactions with these actors may have resulted in co-optation of this discourse under different interpretations, leading to policies and practices that may not mirror their own values and goals, they nonetheless proved powerful in altering institutions at a local level. The outcome of these institutional changes has been new governance practices involving intermediation through organisations like BEN, which have empowered new groups through greater recognition and resource.

The example of fuel poverty in Bristol should serve as encouragement to the city's community energy initiatives despite their apparent tribulations with neoliberal institutions. Their actions have been proven to modify local institutions in the past, and they can continue to do so moving forward by introducing new ideas and discourses into local policy circles. There is no telling what effect such ideas can have in bringing about change as such ideas can transcend time and space. In line with González and Healey (2005, pg. 2065), the argument presented here is that social dynamics in one particular moment are constituted through multiple forces, with their manifestation being contingent and inherently unpredictable. An institutionalist view of social innovation embraces the generative power of ideas: they are the seeds of socially innovative governance practices, and as such, their capacity for change should not be reduced to fleeting instances of either uptake or suppression (Ibid., pg. 2066). When these ideas find themselves in the right context of endogenous and exogenous forces, governance relations can be transformed to serve the interests of those on the margins. (Ibid.)

With this in mind, we return to the current landscape of energy governance in Bristol, where the community energy sector has already established new governance practices and relations through socially innovative processes. Yet, these have been shown to have minimal effect on transforming the managerial, growth-orientated logics embraced by local Council, which limit the degree of empowerment and inclusive nature of the ongoing energy transition. Whether this dynamic will persist or change moving forward may well depend on the ability of community energy initiatives to continue challenging local government, offering up seeds of change that centre on all three forms of justice: procedural, recognition and distributive. These seeds may be fed with exogenous forces that are unbeknownst to local actors in the present day.

Earlier in 2018, Council launched City Leap, which seeks to attract one billion pounds of investment into a "city-scale low carbon, smart energy infrastructure programme." (Bristol City Council, 2018). The Council is now accepting partnership proposals for City Leap from a range of public and private organisations, and is keen to include local community groups in projects (Council respondent). As this process unfolds, the social relations between market, state and civil society will be laid bare, offering a potential glimpse into how effective community energy groups have been in securing a greater role in energy planning. Regarding City Leap, the council interviewee stated:

> "What we're not particularly interested in is having a conversation with companies who want to cherry pick all the best returning, financial return projects in the city because that leaves us to sort out what's left. So they will have to come in with a different mindset."

This quote suggests that perhaps Council is ready to 'break the rules' they have made a tradition of following.

Fueling the Debate

Several academic disciplines were drawn upon in carrying out this analysis. The interdisciplinary approach has meant drawing upon numerous existing theories in order to construct a logical

conceptual framework. Researchers dealing with social practice theory, institutional theory, social innovation, urban governance, energy transitions, and systems theory will all find traces of their work in the produced framework. Its potential contribution to each of these fields is open to debate. However, based on a review of existing literature, this project has particular relevance to the following bodies of work.

One of the main findings in the above analysis, which features prominently in the conceptual framework, is the role of institutions in shaping social innovation. Institutional theory and social innovation theory share sociological roots, in that they are both concerned with explaining social change. Not surprisingly, several scholars in both fields have recognised and explored these connections, and this has offered several valuable insights to this project's emergent analysis. Most notable among them are the works of González and Healey (2005) and Cajaiba-Santana (2014). González and Healey apply a sociological institutionalist approach for studying innovation in governance capacity through the evolution of a community-based movement opposing urban development plans in Newcastle. Their methodology involves examining three separate levels of governance (episodes, processes, cultures) to assess how dynamics between institutions and actions at these three levels might support social innovation. Clearly there are similarities with this project as both focus on uncovering how social innovation can occur in a particular urban setting. Yet, one key difference is that González and Healey are focused on the evolution of one initiative and its shifting relations with the local state and institutional context. In taking a inductive approach, this study has demonstrated how the dynamics of multiple community groups are empowered to integrate because of a shared institutional frame, and how their linking up results in greater potential to affect change at higher scales. As such, it provides greater attention to collective action towards altering institutions in social innovation.

The realisation that social innovation is mobilised through actors conveying ideas to others in order to build shared understandings and form collective action is better reflected in Cajaiba-Santana's (2014) conceptual model of social innovation. Here the author uses institutional theory to construct a holistic model that explains how several of the concepts described in this study serve to co-construct social innovation. The model Cajaiba-Santana developed served as useful reference during analysis for this project; however, there are fundamental differences in our approaches. The most obvious is that this study used inductive methods applied through a case study analysis in order to conceptualise social innovation. Thus the final output combines grounded insights with theoretical constructs in order to support a situated understanding of social innovation by illustrating how concepts like "institutions" are context specific. Furthermore, Cajaiba-Santana's framework is based on a more limited definition of social innovation that stops with the establishment of new social practices. By contrast, I have evaluated social innovation through a case study that considers how process translates into particular outcomes: empowerment, altered social relations and a satisfaction of human needs. Although these elements are not specified in the conceptual framework, they are considered in supplementary discussion, again serving to bring theory to life. In short, both frameworks can be of useful to future research on social innovation, although each is suited to different research objectives.

Of course, the other main theme of this project is community energy and its place in urban energy transitions. As stressed in the introductory chapter, there is growing interest in understanding the social dimensions of urban energy transitions, partly in reaction to a prevailing technical bias (Rutherford and Coutard, 2014). One of the most popular frameworks for conceptualising transitions, albeit not limited to urban settings, is the Multi-Level Perspective developed by Geels (2004). Grounded in systems thinking, which draws on several disciplines, Geels establishes a detailed middle-range theory for explaining processes of transitioning from one socio-technical system to the next. Again, several elements present in the MLP have been considered and applied to this project's findings, including the role of institutions in sustaining an incumbent regime and the development of 'niche' challengers. However, the MLP has a much different view of innovation in transitions. Geels' model tries to explain the transformative potential of "technological niches," how they gain acceptance into society, and resulting changes in social practices. By contrast, this study centres on social innovation brought about through more *social-orientated* niches in the form of community energy initiatives. Of course, as Pesch et al., (2018) rightly outline, community energy initiatives come in all forms and pursue different types of innovation: the creation of new technology, the application of existing technology, and the development of social innovation, often in combination. Realising such diversity in niche innovations prompted Hölsgens et al. (2018) to explore the applicability of MLP to analyzing diffusion trajectories of energy-related social innovations rather than technological innovations. They conclude that social innovations that target systemic change are suitable to the heuristics in the MLP, while social innovations that aim at incremental improvements are not. In order to arrive at this finding, the authors identify social innovation in terms of an evolving entity that (typically) starts as a small scale initiative which targets changes to social practices. Those with ambitions to diffuse and challenge institutionalised social practices within an incumbent regime are suited to systems-based evaluation. This crosses into the territory of what would be considered a transformative social innovation (TSI), or a social innovation that challenges, alters or replaces dominant institutions in their social context (Haxeltine et al., 2016).

TSI theory considers different "shades of change" – social innovation, system innovation, game-changers and narratives of change – to understand their inter-related dynamics in destabilising institutions that serve to power certain groups and disempower others (Avelino et al., 2017). Looking at the these two research approaches – MLP-based and TSI-based – both would offer valuable, complementary strategies to the one undertaken in this project. However, both the MLP and TSI theory tend to be focused on broader societal changes at a much larger scale than one city. While the starting point with these theoretical approaches is often a grassroots, community, or niche level, their aim is understanding how these initiatives scale up and translate into an existing regime whose power stretches to the national and supra-national. Although the examination of social innovation dynamics in Bristol undertaken here has accounted for institutional forces coming from multiple scales, the conceptual framework is decidedly local in its focus. What might be fruitful for systems thinkers or TSI scholars is to trace one or more of the community energy initiatives in Bristol and evaluate how they have linked up with similar initiatives elsewhere in challenging institutions at higher scales and whether there are resulting signs of social innovation.

Limitations

There are limitations to this research project, some of which have already been acknowledged while others will be brought to light here. A constructivist research paradigm has been followed which assumes that "people construct both the studied phenomenon and the research process through their actions." (Charmaz, 2011, pg. 362). All interpretations are subject to my own positionality, which includes bias related to social and situational conditions. Furthermore, although I have strived to remain reflexive throughout my analysis, telling the stories of my respondents in a way that is true to their words, the pathways chosen for analysing data cannot be entirely separated from own ideological positions and existing knowledge of energy transitions.

An additional limitation, that bears mentioning is that this project has sought to explain dynamics of social innovation based on one specific context or case-study. In line with the constructivist paradigm, I acknowledge that realities are multiple, and therefore social innovation processes should be bound with the situation in which they develop. As such the output of this project is not a formal theory, but conceptual framework and set of interpretations that are grounded in the context of Bristol's community energy sector. While I urge caution in extending these outputs to other contexts, this should not stop researchers from testing or contrasting these Bristol-based insights through different research situations.

Summary of Research Outputs

The initiatives studied in this project demonstrate that community energy can be a catalyst for deeper social change, impacting more than just people's energy behaviours. As opposed to technological and state-managed solutions that gel with institutionalised logics and practices, certain initiatives that originate in the grassroots with small-scale practical solutions to issues like fuel poverty can cause shifts in social relations. The conceptual framework presented here traces the effects of three main social processes gleaned from the experiences of community actors in Bristol. Processes of integrating and contesting led by community energy initiatives have helped produce new governance practices despite counter-productive containing processes initiated by the local state. In considering the types of change brought about in Bristol, a particular emphasis has been placed on how institutional contexts interact to produce the outcomes seen in the city's energy system. Above all, sets of rules, values, and cultures emanating from a national level have been shown to place major limitations on local social innovation. However, each episode of contestation between community energy initiatives and the local state puts a crack in these structures. This takeaway may prove valuable to grassroots actors who question whether their efforts are making a difference.

Bibliography

*Photos on the cover page are attributed to the author

Avelino, F., Wittmayer, J.M., Pel, B., Weaver, P., Dumitru, A., Haxeltine, A., Kemp, R., Jørgensen, M.S., Bauler, T., Ruijsink, S., O'Riordan, T., 2017. Transformative social innovation and (dis)empowerment. Technological Forecasting and Social Change. https://doi.org/10.1016/j.techfore.2017.05.002

Bardis, P., 1979. Social Interaction and Social Processes. Social Science 54, 147–167.

BBC News, 2017. Failed Warm Up Bristol scheme gives back government funding. BBC News.

Becker, S., Beveridge, R., Naumann, M., 2015. Remunicipalization in German cities: contesting neo-liberalism and reimagining urban governance? Space and Polity 19, 76–90. https://doi.org/10.1080/13562576.2014.991119

Becker, S., Kunze, C., 2014. Transcending community energy: collective and politically motivated projects in renewable energy (CPE) across Europe. People, Place and Policy Online 8, 180–191. https://doi.org/10.3351/ppp.0008.0003.0004

Becker, S., Naumann, M., Moss, T., 2017. Between coproduction and commons: understanding initiatives to reclaim urban energy provision in Berlin and Hamburg. Urban Research & Practice 10, 63–85. https://doi.org/10.1080/17535069.2016.1156735

Bird, C., Barnes, J., 2014. Scaling up community activism: the role of intermediaries in collective approaches to community energy. People, Place and Policy Online 8, 208–221. https://doi.org/10.3351/ppp.0008.0003.0006

Birks, M., Mills, J., 2015. Grounded theory: a practical guide, Second edition. ed. SAGE, Los Angeles.

Bristol City Council, 2018. City Leap Prospectus [WWW Document]. URL https://www.energyservicebristol.co.uk/wp-content/pdf/City_Leap_Prospectus%204-5-18.pdf (accessed 8.5.18).

Bristol City Council, 2015. Our Resilient Future: A Framework for Climate and Energy Security [WWW Document]. URL https://www.bristol.gov.uk/documents/20182/33423/Our+Resilient+Future+A+Framework+for+Climate+and+Energy+Security/2ee3fe3d-efa5-425a-b271-14dca33517e6 (accessed 8.10.18).

Bristol City Council, 2012. Climate Change and Sustainability [WWW Document]. URL https://www.bristol.gov.uk/documents/20182/239435/Climate+Change+and+Sustainability+Practice+Note+%28December+2012+v2%29.pdf/322600c7-e3bf-4cae-92fd-12f14c966a3e (accessed 8.2.18).

Bristol Energy, 2018. The fight against fuel poverty [WWW Document]. URL https://www.bristol-energy.co.uk/fight-against-fuel-poverty (accessed 8.15.18).

Bristol Energy Cooperative, 2018. About us [WWW Document]. URL http://www.bristolenergy.coop/about-us.html (accessed 6.20.18).

Bristol Energy Network, 2018. About BEN [WWW Document]. URL http://bristolenergynetwork.org/aboutus/about-ben/

Bristol Energy Network, 2013. Bristol Community Strategy for Energy [WWW Document]. URL

http://gallery.mailchimp.com/18bc0f4d60d2b150f9e1dabd5/files/BCSfE_June_2013.pdf (accessed 6.20.18).
Brownlee, E., 2011. Bristol's green roots: the growth of the environmental movement in the city of Bristol. Schumacher Institute for Sustainable Systems.
Bryant, A., Charmaz, K., 2011. Grounded Theory Research: Methods and Practices, in: Bryant, A., Charmaz, K. (Eds.), The SAGE Handbook of Grounded Theory. Sage Publ, Los Angeles, Calif., pp. 1–28.
Bues, A., Gailing, L., 2016. Energy Transitions and Power: Between Governmentality and Depoliticization, in: Gailing, L., Moss, T. (Eds.), Conceptualizing Germany's Energy Transition: Institutions, Materiality, Power, Space. Palgrave Macmillan, London, pp. 69–93.
Bundred, S., 2016. Review of Bristol 2015 European Green Capital Year.
Burke, M.J., Stephens, J.C., 2017. Energy democracy: Goals and policy instruments for sociotechnical transitions. Energy Research & Social Science 33, 35–48. https://doi.org/10.1016/j.erss.2017.09.024
Cajaiba-Santana, G., 2014. Social innovation: Moving the field forward. A conceptual framework. Technological Forecasting and Social Change 82, 42–51. https://doi.org/10.1016/j.techfore.2013.05.008
Catney, P., MacGregor, S., Dobson, A., Hall, S.M., Royston, S., Robinson, Z., Ormerod, M., Ross, S., 2014. Big society, little justice? Community renewable energy and the politics of localism. Local Environment 19, 715–730. https://doi.org/10.1080/13549839.2013.792044
Centre for Sustainable Energy, 2018. About us [WWW Document]. URL https://www.cse.org.uk/about-us (accessed 7.11.18).
Centre for Sustainable Energy, 2017. Our purpose, methods & values [WWW Document]. URL https://www.cse.org.uk/downloads/file/CSE-purpose-methods-values-2017.pdf (accessed 8.15.18).
Centre for Sustainable Energy, 2009. Bristol Citywide Sustainable Energy Study [WWW Document]. URL https://www.cse.org.uk/downloads/reports-and-publications/policy/planning/Bristol_Citywide_Sustainable_Energy_Study.pdf (accessed 8.16.18).
Charmaz, K., 2011. Grounded theory methods in social justice research, in: Denzin, N.K., Lincoln, Y.S. (Eds.), The Sage Handbook of Qualitative Research. Sage, Thousand Oaks, pp. 359–380.
Charmaz, K., 2008. Grounded Theory as an Emergent Method, in: Hesse-Biber, S.N., Leavy, P. (Eds.), Handbook of Emergent Methods. Guilford Press, New York.
Charmaz, K., 2006. Constructing grounded theory. Sage Publications, London ; Thousand Oaks, Calif.
Clarke, A.E., 2005. Situational analysis: grounded theory after the postmodern turn. Sage Publications, Thousand Oaks, Calif.
Clarke, A.E., Friese, C., 2011. Grounded Theorizing Using Situational Analysis, in: Bryant, A., Charmaz, K. (Eds.), The SAGE Handbook of Grounded Theory. Sage Publ, Los Angeles, Calif., pp. 363–397.
Cumbers, A., 2012. Reclaiming Public Ownership : Making Space for Economic Democracy. Zed Books, London.

Davey, E., 2014. Foreword to Community Energy Strategy: Full Report [WWW Document]. URL https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf (accessed 8.20.18).

Department for Business, Energy and Industrial Strategy, 2018. Fuel Poverty Statistics [WWW Document]. URL https://www.gov.uk/government/collections/fuel-poverty-statistics (accessed 8.15.18).

Department of Energy and Climate Change, 2014. Community Energy Strategy: Full Report.

Easton Energy Group, 2018. About [WWW Document]. URL http://www.eastonenergygroup.org/about/ (accessed 7.10.18).

Eisenhardt, K.M., 1989. Building Theories from Case Study Research. The Academy of Management Review 14, 532. https://doi.org/10.2307/258557

Fligstein, N., McAdam, D., 2011. Toward a General Theory of Strategic Action Fields. Sociological Theory 29, 1–26. https://doi.org/10.1111/j.1467-9558.2010.01385.x

Friel, D., 2017. Understanding institutions: different paradigms, different conclusions. Revista de Administração 52, 212–214. https://doi.org/10.1016/j.rausp.2016.12.001

Fuller, S., McCauley, D., 2016. Framing energy justice: perspectives from activism and advocacy. Energy Research & Social Science 11, 1–8. https://doi.org/10.1016/j.erss.2015.08.004

Geels, F.W., 2014. Regime Resistance against Low-Carbon Transitions: Introducing Politics and Power into the Multi-Level Perspective. Theory, Culture & Society 31, 21–40. https://doi.org/10.1177/0263276414531627

Geels, F.W., 2004. From sectoral systems of innovation to socio-technical systems. Research Policy 33, 897–920. https://doi.org/10.1016/j.respol.2004.01.015

Gerometta, J., Haussermann, H., Longo, G., 2005. Social Innovation and Civil Society in Urban Governance: Strategies for an Inclusive City. Urban Studies 42, 2007–2021. https://doi.org/10.1080/00420980500279851

Gibson-Graham, J.K., 2006. A postcapitalist politics. University of Minnesota Press, Minneapolis.

Glaser, B.G., 2002. Constructivist Grounded Theory? Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, Vol 3, No 3 (2002): Subjectivity and Reflexivity in Qualitative Research I. https://doi.org/10.17169/fqs-3.3.825

Glaser, B.G., Holton, J., 2004. Remodeling Grounded Theory. Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, Vol 5, No 2 (2004): Qualitative Market, Media and Opinion Research. https://doi.org/10.17169/fqs-5.2.607

Goldthau, A., Sovacool, B.K., 2012. The uniqueness of the energy security, justice, and governance problem. Energy Policy 41, 232–240. https://doi.org/10.1016/j.enpol.2011.10.042

González, S., Healey, P., 2005. A Sociological Institutionalist Approach to the Study of Innovation in Governance Capacity. Urban Studies 42, 2055–2069. https://doi.org/10.1080/00420980500279778

Haarstad, H., 2016. Where are urban energy transitions governed? Conceptualizing the complex governance arrangements for low-carbon mobility in Europe. Cities 54, 4–10. https://doi.org/10.1016/j.cities.2015.10.013

Hall, D., Lobina, E., Terhorst, P., 2013. Re-municipalisation in the early twenty-first century: water in France and energy in Germany. International Review of Applied Economics 27, 193–214. https://doi.org/10.1080/02692171.2012.754844

Harvey, D., 1989. From Managerialism to Entrepreneurialism: The Transformation in Urban Governance in Late Capitalism. Geografiska Annaler. Series B, Human Geography 71, 3. https://doi.org/10.2307/490503

Haxeltine, A., Avelino, F., Pel, B., Dumitru, A., Kemp, R.; Longhurst, N. Chilvers, J., Wittmayer, J. M., 2016. A framework for Transformative Social Innovation (TRANSIT Working Paper # 5), TRANSIT: EU SSH.2013.3.2-1

Heffron, R.J., McCauley, D., 2017. The concept of energy justice across the disciplines. Energy Policy 105, 658–667. https://doi.org/10.1016/j.enpol.2017.03.018

Hölsgens, R., Lübke, S., Hasselkuß, M., 2018. Social innovations in the German energy transition: an attempt to use the heuristics of the multi-level perspective of transitions to analyze the diffusion process of social innovations. Energy, Sustainability and Society 8. https://doi.org/10.1186/s13705-018-0150-7

Huber, M.T., 2009. Energizing historical materialism: Fossil fuels, space and the capitalist mode of production. Geoforum 40, 105–115. https://doi.org/10.1016/j.geoforum.2008.08.004

Jenkins, K., McCauley, D., Heffron, R., Stephan, H., Rehner, R., 2016. Energy justice: A conceptual review. Energy Research & Social Science 11, 174–182. https://doi.org/10.1016/j.erss.2015.10.004

Johnson, V., Hall, S., 2014. Community energy and equity: The distributional implications of a transition to a decentralised electricity system. People, Place and Policy Online 8, 149–167. https://doi.org/10.3351/ppp.0008.0003.0002

Kelle, U., 2011. The Development of Categories: Different Approaches in Grounded Theory, in: Bryant, A., Charmaz, K. (Eds.), The SAGE Handbook of Grounded Theory. Sage Publ, Los Angeles, Calif., pp. 191–213.

Kenny, M., Fourie, R., 2015. Contrasting Classic, Straussian, and Constructivist Grounded Theory: Methodological and Philosophical Conflicts. The Qualitative Report 20, 1270–1289.

Kuzemko, C., Lockwood, M., Mitchell, C., Hoggett, R., 2016. Governing for sustainable energy system change: Politics, contexts and contingency. Energy Research & Social Science 12, 96–105. https://doi.org/10.1016/j.erss.2015.12.022

Lacey-Barnacle, M., Bird, C.M., 2018. Intermediating energy justice? The role of intermediaries in the civic energy sector in a time of austerity. Applied Energy 226, 71–81. https://doi.org/10.1016/j.apenergy.2018.05.088

Levin, K., Cashore, B., Bernstein, S., Auld, G., 2012. Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. Policy Sciences 45, 123–152. https://doi.org/10.1007/s11077-012-9151-0

Liddell, C., Morris, C., McKenzie, S.J.P., Rae, G., 2012. Measuring and monitoring fuel poverty in the UK: National and regional perspectives. Energy Policy 49, 27–32. https://doi.org/10.1016/j.enpol.2012.02.029

Lounsbury, M., Crumley, E.T., 2007. New Practice Creation: An Institutional Perspective on Innovation. Organization Studies 28, 993–1012. https://doi.org/10.1177/0170840607078111

Martinelli, F., 2012. Social Innovation or Social Exclusion? Innovating Social Services in the Context of a Retrenching Welfare State, in: Franz, H.-W., Hochgerner, J., Howaldt, J. (Eds.), Challenge Social Innovation. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 169–180. https://doi.org/10.1007/978-3-642-32879-4_11

Melville, E., 2016. Bristol, United Kingdom [WWW Document]. URL http://www.energy-democracy.net/?p=359 (accessed 6.10.18).

Middlemiss, L., Parrish, B.D., 2010. Building capacity for low-carbon communities: The role of grassroots initiatives. Energy Policy 38, 7559–7566. https://doi.org/10.1016/j.enpol.2009.07.003

Miller, C.A., Iles, A., Jones, C.F., 2013. The Social Dimensions of Energy Transitions. Science as Culture 22, 135–148. https://doi.org/10.1080/09505431.2013.786989

Moss, T., 2009. Intermediaries and the Governance of Sociotechnical Networks in Transition. Environment and Planning A 41, 1480–1495. https://doi.org/10.1068/a4116

Moss, T., Becker, S., Naumann, M., 2015. Whose energy transition is it, anyway? Organisation and ownership of the *Energiewende* in villages, cities and regions. Local Environment 20, 1547–1563. https://doi.org/10.1080/13549839.2014.915799

Moulaert, F., 2010. Social innovation and community development, in: Moulaert, F. (Ed.), Can Neighbourhoods Save the City? Community Development and Social Innovation, Regions and Cities. Routledge, London, pp. 4–16.

Moulaert, F., Martinelli, F., Swyngedouw, E., Gonzalez, S., 2005. Towards Alternative Model(s) of Local Innovation. Urban Studies 42, 1969–1990. https://doi.org/10.1080/00420980500279893

Pesch, U., Spekkink, W., Quist, J., 2018. Local sustainability initiatives: innovation and civic engagement in societal experiments. European Planning Studies 1–18. https://doi.org/10.1080/09654313.2018.1464549

Rutherford, J., Coutard, O., 2014. Urban Energy Transitions: Places, Processes and Politics of Socio-technical Change. Urban Studies 51, 1353–1377. https://doi.org/10.1177/0042098013500090

Schlosberg, D., 2009. Defining environmental justice: theories, movements, and nature, 1. publ. in paperback. ed. Oxford Univ. Press, Oxford.

Schmidt, V.A., 2010a. Taking ideas and discourse seriously: explaining change through discursive institutionalism as the fourth 'new institutionalism.' European Political Science Review 2, 1. https://doi.org/10.1017/S175577390999021X

Schmidt, V.A., 2010b. Reconciling Ideas and Institutions through Discursive Institutionalism, in: Béland, D., Cox, R.H. (Eds.), Ideas and Politics in Social Science Research. Oxford University Press, pp. 47–64. https://doi.org/10.1093/acprof:oso/9780199736430.003.0003

Schmidt, V.A., 2008. Discursive Institutionalism: The Explanatory Power of Ideas and Discourse. Annual Review of Political Science 11, 303–326. https://doi.org/10.1146/annurev.polisci.11.060606.135342

Scott, W.R., 2014. Institutions and organizations: ideas, interests, and identities, Fourth edition. ed. SAGE, Los Angeles.

Seyfang, G., Haxeltine, A., 2012. Growing Grassroots Innovations: Exploring the Role of Community-Based Initiatives in Governing Sustainable Energy Transitions.

Environment and Planning C: Government and Policy 30, 381–400. https://doi.org/10.1068/c10222
Seyfang, G., Hielscher, S., Hargreaves, T., Martiskainen, M., Smith, A., 2014. A grassroots sustainable energy niche? Reflections on community energy in the UK. Environmental Innovation and Societal Transitions 13, 21–44. https://doi.org/10.1016/j.eist.2014.04.004
Shove, E., 2010. Beyond the ABC: Climate Change Policy and Theories of Social Change. Environment and Planning A 42, 1273–1285. https://doi.org/10.1068/a42282
Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., Seyfang, G., 2016. Making the most of community energies: Three perspectives on grassroots innovation. Environment and Planning A 48, 407–432. https://doi.org/10.1177/0308518X15597908
Smith, A., Stirling, A., Berkhout, F., 2005. The governance of sustainable socio-technical transitions. Research Policy 34, 1491–1510. https://doi.org/10.1016/j.respol.2005.07.005
Stirling, A., 2014. Transforming power: Social science and the politics of energy choices. Energy Research & Social Science 1, 83–95. https://doi.org/10.1016/j.erss.2014.02.001
Strauss, A.L., Corbin, J.M., 1991. Basics of qualitative research: grounded theory procedures and techniques, 3. printing. ed. Sage, Newbury Park, Calif.
Swyngedouw, E., 2009. The Antinomies of the Postpolitical City: In Search of a Democratic Politics of Environmental Production. International Journal of Urban and Regional Research 33, 601–620. https://doi.org/10.1111/j.1468-2427.2009.00859.x
Swyngedouw, E., 2005. Governance Innovation and the Citizen: The Janus Face of Governance-beyond-the-State. Urban Studies 42, 1991–2006. https://doi.org/10.1080/00420980500279869
Swyngedouw, E., Moulaert, F., 2010. Socially innovative projects, governance dynamics and urban change: Between state and self-organisation, in: Moulaert, F. (Ed.), Can Neighbourhoods Save the City? Community Development and Social Innovation, Regions and Cities. Routledge, London, pp. 4–16.
Torrens, J., Johnstone, P., Schot, J., 2018. Unpacking the Formation of Favourable Environments for Urban Experimentation: The Case of the Bristol Energy Scene. Sustainability 10, 879. https://doi.org/10.3390/su10030879
Urquhart, C., 2011. The Evolving Nature of Grounded Theory Method: The Case of the Information Systems Discipline, in: Bryant, A., Charmaz, K. (Eds.), The SAGE Handbook of Grounded Theory. Sage Publ, Los Angeles, Calif., pp. 339–360.
Urry, J., Tyfield, D., 2014. The Problem of Energy. Theory, Culture & Society 31, 3–20. https://doi.org/10.1177/0263276414536747
van der Schoor, T., Scholtens, B., 2015. Power to the people: Local community initiatives and the transition to sustainable energy. Renewable and Sustainable Energy Reviews 43, 666–675. https://doi.org/10.1016/j.rser.2014.10.089
Walker, G., Devine-Wright, P., 2008. Community renewable energy: What should it mean? Energy Policy 36, 497–500. https://doi.org/10.1016/j.enpol.2007.10.019
Walker, G., Hunter, S., Devine-Wright, P., Evans, B., Fay, H., 2007. Harnessing Community Energies: Explaining and Evaluating Community-Based Localism in Renewable Energy Policy in the UK. Global Environmental Politics 7, 64–82. https://doi.org/10.1162/glep.2007.7.2.64

Williams, A., Goodwin, M., Cloke, P., 2014. Neoliberalism, Big Society, and Progressive Localism. Environment and Planning A 46, 2798–2815. https://doi.org/10.1068/a130119p
Yin, R.K., 2009. Case study research: design and methods, 4th ed. ed, Applied social research methods. Sage Publications, Los Angeles, Calif.
Yin, R.K., 1994. Case study research: design and methods, 2nd ed. ed, Applied social research methods series. Sage Publications, Thousand Oaks.
Young, I.M., 1990. Justice and the politics of difference. Princeton University Press, Princeton, N.J.

Appendices

Coding and Memo Matrix – Bristol Energy Cooperative

OPEN CODING	REFOCUSED CODING	MEMO-WRITING

What was the formation process for BEC?
 	
Experimentation with different projects across the city
 	
Realising fragmentation of different projects
 	
Deciding to collaborate between projects/actors
 	
Planning/formalizing partnership
 	
Establishing strategic vision focused on "community benefit"
• Three priorities:
  ○ Reducing carbon
  ○ Alleviating fuel poverty
  ○ Building community
 	
Obtaining financial resources from council in order get started
 	
Selecting initial strategic objective: reducing carbon
 	
Envisioning providing community benefit through provision of cheap energy
 	
Envisioning "community building" democratic shareholder model
 	
Building member base of 100 people
	Establishing priorities and vision
	
	Becoming visible/legitimate
	
	Partnering on projects
	
	Relying on financial support – investors, government, grants
	
	Being constrained by government regulation/policy
	
	Investing in community (through benefit fund, local-based economy)
		There is a clear maturation process for the Energy Co-op as it goes from a series of disjointed grassroots groups towards a more formalised structure. This process could be seen as "consolidation" whereby common interests across different community groups in the city with similar interests realised they have collective power. Here there are linkages with organisational theory, such as strategic action fields, where a field expands based strategic action – "attempt by social actors to create and maintain stable social worlds by securing the cooperation of others." (Fligstein and McAdam, 2011, pg. 7). Contrast between challenger and incumbents – institutional change. Other theoretical interpretation is innovation theory, and the diffusion potential of niches. Strategic niches seek regime change, therefore seeking diffusion benefits, achieved through replication, scaling up and translation from niche to regime (adoption of grassroots practice and higher institutional levels; Risks capture by institutional system) (Pesch et al., 2018, pg. 5).

Raising further funds Progressing gradually Turning-over people involved Seeking advice from other co-ops (collaborating) Identifying opportunities for expansion Collaborating with Council on wind farm project Acting fast on opportunity before policy change Expanding 20-fold in small time window Relying on key personnel **Who are the people involved?** Depending on small cadre of dedicated people Involving different people from local community committed to sustainability Feeling sense of duty to get involved – "make a contribution" **What motivated you?** Identifying unsustainability as a threat Choosing energy as focus area		The process of consolidation and formalisation required a committed group dedicated to cause of sustainability, reflecting a shared set of values and beliefs. Again, has connection to institutional theory – particularly normative institutions as outlined by (Geels, 2004; Scott, 2014) Scaling up requires collaboration to gain resources and legitimacy. Engagement with other grassroots actors can only go so far due to resource constraints and energy system dependencies (state authority). Interaction with state becomes inevitable, which is a common touchpoint for social innovation theory. Interaction with council is both enabling and constraining. Council provided initial financing for co-op and authority to develop on Council properties. This occurs on Council's terms, as expressed through regulatory constraints. Council appears to be in a position of power in shaping scale and scope of BEC operations. Financial constraint has caused a clear bias towards pursuing economic goals, as opposed to expressed aims of combatting fuel poverty and "building community". An example would be a lack of consistent contribution to community

Identifying with others wanting to take action on sustainability/climate change Suggesting three levels of people: • Those with general concerns who do little things – recycling, investing in coop • People actively involved in an initiative • Political activism Dismissing potential for coordinated action between groups **How do these levels come together? (Process)** Collaborating through partnership initiatives. E.g. Bristol Green Capital Specifying partnership for commercial interest Coordinating of grassroots organisations – BEN Intermediating between council and community initiatives – BEN Failing to reach level of political activism (laying in front of bulldozers) Interacting between levels is limited – people with different approaches **What are your major interactions with different actors?** Collaborating with Council- Expressing frustration with Council regulatory stance		benefit fund. Co-op's existence's depends on viability, while sources of funding are limited. Meanwhile, changing government policy, particularly to the feed-in-tariff, have made it difficult to establish a long-term business model. This may explain why the co-op has entered into strategic commercial partnerships, such as the Green Capital Partnership and Zero West. Collaboration through BEN is essential since it serves as way of connecting BEC with communities, which is where their operations are typically based. Shifting focus as a result of policy changes to FIT – future potential to become an energy services company seen as radical alternative to current models. --- <u>Theoretical perspectives:</u> BEC set out a three-pronged vision of alleviating fuel poverty, reducing carbon and supporting community benefit. The main inroads made have been to reducing carbon. In fact, developing low-carbon projects is the main priority. Dependency on Council and other funding sources has meant compromising certain values in favour of others. BEC appears to have to play by

Being forestalled on project Receiving financial support for grid connectivity on project Renting grid connection for Lawrence Weston project Limiting speed of projects because of council bureaucrats Succumbing to council rules Avoiding collaboration/expecting support from certain arms of government **How do you address the issue of fuel poverty?** Downgrading fuel poverty as an objective Prioritising breaking even/financial viability Making sacrifices (pay staff) Recognising fuel poverty goal as compromising finances Experimenting with new projects for growth Maturing as an organisation **How do the economics of renewable energy affect your action on fuel poverty?** Supporting low-income group through micro-grid at housing development		Council's rules, which the interviewee seemed to acknowledge by expressing a "pretty good relationship". So, this process might be a case of one set institutional logics undermining another. As such, BEC's transformative potential has been limited to how their operations might align with Council's goals. Further, there appear to impacts from different scale of institutions. Regulatory and policy changes from different levels of government affect BEC's agency – E.g. FIT change means BEC looking to alter its strategy. The creation of BEC can also be seen as the formation of an important body for processes of social innovation as it has allowed community groups to formalise energy activities through renewable projects – reconfiguring power relations. --- Concepts: -Collaboration/interaction • Consolidation • Partnerships -Lack of autonomy (power) • Authority • Financial -Institutions (guiding vision setting, restricting actions)

Foreseeing opportunity to become an ESCO Envisioning supporting fuel poverty as ESCO Criticizing current supply-based system – Green Deal failure, Big 6 failures Shifting approach towards efficiency and ESCO because of FIT policy change Questioning own ability to meet social goal of "building community" Supporting diversity at organisational level but not at larger scale Prioritizing financial viability over fuel poverty and building communities **What do you see as your social benefit to Bristol?** Engaging the pubic on energy issues Investing in the community – Lawrence Weston Collaborating with community group in Lawrence Weston Enabling community group by securing grant money Supporting localisation of economy – Participation in Bristol Pound, hiring local solar installers Collaborating with other sustainability initiatives – Zero		

West (business groups, councils, etc.) Administering own community benefit fund Investing in academic research through community benefit fund Putting community benefit fund on hold for financial reasons **What needs to happen in Bristol to support a sustainable energy transition?** Requiring political willpower to make hard decisions/sacrifices Challenging bureaucracy in government – tendering rules Seeking greater independence/control for community groups from government Overcoming existing power relations		

Coding and Memo Matrix – Easton Energy Group and Bristol Energy Network (joint interview)

OPEN CODING	REFOCUSED CODING	MEMO-WRITING
How did EEG get started? Learning about broader issue of climate change (beyond env.) Recognising scope of problem	Interacting with council: • Challenging status-quo through collaboration	Easton Energy Group was founded on the basis that approaches to energy transitions were overlooking disadvantaged groups. Not grounded in everyday people's experiences – this represents a

Focusing on climate change impacts at individual/household level Drawing inspiration from others (e.g Transition movement) Reframing the problem/learning how to communicate in new way Establishing a focus on marginalised people Isolating energy usage as a knowledge deficiency Seeing things through a different POV Recognising inequity and lack of recognition for disadvantaged Focusing on community building Engaging with people/talking Critiquing existing viewpoints Partnering/building support through personal networks Grounding efforts in the local community Adding people to join the cause Building a strategic focus and establishing priorities around energy efficiency Starting with basic changes Communicating to wider groups Persisting despite lack of resources and traction	• Being constrained • "Community" spirit being co-opted • Receiving funding Building trust networks for collective action (intermediation, brokering, restructuring) Including under-recognised groups Challenging norms/existing mindsets Grounding action in the community/individual level	different way of thinking (cognitive frame), which went against prevailing institutions. A process of consolidation took place as Easton Energy Group started as a one-person initiative, slowly expanded outwards to involve more people and a formal vision/strategy crystallised around energy efficiency – Easton Energy was also a founding member of BEN. Once again this aligned to organisational theory and innovation diffusion processes. There is a clear lack of trust with city council on a number of grounds. They are seen as engaging with the community, but only on their own terms and when it serves their purposes. A good example of this is WarmUp Bristol where the council refused to cede control over the project to BEN. While they show signs of controlling community-based projects, they are an essential resource for community groups in terms of funding and for achieving wider scale-impacts. BEN appears to take a strong intermediate place between council and community energy groups – filling trust gap and challenging power structures. It is a uniting force among community groups who share similar goals, but it also

Taking a long-term view – potential of today's actions Creating a hub for community energy in Easton Building up technical prowess Daylighting issue for people through basic projects for average citizens **How did BEN evolve out of EEG?** Linking up with other community groups Proposing a network approach as a way for collective action Shifting other people's mindsets away from just renewables Establishing first formal community project as "Green Doors" Running on personal initiative Advocating to make solar available to everyone (low-income communities) Democratising energy transition Coordinating knowledge and resources across community organisations Rejecting non-communitarian approach Managing conflicting interests across community groups		mediates conflicting interests. The BEN Community Energy Strategy is a good example of how BEN brought multiple actors around the same table to build an overall strategy for community energy in the city – i.e. thinking on a broader scale. BEN seems to challenge institutionalised logics around transitions – towards need for greater democracy, inclusion, building social capital – not just low-carbon goals. It is promoting these values in the face of Council's top-down approach. Political volatility can jeopardize progress made in terms of continuity of programmes and relationships. In this sense, political structures are an institutional hurdle for community energy. --- <u>Theoretical perspectives:</u> Several processes from both EEG and BEN's experiences illustrate a theme of consolidation. Consolidation can be thought of as a multi-faceted process involving a coming-together of visions for collective action. The process is akin to building strategic action fields (Fligstein and McAdam, 2011, pg. 9), but also experimentation with new governance forms, such an

Providing initial spark, then stepping back (avoiding steering) Focusing on quick/easy wins in local community Operating on tight budgets Challenging council's top-down approach Getting in-roads with council based on single, strong relationship Gaining power through council relationship – new avenue for collaboration founded on trust **How is BEN positioned between council and community groups?** Identifying lack of trust in council Overcoming uneven power structures Emphasising trust as being bedrock of successful collaboration Establishing BEN purpose as creating alignment between energy system actors (trust broker) **How did you collaborate with others in making the community energy strategy?** Brokering between conflicting interests and approaches amongst members Assembling everyone around same table to co-design strategy		intermediary organisation. Different authors view intermediaries as essential for growing citizen-based initiatives (Lacey-Barnacle and Bird, 2018; Moss, 2009). Another prevailing theme is power. Both interviewees stressed how their efforts are aimed at challenging existing power structures, and expressed this in terms of challenging state control and common ways of thinking. They see trust as fundamental to successful collaboration. Trust is predicated on mutual understanding and respect: a shared cognitive frame, which again harkens back to institutions. Shared understanding allows for networking, and therefore strengthened power relations. Power relations appear to pin BEN, EEG and other community groups against controlling forces of Council, which has shown a techno-managerial approach to energy issues. Action by both groups is seen as strategic in challenging power relations and institutionalised ways of thinking. An example would be the Knowle West project and ensuring equal representation on the board.

Identifying political window of opportunity for strategy to guide new mayor Challenging everyone to focus on equal representation – Knowle West community Resolving internal conflict over power struggle to lead strategy development Allocating responsibilities based on core competencies Recognising overlap in goals amongst group members Serving as counter-point to challenge council's own initiatives Being confronted with new council – shifting dynamics Feeling exploited for council's own aims Losing trust in council based on various missteps Continuing relationship with council despite failing trust – succumbing to power structure Playing along with Green Capital developments – leading energy action group Questioning top-down need for control Establishing network of people willing to support energy action		Concepts: -Power -Conflict -Intermediation -Control -Institutions • Shared values and goals • Political system -Consolidation

Experimenting with pilot project (CHEESE) Bringing experiment to poor communities Integrating with existing community-based work in Ambition Lawrence Weston Facilitating/providing a resource to various projects around the city Taking a network view founded on trust Being constrained/controlled by council's own agenda Overcoming barriers through trusted partner (council officer) advocating from within Identifying council as pursuing self-interest, not grounding efforts in community insights Losing all trust in council, but acknowledging co-dependency Grappling for control with council over BCEF Challenging government approach Broadening focus away from just renewables Aiming for inclusion Challenging top-down renewable project in Lawrence Weston		

Pursuing approach that ensured long-term community benefit Shifting relationship with council based on political change (new mayor more interested in fuel poverty) **What sort of shift have you noticed with council?** Acknowledging greater emphasis on fuel poverty Questioning motive for collaboration (tick-box exercise) Attempting to refocus conversation away from greenwashing exercise Stressing need for community involvement in low-carbon action Identifying democracy as cornerstone Highlighting lack of recognition of poorer communities Stressing need of approach founded on community, trust networks Questioning political commitment – shifting government priorities Continuing to pursue collaboration because of power networks involved		

Coding and Memo Matrix – CSE

OPEN CODING	REFOCUSED CODING	MEMO-WRITING
How did CSE get its start? Evolving from sustainable technology focus towards energy advice Focusing on fuel poverty Engaging in political activity across different scales Relying on project-based funding model Expanding mandate to focus on energy justice issues **How did your shift from technological demonstration to energy justice occur?** Interacting with individuals bearing consequences of energy system Realising need for balancing climate progress with social consequences Following lines of public discontent for problems arising from privatised energy system **Why has Bristol been a good fit for CSE?** Grounding efforts in local experiences – community-based insights Taking advantage of contextual factors – progressive politics, social	Depending on outside resources (financial and knowledge) Grounding efforts in communities Learning through experimentation Taking long-term view Mediating between communities and government	Dependence on mainstream sources of funding, which is limited. Meanwhile, project-based funding model serves as constraint on several grounds: • Shrinking government pots (austerity) • Short-term funding arrangements not enough to establish change processes • Risk aversion of funders – want to see immediate results Experimentation with new approaches for engagement in low-income has led to several learnings and skepticism about whether CE can emerge organically within deprived areas. Expecting these communities to organise themselves to develop projects has proven faulty. This relates to points raised by Middlemiss and Parrish (2010) around community capacity. Lack of recognition that these communities suffer from deep-rooted injustice. For projects to gain traction in low-income areas, collaboration with community-based groups is viewed as key to success. This underscores the role of tapping into existing networks of trust and social capital.

justice activation, awareness, affluence, middle-class volunteerism **How do you work with others to pursue your goals?** Collaborating with local charities, housing orgs., concerned with poverty Working with community energy groups Administering the Community Energy Fund Partnering with Council Trying to avoid overlap with numerous other initiatives **How do you collaborate with local community partners?** Relying on local organisations for community insights Requiring community familiarity and trust networks for local engagement to work Limiting outreach in Bristol because of strong community energy presence Running grant schemes in Bristol **What sort of impacts are you having on local communities?** Struggling to engage with people in low-income communities		Once again there is mention of conflict with Council – not willing to hand over projects and listen to community-based initiatives. Similar to BEN, CSE plays a mediating role between funders and communities. However, CSE is a national charity, with a more established reputation so it has stronger links with mainstream sources of funding. Existing approached to energy transitions viewed as top-down, limited in scope – short-term, agency-based approach doesn't work. Need to couple targeted infrastructure interventions (housing) with social-capital building. Political and financial institutions viewed as major constraint for emancipatory change – techno-managerial approaches. --- <u>Theoretical perspectives:</u> Interviewee alluded to resource constraints due to power relations – funding comes from external sources, thereby restricting the types of projects that can be undertaken. Reliance on funders means they are bound to certain rules, objectives (institutional power). The prevailing approach to community energy from funders

Learning to sensitize efforts for low-energy users Trying to empower people (social capital building) Questioning effectiveness of top-down, agency-based approach to community energy projects in low-income areas Striving for long-term impact Experimenting with various approaches Being limited by lack of locally embedded resources (existing groups) **What would make your work in low-income communities easier?** Relying on engaged residents Building from ground-up Challenging existing paternalistic approaches **Is success contingent on there being a group of residents and community leaders you can work with?** Partnering with community development bodies with pre-established knowledge Working through local actors Aligning interests		and government is techno-managerial, results-based. CSE is challenging this logic by advocating for projects that build social capital in communities. Here they can play an intermediating role between funders and communities. <u>Concepts:</u> -Power • Institutions o Financial o Political o Cognitive -Collaboration -Control (Council)

Questioning whether ground-up approach to community energy is possible in low-income areas **If engaging residents directly doesn't work, what are some alternative strategies to addressing fuel poverty?** Setting expectations around engagement with citizens Requiring leadership and local resources for success **How does CSE decide which projects to take on?** Choosing projects based on available funding Pursuing funding based on ideas guided by overall strategy Devoting efforts to energy advice Avoiding spaces occupied by BEN, and other community energy projects Running national grant schemes (Green Open Homes, Urban Community Energy Fund) Using research team to build local insights to guide projects Remaining politically active, visible Participating in Green Capital Being constrained by council **Why are you constrained by council?**		

Negotiating with council over project design Being over-ruled **What will a sustainable transition look like?** Requiring low-carbon technology Obtaining social license (consent) Envisioning low energy consumption future Requiring integration with multiple systems – e.g. housing **How do you bring that to communities suffering from fuel poverty?** Improving housing stock Needing greater political expediency Funding projects that build social capital through community ownership/benefit funds **What are the challenges in building this type of shared-benefit scheme?** Requiring mutual understanding/viewing compatibility of economic and social goals **Who is going to support this transition moving forward?** Needing government to step up with stronger policy		

Localising energy transitions through transfer of responsibility to municipalities Lobbying for policy change to housing stock **How would financial changes support your work?** Limiting projects based on finances Requiring support outside of government Losing EU funds access Recognising need for risk, long-term approach Failing to find alignment of project deliverables with funders based on timeframes Requiring greater flexibility for experimentation in low-income areas		

Coding and Memo Matrix – Council Energy Service interview

OPEN CODING	REFOCUSED CODING	MEMO-WRITING
How did the energy services team come into existence? Building on existing energy action plan Restructuring council departments for dedicated energy team	Anchoring multiple objectives around zero carbon goal – fuel poverty, economic growth	Dual processes of grassroots activation and national/supranational governance (funding, policies, etc.) measures have made energy management a key focus area for council – building capacity in this area.

Obtaining EU funds to expand scope Consolidating personnel **What are your main objectives?** Broadening remit Establishing central goal of zero carbon by 2050 Dealing with influx of people to Bristol **Other goals related to economic or social benefits?** Making zero carbon an integrated goal for social an economic development Requiring profitability along with social benefits Establishing own energy company as key mechanism for achieving goals Rethinking operating objectives of typical energy supply company Supporting broader public engagement in energy around the city Alleviating fuel poverty through Bristol Energy Viewing fuel poverty as providing knock-on benefits – reduce reliance on other council services	Imaging energy futures (smart tech.) Limiting action due to fiscal constraint (funding mechanisms) Harnessing community potential – funding applications, grounded insights Networking governance of local energy system through collaboration – sees BEN as key channel Anchoring social objectives in fuel poverty Channeling fuel poverty efforts through Bristol Energy	Austerity shaping the types of action council takes – wants to support community energy initiatives but constrained by fiscal accountability. Council embraces culture of innovation & experimentation as part of bold vision for energy future – no prescribed pathway to zero carbon goal, open to new approaches, as reflected by City Leap Prospectus. Local political support critical to this innovative culture – history of environmentalism and successful action. Council acknowledges their tendency to stifle community energy initiatives – corroborating claims from previous interviews. Still have a supportive attitude towards community energy. Fuel poverty of chief concern to council as it drains their budgets in other areas – new technology, energy advice to achieve energy efficiency. Somewhat contradictory given quote from previous interview about council officer saying "I don't care about fuel poverty". No mention of social capital emerging from community projects, building trust networks, local ownership of energy assets, etc.

How do you work with other groups to achieve your objectives? Collaborating with community energy projects (Lawrence Weston solar farm) Offering knowledge resources to community groups (wind farm at Lawrence Weston) Sensing strong community involvement – viewing it as asset Realising challenge of collaborating with CE **How is it challenging working with CE groups?** Questioning efficiency of CE groups Acknowledging constraints of collaboration and funding of CE due to fiscal accountability Limiting community energy involvement because of removal of financing options (national gov grants) Recognising BEN as a go-to resource for community insights Pursuing joint funding applications with charities and community energy groups – adding credibility **How has the Green Capital experience impacted your work?** Attracting attention to Bristol through Green Capital		City Leap strategy represents a strong example of networked governance approach – question is how community groups will be given equal voice in this process as big business is also at the table Fiscal austerity driving council need to control projects, restrict support for community projects, particularly in low-income areas? Opting for cheap fixes as opposed to capital-intensive projects that may have greater impact on social capital? <u>Theoretical perspectives:</u> There is a strong impressions that Council's hands are tied by national policy. Fiscal austerity is putting serious pressure on them to be lean with spending but also generate new revenue streams – localism (Catney et al., 2014) meets urban entrepreneurialism (Harvey, 1989). National climate might be construed as an institutional context; filtering down to shape local behaviour. Collaborations with community energy initiatives Janus-faced since they bring CE to the table, but then their actions are controlling (Swyngedouw, 2004). Institutional influence as source of controlling behaviour since Council recognises their problem.

Weighing social benefits of Green Capital – "middle-class, greenwash" Using Green Capital as a launching point for something bigger Seeking transformative funding for energy transition (City Leap) **Tell me more about the goal of City Leap** Setting an ambitious target Emphasizing renewable uptake, smart tech Prioritising market-based solutions for achieving carbon reductions – "commercially sustainable business model" **Where do vulnerable communities fit into this scheme?** Viewing strong economic position as a pathway to supporting vulnerable communities Competing for investment from large companies looking to invest in renewables and smart tech Recognising that climate change is in broader public consciousness – including deprived areas Harnessing technological potential for delivering energy efficiency across society		Fuel poverty of chief concern, but appears to be a financial reason. Need to alleviate budgets. Cost-benefit analysis results in distributive measures. Shifting focus away from other forms of justice – societal depoliticization (Bues and Gailing, 2016). Also shifting issue of fuel poverty to Bristol Energy – what is the company's true purpose? --- <u>Concepts:</u> -Collaboration ▪ Control -New practices: ▪ Municipal energy ▪ City Leap strategy -Institutions ▪ National influence/Austerity ▪ Narrow view change

Rethinking existing model – conceptualising a radical energy future based on service model Seeking to capture benefit of transition at a household level Innovating business models around shared benefit between council, consumers and suppliers Insisting a rethink of normal business model, mindset Requiring political buy-in **Why do you think leadership supports this City Leap strategy?** Embracing council's track record as an asset Seeing value in experimental approach – a model for others to follow **How have community groups responded to the strategy's embrace of big business?** Stressing need for business involvement in transition Supporting community objectives/local engagement in futures planning (City Leap) **How are you engaging with the community groups in order to involve the broader population?** Protecting spaces of innovation within civil-society		

Realising strained relationship with community groups **Why is fuel poverty your main social benchmark?** Attaching fuel poverty to other social concerns (health, employment, etc.) Acknowledging challenge of bringing renewable/smart tech to less privileged Seeing lack of energy literacy as barrier to adoption of new tech		