Exploring local energy justice in times of austerity: Civic energy sector low-carbon transitions in Bristol city

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Abstract

The rapid rise of energy justice in recent years has been accompanied by a theoretical bias towards a 'systems approach', which is grounded in the dominant theoretical frameworks for understanding energy transitions. This PhD contributes 'local' perspectives to understandings of energy justice, through analysis of civic energy sector low-carbon transitions in Bristol City. The thesis draws on a Participatory Action Research (PAR) approach with civic energy actors in Bristol, using participant observation, in-depth interviews (n=31) and a focus group (n=7) conducted over a 24-month period between 2015 – 2017. Set against a backdrop of continuing fiscal austerity reconfiguring institutional state capacity at multiple scales, alongside the simultaneous growth of the low-carbon economy, the thesis draws on three core tenets of energy justice (distributional, procedural and recognition justice) and 'bottom-up' approaches and pathways to energy transitions, to generate original insights into how communities, local organisations and local government are seeking to combat energy injustice and realise energy justice.

The three tenets are used to analyse the critical role of prominent community and civic energy organisational structures and schemes, intermediary organisations and new forms of local 'energy activism'. The findings show that 'local' energy justice connects to a powerful discourse of localism in a time of austerity, in which civic energy projects seek to challenge 'extractive' forms of neoliberal economic organisation and privatised ownership over the UK energy system. However, this localism is shown to critically reflect broader issues of persisting social inequalities in Bristol. Drawing on the three tenets, the emerging politics and geographies of local low-carbon energy infrastructures and initiatives are explored further through four core case studies derived from the primary data.

The thesis concludes with a call to shift energy justice away from its 'systems approach' to a fundamentally 'multi-scalar' theoretical framework, recognising the importance of all scales of analysis. It also finds the integration of 'spatial justice' into local approaches to energy justice vital for developing the real-world applicability of the field and facilitating critical engagement with energy decentralisation, whilst offering original insights into the importance of novel organisational structures, intermediaries and civic energy networks for local energy justice. It finishes by opening up a bold new research agenda that calls for energy justice to significantly expand into spaces for innovative bottom-up approaches, in both theory and in practice, to further empower the communities at the heart of local low-carbon energy transitions.

STATEMENT OF ORIGINAL AUTHORSHIP

This work has not been submitted in substance for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any degree or other award.

Signed: MAX LACEY-BARNACLE Date: 26.07.2019

STATEMENT 1

This thesis is being submitted in partial fulfilment of the requirements for the degree of PhD.

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STATEMENT 2

This thesis is the result of my own independent work/investigation, except where otherwise stated, and the thesis has not been edited by a third party beyond what is permitted by Cardiff University's Policy on the Use of Third Party Editors by Research Degree Students. Other sources are acknowledged by explicit references. The views expressed are my own.

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I hereby give consent for my thesis, if accepted, to be available online in the University's Open Access repository and for inter-library loan, and for the title and summary to be made available to outside organisations.

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List of Abbreviations

ALW – Ambition Lawrence Weston

BCC – Bristol City Council

BCSfE – Bristol Community Strategy for Energy

BCEF – Bristol Community Energy Fund

BEC – Bristol Energy Co-operative

BEIS – Business, Energy and Industrial Strategy

BEN – Bristol Energy Network

BPC – Bristol Power Co-operative

BWCE – Bath & West Community Energy

CBF – Community Benefit Fund

CBS/BenCom – Community Benefit Society

CIC – Community Interest Company

Co-op – Co-operative Society

CSE – Centre for Sustainable Energy

DECC – Department of Energy and Climate Change

FCA – Financial Conduct Authority

FIT – Feed-in Tariff

GFC – Green Fox Co-operative

LCG – Low-Carbon Gordano

LWCS – Lawrence Weston Community Solar

MLP – Multi-level Perspective

MSA – Moorhouse Solar Array

OFGEM – Office for Gas and Electricity Markets

PAR - Participatory Action Research

RADE – Residents Against Dirty Energy

RHI – Renewable Heat Incentive

SNM – Strategic Niche Management

UKPR – UK Power Reserve

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1. INTRODUCTION

1.1 Exploring 'local' energy justice

Energy justice research seeks to embed principles of *justice, fairness* and *social equity* in energy systems, energy policy and energy transitions. It is a rapidly growing and diverse research field, investigating injustices in energy systems, and identifying, where possible, if justice can be achieved. As it has continued to expand across the globe, it has been underpinned by both *analytical* and *conceptual* approaches, alongside a policy relevant decision making framework to aid energy decision-makers when formulating energy policy. However, the overriding prominence of 'whole systems' approaches within the field, the application of energy justice to global supply chains in international energy markets, and conceptual frameworks of 'energy *systems* justice' that are seemingly universal in application, have given prominence to an analytical framework that appears somewhat biased towards these larger scales of analysis, or 'global energy justice' (Heffron & McCauley 2014; Jenkins et al. 2014; Sovacool & Dworkin 2014). Furthermore, energy justice scholars have sought to promote the application of the three core tenets of energy justice – procedural, distributional and recognition justice - *primarily* across global energy systems - from production to consumption, normalising its theoretical embeddedness within global scales of analysis, and, distinguishing it conceptually from both climate and environmental justice (Jenkins et al. 2014; Jenkins et al. 2016). This not only risks impeding the development of energy justice's analytical framework towards an inherently *multi-scalar* field of research, as opposed to a *systems-led* field, but – as this thesis aims to show - may neglect the practical, conceptual and theoretical value of 'local' approaches to energy justice. As such, this thesis will demonstrate that the dominant theoretical frameworks for understanding energy transitions have come to dominate thinking about energy justice, which has led to a widespread neglect of bottom-up theories of transitions in the energy justice field. This domination has underpinned a concept of energy justice that is now reliant on top-down implementation, whilst being seemingly distant from local communities and actors engaging in energy systems and low-carbon transitions on the ground. Furthermore, theories and approaches looking more closely at the role of civil society engagement in energy systems, such as Grassroots Innovation theory, Social Movement theory and the *Thousand Flowers* transition pathway in the UK, have received relatively little attention in the field of energy justice.

Rather than seeing a systems approach as *innate* to energy justice theory, the thesis shows that local scales of analysis, alongside collaborative approaches to research, are critical for the advancement of energy justice principles into local government policy, local networks of key actors and organisations, and ultimately, local communities. However, it is vital to acknowledge that this 'advancement' is an iterative and dynamic process; academics can learn from local and community-led understandings of energy justice and vice versa. When viewed from the 'bottom-up' or at the local level, the three core

tenets of energy justice take on slightly different and nuanced interpretations. Indeed, the three core tenets of energy justice are shown to resonate closely with the activities of local communities and local organisations at the forefront of low-carbon transitions in Bristol. Rather than approaching local energy systems with a systems approach in mind, the thesis largely restricts analysis to the UK and the city of Bristol, with the application of the three tenets revealing critical tensions, inequalities and struggles within and between communities. Thus, these mere 'components' of the energy system are shown to be vital for the realisation of the concept of energy justice beyond the realm of books, journal papers, conferences and seminars. In order to move beyond the world of academia and theory and into policy and action, local approaches are shown to be critical to the real-world applicability of the field, evidencing tremendous merit outside of the dominance of 'ivory tower' systems thinking within energy justice. The merit of this approach is further demonstrated within this thesis by applying the three core tenets of energy justice to various legal structures, organisations and actor's initiatives within Bristol's civic energy sector. Thus, this thesis shows that it is vital to integrate analyses of different local contexts into its continuing expansion as a research field, and, to recognise the potential for locally-led approaches to address new forms of social, political, economic and spatial inequalities in local low-carbon transition contexts.

1.2 The growth of local, community and civic energy

As the role of civil society grows in the context of energy transitions to low-carbon energy systems, the rapid growth of organisational models and activity within the UK's civic energy sector over the past decade demands critical attention from researchers integrating *energy* and *social science* research. The presence of over 5,000 different community energy groups 'generating, managing, purchasing and reducing energy' (DECC 2015b p.6) in the UK, and, a multitude of organisational models in civic energy transitions, is a result of a number of key developments in the legislative, policy, financial and institutional landscape of the UK.

Firstly, legislation committing the UK to legally binding emissions reductions targets, such as the Climate Change Act of 2008, the EU 20-20-20 targets and related EU directives such as the Renewables Directive of 2009, bolstered the emergence of new organisations focusing on harnessing renewable energy sources at multiple scales. In the UK, specific acts of parliament, such as the Companies Act 2006 and Co-operative and Community Benefit Societies Act 2014, have also facilitated the creation of favoured social enterprise models for the civic energy sector, providing the legal framework for many community organisations to become formally established. In addition, the Local Government Act 2010, Localism Act 2011 and Cities and Local Government Devolution Act 2016, have all stimulated more active engagement in energy markets from local authorities. This is evidenced by various forms of support for local and community energy projects, establishing ESCO arrangements, and setting up local municipal energy companies, as seen in Nottingham, Peterborough and Bristol (Armstrong 2015). This

activity is occurring alongside cross-sectoral recommendations for innovative collaborative models between communities and private and public sector organisations, in the form of shared ownership, partnerships, and joint ventures, to be explored much further to expand the remit of local and community involvement in energy systems (DECC 2014a; Julian & Dobson 2014; Berka & Creamer 2017).

Secondly, the introduction of government subsidies for renewable energy generation, such as the Feed-In Tariff (FIT) and Renewable Heat Incentive (RHI), has incentivised the adoption of renewables at the local level. These subsidies were also complemented by the introduction of the Energy Company Obligation, Renewables Obligation and Green Deal programme into the UK policy regime over the last 10 years, intending to increase both renewable energy capacity and energy efficiency, through substantial reductions in energy usage across the UK housing stock. This rapidly shifting policy landscape of new low-carbon financial mechanisms and incentives was also supported by funding schemes announced specifically for local energy initiatives. Alongside the establishment of a £10 million Urban Community Energy Fund (UCEF) in 2014, the financial landscape for local and community energy also broadened to include cross-sectoral funding support from organisations such as the Green Investment Bank, Co-operatives UK and even a 'Marks & Spencer Energy Fund' for community energy projects, demonstrating engagement by an increasingly wide range of actors.

Lastly, a landmark shift within central government through the publication of a 'Community Energy Strategy' by the Department for Energy and Climate Change (DECC 2014), supported the creation of a new 'institutional infrastructure' for local energy schemes, establishing a new 'Community Energy Unit' within DECC and the creation of various funding, support and information schemes. This is complemented by the steady rise of devolved (e.g. England, Wales, Scotland), regional (e.g 'North East Community Energy', 'Community Energy South') and city-based (e.g Bristol Energy Network, South East London Community Energy) representative organisations focusing on local energy initiatives, alongside a growing role for the UK-wide 'Community Energy Coalition' to lobby on behalf of the community energy sectors interests more widely.

It is also important to note that, in addition to these key developments, the deployment of various renewable energy technologies can occur at a variety of scales and sizes; this allows for a distributed and decentralised energy infrastructure that opens up spaces for local and community ownership, and the possibility of increased engagement and participation by new civic energy actors. As the above developments have continued to grow, so has the research field of 'energy justice' within the social sciences, effectively bringing together energy and social science research, and critically, incorporating questions of social justice into the analysis of energy systems.

1.3 Times of austerity

In light of the theoretical and empirical context outlined above, the aim of this research is to use energy justice theory to investigate the social impacts of civic energy sector low-carbon transitions in Bristol city, in a time in which increased public funding cuts and fiscal austerity measures are adversely affecting social inequality. Austerity is seen here as a macroeconomic shift that has been definitive of both UK politics and local-level politics since 2010, and, has been widely criticised for its divisive impact on society and negative impact on social equality generally (Ginn 2013; O'Hara 2015; McBride & Evans 2017). While the research will expand on work exploring the role of *justice* and *social equity* in low-carbon transitions, contributing to understandings of 'local' energy justice and the deliberation and negotiation of energy justice at the local level, it will also contribute to a small body of research that acknowledges the critical impact of austerity measures occurring alongside an increase in local engagement and involvement in low-carbon transitions (De Laurentis et al 2012; Catney et al 2014; Dixon & Wilson 2013).

The thesis unearths the potential inequities stemming from the politics of local transitions, and, offers insight into how different organisational forms and actors address existing social inequalities through the critical lens of energy justice theory. Indeed, one central concern of this research is to generate an understanding of how new organisational types can present innovative opportunities for securing a more 'just' energy transition in the civic energy sector. However, the thesis explores the extent to which new organisations are *reproducing* existing inequalities, as this transition is shaped and guided by a powerful market-based logic in an age of neoliberal hegemony. As will be further explored in the literature review, the continuing influence of neoliberal economics and policies is crucial for understanding the increase in social inequality in the UK and the logic of austerity measures (McBride & Evans 2017). This prominence of neoliberalism provides a crucial backdrop for the dynamic interactions between actors, institutions and organisations within civil society-oriented transition pathways and bottom-up and local approaches to energy transitions. Indeed - it is argued that the legacy of neoliberalism and its connection to the proliferation of 'extractive' energy corporations serves to subvert the central concerns of energy justice and motivates, to varying degrees, new decentralised energy initiatives that seek to localise the economic gains of low-carbon transitions in response to extractive ownership models.

Despite supportive policy shifts for local energy schemes under the 2010-2015 coalition government, recent political changes, including the 2016 EU referendum and General Election of 2017, have cast doubt over the future stability of local low-carbon energy initiatives, as the lifetime for subsidy frameworks for renewables have been shortened and tax incentive schemes for local energy projects removed. However, through its 'Clean Growth Strategy' the government announced a new 'Local Energy Programme' that will seek to support future civic energy activities (BEIS 2017). The extent

and depth of this commitment will help to shape the civic energy sector in years to come. In addition, the government remains committed to austerity. This landscape threatens to deepen existing socio-economic inequalities in a wider systemic context of perpetual financial crises, fiscal austerity and market-based energy policy mechanisms supporting low-carbon transitions. As will be further explored, a neoliberal logic of individual economic gain, privatisation and corporate ownership largely dominates the UK energy system and the distribution of renewable energy technologies. This presents a series of substantial challenges to the growing involvement of 'local', 'civic' and 'community' based organisations in energy transitions, forcing critical analysis to question *what* form these projects take and *where*, alongside questions of *who* exactly is involved and *who* benefits from these projects.

1.4 Structure of the thesis

The thesis will begin with a critical review of a diverse plethora of relevant academic and policy literatures, providing first an overview of the UK context for energy justice research which explores the rise in social inequality under austerity alongside the distributional impacts of energy policy mechanisms. It will then review key literatures in the field of energy justice, outlining the establishment of different approaches to energy justice and the rapid development of the field, alongside providing insight into the foundational 'triumvirate of tenets' of energy justice at the heart of the field. Next, the review addresses literatures on local, community and civic energy, noting the deep connections between all three classifications and briefly considering selected case studies within the academic analysis of community energy schemes. In addition, section 2.3.3 also addresses the academic literatures on organisational structures, before turning to a critical examination of the dominant theories of energy transitions.

Separating out 'top-down' and 'bottom-up' approaches to energy transitions, sections 2.2 – 2.4 look at how energy transitions theorists conceptualise and understand energy transitions as 'socio-technical' processes that involve a complex array of internal and external pressures from both 'above' and 'below'. While this section also briefly considers the justice implications, or the integration of justice principles, into theories of energy transitions, it also opens up new research avenues for energy justice to consider more thoroughly a range of bottom-up approaches to energy transitions. The literature review then finishes with a summary of the literature on organisational models in the UK's civic energy sector and how they broadly relate to differing types of ownership models under neoliberal capitalism.

Once the critical literature review has explored the core literatures in the field, the thesis will then outline the use of PAR as an effective research methodology to explore local energy justice, alongside describing the value of its associated qualitative research techniques. After reviewing the epistemological and methodological suitability of PAR, Chapter 3 will look at the process of data

collection, demonstrating researcher reflexivity in the shift of focus from 'community' to 'civic' energy, and outlining the different phases of data collection over 24 months. It then finishes by detailing the identification system and the system for presenting data throughout chapters 5-7.

Using the three tenets as thematic guides throughout chapters 4 and 5, the thesis provides original insights into the impactful justice implications of the various actions of civic energy organisations in a time of fiscal austerity and contributes new bottom-up perspectives and empirics to the energy justice field. Local networks and intermediaries are shown to act as a critical bridge between local low-carbon energy initiatives and deprived communities; lead community outreach activities; raise awareness of funding opportunities for low-carbon activities to otherwise excluded community groups, and, where possible, seek to *localise* the emerging economic benefits of the civic energy sector and low-carbon transitions in Bristol. Some are shown to act more in their economic self-interest and prioritise decarbonisation in response to climate change, while new forms of 'energy activism' are unearthed, which seek to shape low-carbon transition pathways in the city and push for greater energy justice in deprived parts of Bristol. The importance of energy geographies and a new geography of low-carbon transitions are also explored, with the core case studies revealing the critical nature of these considerations going forward.

The thesis finishes with a call for energy justice researchers to collaborate more closely with organisations facilitating local low-carbon transitions, alongside suggesting efforts are needed to push for a commonly understood framework of energy justice to be embedded within local energy networks, particularly during a time of austerity. Theoretically, the thesis also argues for the adoption of a 'multi-scalar' approach to energy justice over a 'systems' approach, factoring in all scales of analysis as valid. It is argued that the strength of the three-tenet energy justice framework lies in its comparative simplicity and ability to more immediately relate to real-world low-carbon activity on the ground. However, this framework is restricted if its usage is *only* to be applied to every stage of the energy system according to the supply-chain dynamics of global energy markets. The three tenet approach, it is argued, must be seen as valuable in a multi-scalar sense, able to independently provide insights at individual scales. This is suggested to aid the continuing expansion of energy justice research across the globe, and, to strengthen the widespread applicability of the three tenets which lie at the core of the analytical heart of the field.

1.5 Aims & research questions

Building on what has been outlined above, the core research aims and questions underpinning this thesis are as follows:

- The thesis aims to contribute novel insights into bottom-up approaches to understanding and conceptualising energy justice, countering the conceptual and theoretical dominance of systems approaches to energy justice and filling a clear research gap both theoretically and empirically.
- The research also aims to draw upon the three tenets of energy justice to critically juxtapose the continuing impacts of fiscal austerity with the growth of the low-carbon economy, focusing on the UK's 'civic energy sector'. Using the City of Bristol as the core focus of this juxtaposition, the thesis aims to explore the role of 1) different organisational structures and 2) civic energy networks in relation to 'local' energy justice.
- The thesis will seek to contribute towards these aims by drawing upon:

  1) An extensive critical literature review, identifying key gaps in energy justice and civic energy literatures, alongside critical appraisal of different theories and approaches to energy transitions via 'top-down' and 'bottom-up' classifications; and;

  2) Methods derived from the Participatory Action Research (PAR) tradition to gather primary data and contribute new empirics on local approaches to energy justice, supporting the above aims.

In seeking to realise these aims, the thesis asks and seeks answers to four vital research questions pertinent to this exploration of local energy justice (in the UK/England/Bristol contexts), such as;

1. Using the three tenets as an analytical framework, what critical insights, observations and knowledge can they contribute to local and bottom-up perspectives on energy justice?
2. What organisational models dominate the community energy sector and what are the energy justice implications of these models?
3. What role do civic energy networks and intermediary organisations play in shaping local energy justice on the ground?
4. Which communities are engaging in civic energy transitions and which are not? Why?

In seeking to address these research aims and questions, the three tenets will be used as the core conceptual and analytical framework, guiding the analysis of primary data and structuring the presentation of the research findings. The next chapter provides a critical literature review of relevant literatures, beginning with an overview of the UK context for advancing local energy justice research.

2. CRITICAL LITERATURE REVIEW

> *'Developing socially just responses to climate change, both in terms of adaptation and mitigation, is an opportunity to put in place governance, systems and infrastructure that will create a more resilient and fairer society as a whole' (Banks et al 2014 p.8)*

2.1 The UK context: austerity, neoliberalism and energy justice

In the context of a growing number of local low-carbon projects across the UK, there exists the need to understand the impacts of how such projects are distributed, what organisational forms these projects encompass and who benefits from and engages with these 'niche innovations'. Since 2010, a range of competitive, market-led responses to the challenges of achieving a low-carbon transition have come into existence at the local level, based largely on individual *and* community capacity, wealth and initiative. The growth of these types of responses simultaneously threatens to generate new forms of inequality, in which low-income communities with low levels of social capital and little awareness of funding and subsidy schemes are unable to engage in such transitions (Catney et al 2014; Banks et al 2014). The potential inequities and injustices underpinning the dynamics of low-carbon transitions have led to calls for the integration of ideas of 'justice' into various fields. Agyeman (2013) has called for a 'just sustainabilities' approach to policy, planning and practice at various scales, whereby the integration of issues around social need and welfare offers a more 'just, rounded and equity-focused definition of sustainability' (Agyeman 2013 p.4) in the context of growing low-carbon activity. When thinking about transitions specifically, Newell & Mulvaney (2013) consider the importance of a 'just transition', in which justice and equity concerns become an integral part of the transition to a low-carbon future, as new low-carbon activity reconfigures social, political and economic processes. Focusing on the potential for social divisions to emerge from the growth of the low-carbon economy, Walker (2008a) provocatively identified the prospect of an 'energy underclass' emerging in the UK, where the middle classes engage in micro-generation installation and energy efficiency measures, through investing readily available capital and taking advantage of subsidy schemes such as the FIT and RHI. This occurs while lower-income groups remain largely dependent on increasingly expensive conventional gas and electricity supplies, often in homes that are energy inefficient and costlier to heat, in situations in which they are unable to invest in both micro-generation and retrofit solutions (Walker 2008a).

In light of research on inequality in the UK, the pressing need for approaches to transitions that factor in justice and equity issues can be seen in important grey literature and policy reports that observe the sharp rise of social inequality in the UK after the global financial crisis of 2008 (Kersley & Shaheen 2014; Dransfield 2014; Bellfield et al 2014; The Equality Trust 2014). This severe economic downturn initiated drastic cutbacks in public spending through austerity measures implemented by the

UK government after the coalition government came to power in 2010. With the outcome of both the 2015 and 2017 general elections seeing the Conservative party secure first a majority - then a minority-led coalition - in the House of Commons, future economic and political forecasts confirm the continuation of austerity measures until at least 2020, resulting in deep cuts to state expenditure, the reduction of public service capacity and substantial reforms to health, education and welfare provision (Wright 2015: McBride & Evans 2017). These measures are being pursued to address the UK's budget deficit and avert a deeper economic crisis by nurturing economic growth. However, these policies are expected to have a continued negative effect on levels of social equality and are largely seen as a sign of the continuing intellectual domination of neoliberal orthodoxy, as the role of the state is being drastically reduced throughout many aspects of British life, while the private sector is expected to take a leading role in the economy (Harvey 2005; Elliot 2014; Wright 2015; O'Hara 2015; McBride & Evans 2017). The impact of this policy of austerity also occurs at a variety of scales of governance, with local authorities across the UK being hit particularly hard, as the Local Government Association predicts a 77% fall in central government funding by 2020, leaving a £5.8 billion funding gap (Bounds 2017). Many of these cuts are being felt already, with research showing this to have a negative impact on energy policy within local government as vital resource links to central government are cut (Morris et al 2017).

The roots of these economic changes lie not only in the change in political climate brought about by the financial crisis, but more broadly in the advent of neoliberalism, a political and economic doctrine which seeks to reduce the role of government and prioritise private sector actors in the governance and regulation of both the economy and society (Harvey 2005). This intellectual domination of neoliberalism over political and economic thinking is particularly visible within the modern history of the UK energy market.

After the implementation of neoliberal policies during the Thatcher government of 1979-1990 and the subsequent adherence to ideas of 'privatisation, deregulation and liberalisation' across many domains of the UK energy market (Helm 2003; Harvey 2005), the issue of a growing energy inequality has also steadily risen to prominence in British society. In addition, energy policy under New Labour from 1997 – 2010 saw the doctrine of energy privatisation go relatively unchallenged, with an emphasis on 'competitive markets' underpinning much of New Labours approach to energy policy developments in this period (Rutledge 2007). However, while fuel poverty was a primary concern under the New Labour government, reducing 6.5 million families living in fuel poverty to 3 million families in between 1996 – 2001, these gains had to be offset with frequent 'price shocks' and a sharp increase in energy costs for both industrial and domestic consumers between 2003 -2006, which refocused energy inequalities on to the impact of damaging price fluctuations on low-income communities (Rutledge 2007 p.918). These forms of energy inequality often relate to household energy consumption, levels of energy efficiency within a household and household income (Walker

2008; DECC 2015a). This means that they are often a symptom of wider problems relating to general poverty and inequality levels in the UK (Bellfield et al 2014). Indeed, the UK plays host to concerning levels of 'fuel poverty', understood as when more than 10% of a household's income is spent on paying for energy bills (DECC 2013). As of 2013, around 17% of all households were 'fuel poor' within the UK (DECC 2013). As research has developed on fuel poverty, more emphasis has been placed on devolved governments sourcing information from their own regions and territories to gather reliable data and statistics. The traditional 10% definition has also been replaced with a 'Low Income High Cost' indicator. This indicator consists of looking at the number of households that have both low incomes and high fuel costs and the depth of fuel poverty amongst these fuel poor households. This new 'depth' element of the indicator is measured using a "fuel poverty gap which represents the difference between the required fuel costs for each household and the median required fuel costs" (DECC 2015a p.9). Fuel poverty continues to be a chronic problem, not only because the UK is known as the 'Cold man of Europe', playing host to some of the highest rates of fuel poverty and one of the most energy inefficient housing stocks in Europe (Jansz 2015), but because the problem has been increasing:

'In 2015, the number of households in fuel poverty in England was estimated at 2.5 million, representing approximately 11% of all English households. This is an increase from 2.38 million households (10.6%) in 2014 (a change of around 0.4 per cent)' (DECC 2015a p.3)

The extent to which this increase in fuel poverty is directly attributable to austerity is partially unclear, though low-income groups most likely to experience fuel poverty have been shown to be adversely affected by austerity (Ginn 2013), while Middlemiss (2017) has criticised the new 'Low Income High Cost' measurement of fuel poverty as ineffective, and sees an overriding cost-efficient approach to fuel poverty as a result of the influence of austerity (Middlemiss 2017). Notions of an 'energy underclass' and rising fuel poverty point to a wider issue of 'energy vulnerability' within the UK, defined as a situation 'in which a person or household is unable to achieve sufficient access to affordable and reliable energy services, and, as a consequence is in danger of harm to health and/or wellbeing' (Bickerstaff et al 2013 p.16). This term is used to capture the inherent 'variability of circumstances and processes through which problems of access to sufficient and affordable energy are manifest' (Bickerstaff et al 2013 p.15). However, it is important to note that the prevalence of energy vulnerability, fuel poverty and the inability of households and communities to invest in micro-generation technologies and energy efficiency measures, are themselves, a subset of *broader* issues of systemic inequality within society, where growing levels of income inequality, stagnating wages and a reduction in access to core public services underpin such fundamental concerns (Dransfield 2014; Bellfield et al 2014).

In a context where the UK has one of the highest levels of inequality amongst the developed OECD countries, policy research points towards evidence of huge wealth disparities in the UK; the richest 1% of the UK population are wealthier than the poorest 50% combined (Kersley & Shaheen 2014), 13 million people have been classed as living below the poverty line (Dransfield 2014) and a 'cost of living crisis' has meant that the poor have become worse off in recent years, as 'income inequality has fallen back to levels last seen one or two decades ago' (Bellfield et al 2014 p.12). With the continuation of austerity measures in a post-crisis economy, inequality is predicted to continue to rise and wealth disparities grow ever larger (Kersley & Shaheen 2014). Furthermore, Hood & Waters (2017) predict, using current economic trends and policy frameworks, that income inequality is projected to rise between 2017 – 2021, while UK poverty rates are to remain roughly unchanged during the same period.

This situation, when applied to a context of low-carbon energy transitions, is further exacerbated by research investigating the social justice implications of energy policy mechanisms in the UK. Bickerstaff et al (2013) make clear that there are currently two main types of 'green subsidy' mechanisms underpinning low-carbon transitions; one passed on to the consumer through energy bill increases, and one wholly reliant on taxpayer subsidies. While it is uncertain that taxpayer funding for renewable energy subsidies will have less impact on lower-income communities, the funding mechanism for policies such as the FIT is considered regressive due to its distributional impacts. Emerging out of the Energy Act of 2008, the FIT supports the development of renewables initiatives through financially rewarding the generation of energy from renewable sources. Defined as a 'system offering those who produce desirable forms of energy (renewable) a guaranteed level of income for the energy, at a higher level than the tariff for fossil fuel energy' (Vaze & Tindale 2011 p.192), the FIT was seen as a welcome incentive and addition to the UK's low-carbon policy landscape. However, Banks et al (2014) note that many of the UK's energy policies designed to incentivise the take-up of low-carbon energy technologies are paid for through complex levies on energy bills, as energy suppliers pass on the cost of the FIT scheme to all their electricity-using customers. Subsequently, lower-income communities pay more, as a proportion of their income, than higher-income households towards the implementation of these policies, while they benefit the least from these policies. This policy mechanism has led to the accusation that the FIT is essentially a subsidy to the middle classes, as it is highly unlikely that low-income families and communities can afford to invest in micro-generation technologies that guarantee returns through the implementation of levies that underpin renewable subsidy frameworks (Bickerstaff et al 2013). Entering into popular media, journalists have asked: *'Why do we have green welfare for the wealthy?'* (Barkham 2015), pointing to the tendency for renewable subsidies to further enrich the wealthy and comparing the RHI to a form of 'middle-class self-indulgence' (Barkham 2015), despite its efforts to bolster the renewable heat market to lower carbon emissions.

In addition, low-income communities are more likely to be unaware of decision making procedures surrounding the formulation of local energy policy, whereas higher-income communities, with higher levels of social capital, are more likely to be active in public consultation and community forum meetings concerning local energy infrastructures and issues, whilst being more aware of existing investment opportunities arising from renewable energy policy (Catney et al 2014). This underpins notions of both the 'grey greens' and 'usual suspects' in local energy projects being vital to their initiation, while many low-income communities are effectively excluded or unaware of potential opportunities arising from low-carbon transitions (Catney et al 2014; Banks et al 2014). Johnson & Hall (2014) also note that the financial landscape for the local energy sector is based on a competitive bidding process in which different community projects across the country compete for government and private sector funding. This favours those communities that, again, possess the capacity and the wherewithal to engage in such bidding processes, further entrenching social divides.

The concomitant developments of both neoliberal austerity and low-carbon transitions in the UK, provide an important contextual backdrop for the use of energy justice ideas in critically analysing local low-carbon transitions. These simultaneous processes are important for highlighting the reality of growing social divides in a context of widespread fiscal austerity, and point to the need to bring 'justice' led analyses into UK low-carbon transitions. Next, this critical literature review will explore the foundations of energy justice and the key concepts and developments in the field, before going on to understand how local, community and civic energy has been conceptualised in relevant literatures.

2.2 Energy justice research: roots, key concepts and developments

Energy research, while an increasingly burgeoning field, has until recent years been somewhat lacking in engaging with issues of justice. In 2015, a particularly pertinent content analysis of the top energy policy and technology journals revealed that 'out of 5318 authors publishing in these journals over a period of ten years, only 6 had training in philosophy and/or ethics and only one used the word "justice" in its title and/or abstract' (Sovacool & Dworkin 2015 p.435). This demonstrates the extent to which both social justice and social science research have been lacking within wider energy research. Indeed, the now prominent *'Energy Research & Social Science'* journal was only established in 2014, pointing to the relatively recent rise of this type of research. In a similar timeframe, the energy justice research field has rapidly risen to prominence in the last 4-5 years, with key publications and foundational concepts being published within that time period (Bickerstaff et al 2013; McCauley et al 2013; Sovacool et al 2014; Sovacool & Dworkin 2014; Sovacool & Dworkin 2015; Jenkins et al 2016).

It is important to understand that the emergence of energy justice as a critical analytical concept is also wholly concurrent with the push towards large-scale energy transitions, in which deep infrastructure changes are sought to usher in a new era of low-carbon energy systems (Foxon et al

2010; Foxon 2013). Transforming and decarbonising our energy systems is seen as one of the key 'justice' issues of our time, as the energy sector is the number one contributor to global greenhouse gas emissions, and thus a key area to tackle when we consider combating anthropogenic climate change (Davis et al 2010; Bickerstaff et al 2013). Furthermore, much of the energy justice literature sees the transformation of energy systems as an *opportunity* to embed principles of *justice* and *social equity* at the core of energy systems and in amongst energy transition processes (Bickerstaff et al 2013; McCauley et al 2013; Jenkins et al 2016).

Thus, the field of energy justice is simultaneously concerned with looking at how *social inequalities* are manifest in energy systems, whilst seeking to raise the profile of social equity and justice concerns in energy systems (Bickerstaff et al 2013; Jenkins et al 2016). Energy justice literatures have therefore drawn on an explicitly and unashamedly normative approach to critically analysing energy systems. As scholars see that social inequality itself is fundamentally unjust, the exacerbation or replication of this social inequality by energy systems, technologies, infrastructures or transitions is seen as a threat to the stability and proper functioning of wider society. Indeed, these ideas of justice, a 'well-ordered' society and a more 'egalitarian' society, are rooted in the liberal tradition of political philosophy, which in its most modern incarnation, is most commonly associated with John Rawls classic work *'A Theory of Justice'* (Rawls 2009). This key text sees the reduction of inequality in society as a fundamentally just pursuit, alongside intrinsic merit in giving greater voice and representation to more marginalised and disadvantaged parts of society (Rawls 2009). These egalitarian ideas contribute to a better understanding of 'justice' within the liberal tradition of political philosophy; as the pursuit of a more just society grants fundamental human rights to individuals on the basis of their humanity alone, also known as 'cosmopolitan justice', seen by Sovacool & Dworkin (2015) as fundamental to the global spread of energy justice.

One of the earlier ways in which this liberal political philosophy influenced justice scholarship, was through the rise of environmental justice research – a key influence for energy justice itself. Since the ascent of environmental justice research in the late half of the 20th century and early 21st century, it has developed as a substantial field of inquiry into the social dynamics underpinning human-environment interactions, permeating the spheres of political activism, research and policymaking (Bullard 1993; Bullard & Johnson 2000; Schlosberg 2004; Walker 2012). Environmental justice literature has tended to focus on the distribution and effects of 'environmental bads' or 'ills', such as air pollution, biodiversity loss, water contamination or waste disposal, understanding the ways in which these ills impact marginalised communities (Bullard 1993: Walker 2012). In comparison, less attention has been given to understanding the impacts of distributing 'environmental goods', such as renewable energy generation technologies or energy efficiency initiatives, therefore, research at the intersection of energy and justice:

‘Should not only be reactive to environmental bads, but it should also be proactive in addressing equity issues relating to environmental goods […] the distribution of such environmental goods has been relatively under-researched’ (Park 2012 p.388)

This lack of attention is largely because of the relatively recent increase of both activities in response to anthropogenic climate change and resulting climate mitigation and energy transition policies. However, focusing on this recent activity, environmental justice-led studies *have* emerged in recent years, critically analysing the social impacts of low-carbon energy transitions in various contexts across the globe (Middleton et al 2015; Hess et al 2016; Hoffman 2017). While these studies are crucial, providing useful contributions to understanding the rapidly shifting landscape of low-carbon energy transitions, energy justice seeks to focus more *explicitly* on the application of justice theory to energy systems, technologies and transitions. It has, as a by-product, begun to separate itself from the field of environmental justice through the development of multiple energy justice frameworks that are now specific to the field (McCauley et al 2013; Sovacool & Dworkin 2015; Heffron et al 2015; Jenkins et al 2016; Heffron & McCauley 2017). Two of the most widely used frameworks are explored in more depth in this section; the three-tenet approach (McCauley et al 2013; Jenkins et al 2016) and the 8-principle decision-making framework (Sovacool & Dworkin 2015), both of which have been central to expanding energy justice research. Other frameworks that have been developed, such as the ‘energy justice metric’ (Heffron et al 2015), are certainly influential, but have arguably been used to a lesser extent within energy justice literatures.

Thinking first about the origins of the three tenet approach, consisting of ‘distributional’, ‘procedural’ and ‘recognition’ justice, these tenets, taken together, have unmistakably been key to the advancement of environmental justice, whilst also taken separately, have been prominent throughout social and environmental justice literatures (Fraser 1997; Schlosberg 2004; Schlosberg 2009; Walker 2009; Rawls 2009). However, despite these conceptual links and influences on energy justice, attempts have been made by certain energy justice scholars to distinguish the effectiveness of energy justice from the achievements of environmental justice research, and also, literatures on climate justice. Heffron & McCauley (2017) put forward many bold claims as to the failures of climate and environmental justice to influence policy, and, argue that energy justice can be more effective for influencing policy and decision-making. However, the extent to which energy justice is more influential over policy - which is admittedly a core part of the aims of energy justice (Heffron et al 2015; Jenkins et al 2017) - remains to be seen.

Despite these antagonistic assertions, energy justice clearly takes great influence from the analytical prowess of environmental justice research, and therefore is indebted to the power of its insights, as acknowledged by other energy justice scholars (LaBelle 2017). We can see this influence most clearly in the renaming of the three tenets by energy justice scholars as the ‘triumvirate of tenets’ of energy

justice (McCauley at el 2013), which as alluded to earlier, stem largely from both the social justice (Fraser 1997) and environmental justice fields (Schlosberg 2004; Walker 2009), alongside a preceding application of these tenets to issues of energy justice (Walker & Day 2012). The adoption of these tenets into a core energy justice framework is thus seen here as more of a dynamic evolutionary process that borrows from the successes of decades of environmental justice research, rather than a more effective and policy-oriented approach to justice scholarship. Meanwhile, these tenets have certainly evolved to take on a partially new meaning when applied to energy systems, technologies, infrastructures and transitions, thus distinguishing their use from the environmental justice field.

Procedural justice - in the context of energy justice - is concerned with the ways in which people can be involved in decision-making procedures in energy systems, enabling communities 'to overcome a lack of social capital and institutional barriers to involvement in decision making' (Brisley et al 2012 p.5), alongside enhancing participation and ensuring transparent decision-making (Jenkins et al. 2016). *Distributional justice* focuses on both locational issues concerning the geographical siting of energy infrastructure and the economic benefits and burdens embedded in energy systems, alongside considerations of how they are distributed across society (Heffron & McCauley 2014). Thus, while distributional justice factors into consideration the spatial nature of energy systems, it also concentrates on how resources are distributed and to what effect. *Recognition justice* looks at how marginalised or deprived communities can achieve greater recognition in energy systems, to address social inequalities that reflect forms of injustice and inequity within wider society (McCauley at el 2013; Fraser 2014). The notion of 'justice as recognition', or recognition justice, stems from Frasers (1997) original work on expanding the conventional scope of social justice research to include an understanding of the cultural, social and economic basis for inequalities, in which a failure to attribute *rights* and *recognition* to vulnerable and marginalised groups signifies a claim for injustice. Where a lack of recognition occurs, certain social groups may be 'overlooked or stigmatised' (Walker and Day 2012 p.71) and this lack of recognition is seen as 'foundational to distributional inequalities' (Walker and Day 2012 p.71).

It is clear from these understandings of the different tenets of energy justice that procedural, distributional and recognition justice are all deeply intertwined. It is also apparent that recognition justice forms the foundation upon which procedural and distributional justice can be realised. From the triumvirate of tenets, we can therefore deduce that *'inequitable distribution, a lack of recognition and limited participation all work to produce injustice and claims for injustice'* (Schlosberg, 2004, p. 529) in energy transitions and systems. Indeed, Eames (2011) shows that when we combine 'evidence of inequality' with a coherent argument for 'fair' treatment, we have a legitimate 'justice claim' when critically analysing transitions. These three tenets can thus be used to understand where injustices occur within energy systems, and critically, to understand how justice can be achieved (McCauley et al. 2013; Heffron & McCauley 2014; Jenkins et al. 2016). As the field of energy justice has

developed, certain scholars have proposed the addition of new tenets to enhance the analytical powers of a tenet-based approach. Similar to the call for the recognition of 'cosmopolitan' justice as important to the development of an analytical energy justice framework (Sovacool & Dworkin 2015), energy justice scholars have also brought attention to the concept of 'restorative' justice, proposing it as a new tenet of energy justice (Heffron & McCauley 2017). *Restorative* justice borrows from the legal world the notion that some sense of justice can be 'restored' after a violation of the rights of individuals, e.g. through a crime or unlawful act (Heffron & McCauley 2017). In the case of energy systems, this may be achieved through a process of remediation in response to a perceived energy injustice within an energy system or as part of an 'unjust' energy transition process. This is certainly an interesting proposed addition to the tenets framework, however, as pointed out by Jenkins et al (2016), the 'triumvirate of tenets' has been most widely used in energy justice research to date, and has been continuously used in energy justice studies spanning the globe (see for example Lappe-Osthege & Andreas 2017; Munro et al 2017 & Alvial-Palavicino & Ureta 2017).

This widespread usage of the three tenet framework may be in part due its comparative simplicity when analysed alongside the use of Sovacool & Dworkin's (2015) 8-principle decision-making framework. These principles and their associated explanations are summarised in the 'energy justice decision-making tool' table below:

Energy justice decision-making tool.

Principle	Explanation
Availability	People deserve sufficient energy resources of high quality
Affordability	All people, including the poor, should pay no more than 10 percent of their income for energy services
Due process	Countries should respect due process and human rights in their production and use of energy
Good governance	All people should have access to high quality information about energy and the environment and fair, transparent, and accountable forms of energy decision-making
Sustainability	Energy resources should not be depleted too quickly
Intragenerational equity	All people have a right to fairly access energy services
Intergenerational equity	Future generations have a right to enjoy a good life undisturbed by the damage our energy systems inflict on the world today
Responsibility	All nations have a responsibility to protect the natural environment and minimize energy-related environmental threats

Figure 1. *'Energy justice decision-making tool'* (Sovacool & Dworkin 2015 p.437)

According to this decision-making tool, these 8 principles should be used by decision-makers when formulating energy policy, to provide more equitable and just energy policy outputs, and, make policymakers more aware of equity issues that may be overlooked by conventional economic approaches that dominate contemporary policymaking (Sovacool & Dworkin 2015; Sari et al 2017). Additionally, Sovacool et al (2017) have proposed a revised conceptual framework based on this decision-making tool, which adds in the principles of 'resistance' and 'intersectionality', creating a new 10-principle framework, arguably complicating its already limited comprehensiveness when compared to the three tenets framework. However, similar to the three core tenets, the 8 principle energy justice framework has proved useful in analysing energy systems, and has also made its way into energy justice studies in non-western contexts, (Islar et al 2017), while some scholars have

attempted to combine both the three tenets and 8 principle decision-making tool (Lappe-Osthege & Andreas 2017). However, with the proliferation of both frameworks, the principles within the triumvirate of tenets framework have been used more than the 8 principle decision-making tool, especially when we consider their ability to be used in isolation from one another (Yenneti & Day 2015; 2016). This is apparent in an energy justice-led study of the implementation of a large-scale solar park in Gujurat, India, whereby Yennetti & Day (2015) use one publication to tease out core *procedural* justice aspects of this project, before moving on to critically interrogate the *distributional* justice concerns of this project in another publication (Yennetti & Day 2016). Interestingly, despite this proliferation, when doing a broad scalar analysis of the types of scales that have been prioritised within energy justice literatures, both have not been *widely used* in the analysis of 'local' low-carbon transitions. Or rather, energy justice is yet to focus explicitly on the dynamics of local scales in a way that constitutes a sufficient body of literature, empirics and primary research. This points to the need for energy justice research to engage much more closely with local low-carbon energy systems.

In a powerful and provocative section in *Global Energy Justice* on what is to be done about energy poverty, access and welfare, Sovacool & Dworkin (2014) make clear the strong links between 1) investing in small-scale renewable energy systems, 2) facilitating community ownership of energy infrastructures and 3) the expansion of decentralised energy provision. They conclude that by combining these three aspects, low-carbon transitions can offer many environmental, economic and social benefits to communities across the world (Sovacool & Dworkin 2014 p.223 - 256). Applied to the UK community context, we can envision that communities that are best positioned to explore these links will also see the strong connections between small-scale, community-owned renewable energy systems and community benefit provision. However, this localisation and decentralisation of renewable and low-carbon energy comes with a whole new set of challenges; not merely concerning those communities that are highly inactive, unaware and unable to engage in these transitions, but also concerning those communities that wish to participate in these transitions, see the many benefits associated with small-scale generation - and ownership - but are equally unable to successfully engage and take part. In light of this concern, research exploring the value of *local approaches to energy justice* has recently begun to emerge.

The few studies that draw specifically on local approaches in energy justice literatures have been shown to highlight core spatial, contextual and power-oriented concerns in low-carbon energy transition processes, whilst also demonstrating the critical importance of differing levels of inequality between and within communities (Catney et al. 2014; Reames 2016; Bouzarovski & Simcock 2017; Forman 2017). Before these publications emerged, however, the use of energy justice tenets in critically examining local energy activity emerged in grey literatures before McCauley et al (2013) declared the triumvirate of tenets as an explicit energy justice framework. Exploring different types of community initiatives and their justice implications, Bulkeley & Fuller's (2012) analysis of 'low-

carbon communities and social justice' sought to develop a 'climate frame' which could be used to assess the social impacts of government, civil society and private sector-led community initiatives. They put forward a method of assessing what is 'just' by situating distributive and procedural justice alongside three additional dimensions – responsibility, rights and recognition (see below).

	Responsibility	*Rights*	*Recognition*
Distributive	Allocation of duties to mitigate	Share of the benefits and costs of the impacts of climate change and of mitigating its effects	The structural conditions that create vulnerability and produce uneven landscapes of greenhouse gas emissions
Procedural	Imperatives for participation in climate decision-making	Provision of access to decision-making to relevant groups and individuals	The basis upon which exclusion and inclusion from decision-making is currently structured

Figure 2. The multiple facets of climate justice (Bulkeley & Fuller 2012 p.3)

While this isn't explicitly an energy justice framework, but rather, framed in terms of 'climate justice', it allows researchers to integrate recognition concerns into a more complex understanding of the multiple dimensions of justice, sharing some similarities with Sovacool & Dworkins (2015) eight key principles with the inclusion of 'responsibility' and notions of intrinsic 'rights' that display links to ideas of cosmopolitan justice. Interestingly, this early presence of the 'triumvirate of tenets' allows the researchers to examine the impacts of different *organisational structures* at the local level.

Looking at how procedural justice may be realised in a community context, Bulkeley & Fuller (2012) consider the *structures that underpin* how recognition is afforded to certain groups within a community, how rights are allocated through the 'provision of access to decision-making' and how the 'imperatives for participation' in decision-making are tied to a communities perceived participatory responsibilities (Bulkeley & Fuller's 2012). From a subsequent analysis of their research results on the impacts of different organisational structures in Bickerstaff et al (2013), they find *'significant variation in terms of the extent to which fundamental inequalities that shape distributive and procedural aspects of […] justice at the community level are recognised'* (Bickerstaff et al 2013 p.77). For example, with regards to the distributive dimensions of government-led programmes, they find that they are more likely to consider how 'benefits might be shared through specific attempts to distribute benefits to marginalised groups' (Bulkeley & Fuller 2012 p.15), which stands in sharp contrast to the programmes initiated by private and civil society actors, which according to their selection of case studies, do not 'consider the distributional impacts of their programmes in such explicit terms' (Bulkeley & Fuller 2012 p.15). Similarly, when addressing the procedural dimensions of these programmes, government-led initiatives were *less* likely to include marginalised groups in open processes of decision-making than private and civil society programmes (Bulkeley & Fuller 2012). This analysis of 'low-carbon communities and social justice' was one of the first UK analyses

to take what is now known as the 'triumvirate of tenets' (McCauley et al 2013) and apply it to local energy scenarios, with a focus on the justice implications of different cross- sectoral activities.

Not long after Bulkeley & Fuller's (2012) analysis of local activity, Catney et al (2014) critically explored the social impact potential of community energy schemes in the UK. Seeing that highly unequal capacities for differing communities to engage in local energy schemes would be critical for their initiation, the authors suggest undertaking what they call a 'reality check' when exploring the potential for a deprived locality or community to engage in energy generation projects (Catney et al 2014). In this, they put forward three different points of analysis; taking stock of a community's *social capital*; assessing *community capacity* and understanding their *cultural capacity*, as they note that 'for people living in poverty in deprived areas, personal responsibility for carbon emissions may be the furthest thing from their minds' (Catney et al 2014 p.11). Furthermore, additional analysis of Catney et al's (2014) case studies drawn from the West Midlands, in which they compare two relatively affluent wards to two highly deprived wards, sheds light on the critical importance of geographical differences and disparities underpinning socio-economic inequalities. Indeed, Bridge et al (2013) see energy transitions themselves as a *fundamentally* geographical process, arguing that the energy transition 'pathways' governments choose will shape the future geography of transitions. In their analysis of space and place in low-carbon transitions, they see the uneven and unequal landscape for the deployment of a diverse array of low-carbon technologies as embedded in 'spatial difference', emphasising that;

'Space is a necessary condition for the possibility of multiple, co-existing energy pathways and, therefore, an important source of variety and experimentation: there are significant opportunities, therefore, for understanding the relationship between different trajectories of energy transition and the geographical conditions from which they emerge' (Bridge et al 2013 p.339)

This spatial difference is not only intimately connected to the physical geography of resources, but also to the capacity of different regions, local authorities and communities to engage in energy transition processes. Interestingly, more recent studies have taken this explicitly geographical focus and have integrated *spatial justice* approaches into energy justice. Scholars have found that local and 'area-based' policy solutions have the potential to remedy geographically uneven patterns of energy injustice (Bouzarovski & Simcock 2017 p.646). Indeed, Bouzarovksi & Simcock's (2017) call for scholars to acknowledge 'landscapes of material deprivation' when considering processes of energy injustice within energy systems, demonstrates strong connections to Catney et al's (2014) earlier analysis of the inability of deprived wards to engage in potentially beneficial forms of local energy activity. Therefore, both studies seem to suggest that strategic forms of local intervention by local organisations in areas of high deprivation, may go some way to tackling local energy injustices in energy transitions (Catney et al 2014; Bouzarovksi & Simcock 2017).

Extending energy justice insights into localities in the UK, research into local community energy schemes in Wales shows that there are diverse approaches to energy justice which depend on the specificities of local contexts and the politics of localities (Forman 2017). Indeed, one of Forman's (2017) central findings was that local level interventions in community energy schemes have the potential to foster greater energy justice outcomes and 'deliver more widespread equity gains' in energy transitions. However, like Catney et al (2014), Forman (2017) doesn't address the specifics of *how exactly* this local intervention should be conducted. This is crucial for understanding what types of power dynamics are at play, and indeed, as Bulkeley & Fuller (2012) acknowledged, what organisational structures may foster greater energy justice at the local level.

Thinking further about how *power* relations are altered by local projects, in an energy justice-led analysis of decentralised, small-scale biogas deployment in Nepal, it was found that small-scale energy solutions have the potential to *change* power dynamics and empower local communities (Damgaard et al. 2017 p.13), differing substantially from the potential justice implications of centralised, large-scale energy deployment, often owned by distant and sometimes disconnected public or private companies. This potential for empowerment is also attested to further in specific calls by energy justice scholars for small-scale energy projects and local renewables initiatives to be given serious consideration in developing country contexts, as a means of simultaneously tackling both absolute poverty and sustainable development (Guruswamy 2011; Baker 2016; Banerjee et al 2017; Villavicencio & Mauger 2017). These power differentials largely reside around different ownership structures and scales of technological deployment, when compared to large-scale centralised energy schemes. These important studies go on to conclude that these emerging, unique power dynamics between actors within a 'local' and 'community' context centre on new forms of low-carbon activity. However, as has been acknowledged earlier in both the introduction and in this literature review, this new activity, in turn, can produce new forms of energy injustice, where low-carbon energy systems and transition processes pose the risk of leading to fundamentally unjust outcomes for vulnerable, disempowered and marginalised groups (Bickerstaff et al. 2013; Yenneti et al. 2016), whilst also risking the neglect of more deprived areas altogether (Catney et al 2014).

Building this on critical local approach, Reames (2016) notes in his energy justice-led study of socioeconomic disparities in residential energy efficiency, that local and area-based approaches are key to targeting appropriate low carbon interventions to different locations in order to tackle local energy injustices (Reames 2016). This further strengthens the consensus within the literature that *intervention by local organisations* is key to addressing core energy justice issues in local low-carbon energy transitions.

As Forman (2017) has alluded to, while there is ample evidence for the emergence of many local energy schemes across the UK (Walker et al 2007; Seyfang & Haxeltine 2012; Seyfang et al 2013;

DECC 2014), there is limited evidence demonstrating the extent to which a large diversity of communities across the UK are engaging in questions of justice in energy transitions at the local level, and more specifically, whether they are explicitly engaging in an energy justice framework. What is increasingly apparent about these initiatives, is that understandings of both social and energy justice are highly varied, contested and multifaceted. It is therefore important to note that when exploring local energy justice, there is not a broad agreement on what energy justice is and whether a top-down prescription for energy justice is indeed effective.

Different scalar approaches have therefore emerged within the energy justice field and these approaches often relate to either top-down 'systems' led thinking or more bottom-up 'local' approaches. Debates are underway as to the extent to which a *systems approach* to applying the three core tenets of energy justice is merely *one way* of approaching energy justice, as scholars explore approaches that factor in various scales of analysis (Rasch & Köhne 2017). Indeed, Forman (2017) has seen this approach as counter to the need to recognise bottom-up and local approaches to energy justice as equally as important to its conceptualisation of energy *systems dynamics*. While some energy justice literature has recognised that this approach is inherently top-down, as institutions and policymakers have to enforce this approach onto systems and the people within it (Jenkins et al 2017), many scholars still view it as the most effective approach to critically addressing the global nature of energy systems, their complex entanglements within global supply chains and their highly variant and geographically dispersed social impacts (Jenkins et al 2014; Jenkins et al 2016). This systems approach is also used to distinguish energy justice from climate and environmental justice further, with scholars claiming that this application of principles of justice to each point of extraction, production, distribution and consumption within energy supply chains is unique to energy justice (Jenkins et al 2016). However, scholars such as Rasch & Köhne (2017) have shown that vital links between different scales of energy activity are crucial for how we understand energy justice, whilst various scholars are increasingly drawing upon the importance of bottom-up perspectives for understanding how people create energy justice 'from below' or at the local level (Reames 2016; Forman 2017: Rasch & Köhne 2017:).

This section has explored the roots, key concepts and developments of energy justice research. It has also shown how highly influential work on advancing energy justice by McCauley et al (2013), Heffron & McCauley (2014), Sovacool & Dworkin (2015) and Jenkins et al (2016), logically necessitates strong levels of top-down government intervention and the implementation of policies that support their notions of justice across global supply chains and at various levels of global and national governance. These approaches, while critical in addressing the complexities of global energy systems, unintentionally disregard the ways in which bottom-up, grassroots initiatives, and indeed local authority and regional initiatives, seek to shape and frame justice in a way that is suitable to a

specific locality, local context or even community group or organisation. However - and as will be advanced within this thesis - if the triumvirate of tenets are to be applied at the community level, it is important to see that deep tensions between both top-down and bottom-up approaches to energy justice will present a variety of challenges for understanding how justice is negotiated at the local level. One apparent tension may be between local organisations and local authorities themselves, as pre-existing power plays within localities come to the fore around local energy politics and the politics of low-carbon transitions (Shove & Walker 2007). This is one of the key critical challenges for local energy justice going forward; how to ensure that the advancement of energy justice into policy and low-carbon activity isn't a top-down imposition, but rather something that localities and communities ultimately desire and seek to realise on their own terms. Indeed, it is vital to note that 'who defines *what is just*, and *for whom*, will be determined by power struggles in particular contexts as measures aimed at achieving energy and climate justice are simultaneously deployed' (Newell & Mulvaney 2013 p.138). The next section of this critical literature review will review key literatures on local, civic and community energy, demonstrating the overlap between them and explaining why 'civic' energy has ultimately been used as the main concept for researching and investigating local energy justice within this thesis.

2.3 Inextricably linked: 'local', 'community' and 'civic' energy in the UK

In light of the energy justice challenges posed above for local low-carbon transitions, many authors have argued for the *primacy* of equity and justice concerns when formulating energy policy and practice around low-carbon transitions, particularly at the local or community level, where the social impacts of transitions are often considered most visible or apparent due to the physical and material localisation of mitigation activity and measures, deployment of energy technologies, and additions and alterations to relevant local infrastructures (Park 2012; Eames 2011; Seyfang et al 2013). Building on the overview provided in section 1.2, and, thinking about how different local level actors can engage in low-carbon transitions, this section will review key findings in civic and community energy research in the UK. It will also demonstrate the extent to which both of these concepts are inextricably linked, with an acknowledgement of their relation to the *'Thousand Flowers'* transition pathway, which neatly captures the existence of community energy schemes, whilst also acting as the intellectual and conceptual precursor to the 'civic energy sector'. This pathway is reviewed in more detail in section 2.4.3.

While the interlinkages between civic and community energy activities and associated literatures are under review here, it is important to note that they are also critical to understanding locally-led and bottom-up pathways to energy transitions. However, while the literatures reviewed here form a constituent component of bottom-up transitions, they do not provide broader institutional and technological details of their *potential* role in the UK energy mix, as proposed in detail by the

'*Thousand Flowers'* transition pathway and the potential for 'Grassroots Innovations' to prosper within the UK's energy mix (section 2.4.3). Instead, the literatures presented here demonstrate engagement with decentralised and local energy activity and the different ways in which these have been understood and conceptualised within the UK and Europe. These conceptualisations are important, as they show what *hasn't* been researched properly to date, and thus where critical research gaps lie in the analysis of decentralised and local energy more broadly. Firstly, the idea of 'community energy' is reviewed, beginning with a brief history of its roots and emergence within the UK. Secondly, an overview of case studies is provided, demonstrating the importance of ownership models for local energy projects. Lastly, emerging structures, ownership types and modes of implementation in local energy scenarios are reviewed.

2.3.1 Background of local and community energy in the UK

The idea of local, community-scale energy generation appears to be a much considered concept in the older tradition of sustainable energy literature. Lovins (1977) notion of a 'soft energy path' advocated the gradual replacement of centralised, fossil fuel-based energy sources with local renewable energy sources, not only because of the pollution and environmental degradation arising out of such activities, but because of the potential social implications of localised renewable energy, such as increased ownership of energy by and for communities. Similarly, Schumacher's (2011) famous work '*Small is beautiful',* first published in 1973, encompassed ideological notions of an 'appropriate technology' movement being one that is focused on technological configurations that are locally controlled, decentralised and environmentally friendly. With an emphasis on technologies such as self-powered equipment (e.g. hand powered water pumps) and passive solar building designs, Schumacher (2011) wanted to integrate environmentally benign livelihoods into widespread, localised and small-scale models of energy production and usage. Both authors attempted to join up local energy *ownership*, *control* and *production* with social benefits and advantages in classic environmentalist literatures that date back to the 1970's, observing the ability for localised energy to complement new social, technological and organisational configurations. These perspectives demonstrate similarities with some energy justice literatures, such as Sovacool & Dworkin's (2014) writing on the energy justice potential of this local approach.

However, it is only within recent decades that similar ideas have started to emerge in UK government and gain some ground in the thinking around low-carbon transition pathways. From a policy perspective, The 2003 Energy White Paper *'Our Energy Future – Creating a Low Carbon Economy',* was a significant leap forwards for community energy. Alongside considerations of fundamentally changing the UK's energy landscape by increasing the UK's security of supply and self-sufficiency with a wider use of renewable energy, it explicitly makes clear that 'increasing the deployment of renewables will depend on people supporting local projects' (DTI 2003 p.52) across the UK.

Furthermore, two projects were established in the early 2000's that aimed to focus exclusively on community energy; the Community Renewables Initiative (CRI) and the Community Energy Programme (CEP). While the CEP was set up as a 2 year programme by the Department for Environment, Food and Rural Affairs with £50 million to support the development of community heating systems across the country between 2002 and 2004 (DTI 2003 p.123), the CRI, set up by the Countryside Agency in 2002 and funded by the Department for Trade and Industry, had wider, more long term ambitions. Seeing the potential for community energy to address local issues, one of its principle objectives was to 'help groups and individuals realise that renewable energy can form part of the regeneration of their locality' (CRI 2002 p.1) in a variety of ways. Unfortunately, after many successful schemes, the funding was withdrawn from the CRI in 2007 'at a time when it was reporting an almost overwhelming demand for its services' (Walker 2008b p.4402), creating a huge gap for potential community energy projects in the UK. These new perspectives on community energy were part of the emergence of a wider shift in 'both policy discourse and the investment of public resources' (Walker et al 2007 p.65) since 2000, as the appreciation of the capacity for local energy projects to go beyond sole considerations of energy generation were surfacing. As a result, it was increasingly argued that a community-centred approach;

'Could help ensure that projects were more appropriate to their locality, persuade people of their worth through providing more direct benefits to local residents (including through direct ownership) and generate less conflict through the close involvement of the community from the start of the project' (Walker et al 2007 p.71-72)

Walker et al's (2007) points around the appropriateness of community energy for localities, potential ownership implications and acceptance of new infrastructures through greater involvement in their implementation are further explored in the next section concerning an overview of selected case studies of community energy in the UK and Europe.

2.3.2 Community energy initiatives: local ownership, public acceptance and geographies of energy decentralisation

While in theory community energy projects seem able to present an innovative model equipped to avoid some of the inherent limitations of government and private sector oriented projects (Park 2012), in practice they can encounter a wide variety of problems relating to both external and internal tensions and conflicts. Whether this is the organisational model adopted by a community project, macro-economic shifts in the wider energy economy or dramatic changes in the policy landscape, the pressures of starting community energy projects come with considerable risk in an economic and political landscape that has shifted from a largely grant-based funding model to a more commercial

and business oriented framework for local energy projects (Seyfang et al 2013). This means that contemporary community energy projects also rely heavily on financial and policy support from both the government and the private sector, as raising capital purely from communities alone isn't sufficient to fund sustainable long-term business models (Aylett 2013; Seyfang et al 2013; Johnson & Hall 2014). This understanding leads to a context in which cross-sectoral collaboration and the development of hybrid partnerships and innovative ownership models become embedded in the community energy landscape. This participation across sectors can be used to support and incentivise direct community ownership and co-ownership of renewable energy projects, though in the UK, there are still many technical barriers and policy/legal complexities preventing the sale of power to local residents and customers from energy generation provided by renewable energy assets (Forman 2017). More favourable conditions to this arrangement in countries such as Germany and Denmark, explain in part, why the UK's community energy sector is comparatively small when looking at other European nations (Bauwens et al 2016).

In an analysis of case studies concerning the social impacts of local renewable energy projects throughout Germany, Zoellner et al (2008) encounter a great degree of 'NIMBYISM' throughout their findings. This points towards a growing phenomenon in which the majority of the public are in favour of renewable energy policies and higher levels of energy generation from renewable sources at the national level, often supported, administered and legislated by national government, but when local projects are commissioned, perceptions of renewable energy start to change and receive more opposition at the community level (Zoellner et al 2008 p.4136). Studying a total of four different projects around Germany, the analysis consisted of case studies which used solar, wind and biomass energy sources and looked at what factors increased the acceptance of local renewable technologies. Using a mixed methods research design which encompassed standardised questionnaires and qualitative interviews, the researchers found that two fundamental aspects of various modes of renewable energy implementation (local government, local business or citizen-led) were required to increase acceptance. First, the researchers state that 'it has to be clearly communicated that renewable energies have a positive economic impact – for the individual as well as on the regional level' (Zoellner et al 2008 p.4140). This can occur through a variety of methods, for example, demonstrating that new jobs are created through the installation, use and maintenance of new technologies and explaining to those communities that they are being protected against rising fossil fuel prices by securing forms of low-carbon generation. Secondly, the active involvement and participation of local residents in the decision making and planning process was considered vital for increasing public acceptance. This was found to be a fundamental process in enhancing the perceived legitimacy of the implementation process and furthermore, the degree of engagement throughout all stages of the process – from gaining planning permission and raising sufficient capital, to installation and operation – was key in securing not only consent, but involvement and support (Zoellner et al 2008 p.4140).

These findings, therefore, clearly resonate with the 'triumvirate of tenets' of energy justice (McCauley et al 2013), with aspects of realising both distributional and procedural justice clearly vital to the increased acceptance of local energy projects.

However, while this study also looks at the social factors conducive to increasing public acceptance, the required public engagement and demonstration of economic incentives does not necessarily reflect the impact of *structures of ownership*. An analysis of a community-owned windfarm on the small Isle of Gigha in southwest Scotland demonstrates that *ownership* of renewable technologies can shift public attitudes. Warren & McFayden (2010) note that while Scottish support for renewable energy remains high and wind power resources in Scotland are amongst the most considerable in Europe, a prevailing concern amongst Scottish communities was the potential visual impact of wind turbines on previously untouched rural landscapes. While the authors set out to explore the relationship between community ownership and public acceptance, they find that the rural setting of these proposed wind turbines proves highly troublesome. They note that the most vociferous of critics are opposed to the 'transformation of natural landscapes into landscapes of power' (Warren & McFayden 2010 p.205) and public objections are based on assertions that 'landscape impacts of windfarms will damage tourism […] cause noise pollution, affect property prices and damage flora and fauna' (Warren & McFayden 2010 p.205). Similar to Zoellner et al (2008), the researchers employ a mixed methods research methodology in which questionnaire based surveys were used alongside semi-structured interviews to test the hypothesis that community ownership leads to greater public acceptance. After sending out 106 questionnaires (the population of the Isle of Gigha is around 150) and conducting interviews with 5 key stakeholders, the researchers most significant finding 'concerns the positive influence of ownership on the attitudes of communities towards wind energy projects' (Warren & McFayden 2010 p.209). In addition to this finding, Musall & Kuik (2011) used questionnaire-based surveys to investigate the difference between public attitudes towards community co-ownership of wind energy and commercial company ownership in southeast Germany. The results obtained through this study can be successfully corroborated with Warren & McFaydens (2010) findings, despite the largely different historical, political, economic and geographical contexts. Through a comparison of two communities within SE Germany - Nossen and Zschadrass - Musall & Kuik (2011) find that community co-ownership models have a significant effect on increasing local acceptance. Furthermore, they also find that;

'Community co-ownership of wind energy leads […] to a higher level of local acceptance towards the nearby installed wind turbines than ownership of a wind farm by a commercial company' (Musall & Kuik 2011p.3258)

Thus, these studies contain large implications for distributional justice in particular, as they point towards ownership models that economically benefit local communities as being more favourable to increasing acceptance. In addition, this has implications for the geographies of energy justice and 'energy geographies' (Bouzarovski et al 2017), as initiatives seeking to deploy decentralised low-carbon energy sources *may* decrease potential opposition by ensuring some element of community co-ownership or economic benefit is guaranteed. However, other important factors contributing to the development of co-operatively and community owned renewable energy include 'support instruments for renewables, planning policies, attitudes toward the cooperative model and local energy activism' (Bauwens et al 2016 p.145) in addition to ownership design, which is explored in more depth in section 2.5 of the literature review.

Furthermore, it is crucial to recognise that *natural resource endowments*, or a 'physical geography of resources', will naturally vary a community or localities capacity to deploy certain renewable energy technologies, on the understanding that a 'naturally occurring geography of places better endowed with the requisite natural resources […] for the deployment of particular technologies' (Bickerstaff et al 2013 p.59) will greatly affect the different types of technologies used across the UK. For example, if we look at the solar radiation map below, solar thermal and PV technology may perform differently over a given year or number of years, in terms of potential energy generation and thus revenue generation, depending on where the technology is located throughout the UK.

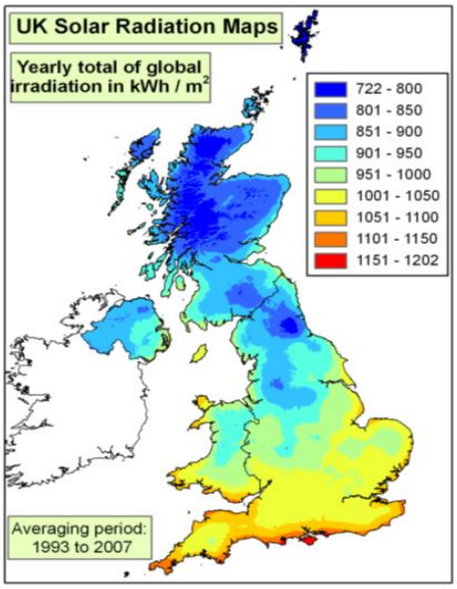

Figure 3: UK Solar Radiation Maps (DECC 2013 p.19)

Similar to the siting of wind turbines, the geographical location of solar technology will affect its economic viability and its potential community benefits. This physical geography of resources is further affected by the siting of renewable energy technologies in either urban or rural environments, where the technical feasibility of different technologies varies greatly according to the specific make

up of both the natural and built environment. For example, Grubler et al (2012) note it is likely that solar PV installations will become more prominent within the built environment and in cities than other existing technologies. This is due in part to the 'hyper-sizeability' of solar PV, which allows the technology to be deployed at a variety of scales and sizes (Walker & Cass 2007; 2011), and also the ability for PV to be integrated into the large amounts of roof space available within cities. These geographical, technological and scalar aspects of local renewable energy deployment account for why community solar is more common in cities and community wind more prevalent in rural areas or on the outskirts of urban areas (Grubler et al 2012; Bouzarovski et al 2017). The next section gives an overview of emerging structures of ownership in the civic energy sector and the different modes of renewable energy implementation in the UK energy system.

2.3.3 Community and civic energy: Emerging structures, ownership types and modes of implementation

As has been explored, it is important to note that the 'community mode' of renewable energy deployment, in contrast to other modes of energy implementation such as public utility or private supplier, has been seen by many researchers as particularly competent in meeting varying social, environmental and economic objectives (Zoellner et al 2008; Warren & McFayden 2010; Musall & Kuik 2011; Seyfang et al 2013). Outlined below is an overview of the five different modes of renewable energy implementation in the UK and associated characteristics, such as 'ownership', 'management' and 'technologies':

Modes	Underlying discourses	Technologies	Size	Function and service	Ownership and return	Management and operation	Infrastructure and networking
Public utility	Universal provision	Hydroelectric	Macro	Electricity for grid and distanced consumption	Public, return to state	Publicly owned utility	National electricity grid
Private supplier	Neoliberal market logic, consumer choice	Wind, waste to energy, hydro	Macro and meso	Electricity for grid and distanced consumption	Private, differentiated, return to shareholders	Privately owned utility; differentiation in roles	National electricity grid; regulated market
Community	Neocommunitarianism, participation, sustainable communities	Solar, wind, hydro, biomass, heat pump	Meso and micro	Electricity or heat for local consumption and/or grid	Multiple models; partnerships, cooperatives, user-led; some 'collective' return	Multiple models; partnerships, user-led, cooperatives	Off grid and/or feed to national or local network (heat or electricity)
Household	Personal environmental responsibility, self reliance, autonomy	Solar, wind, hydro, biomass, heat pump	Micro	Electricity or heat primarily for local consumption	Household as owner or host; direct or indirect return to household	Multiple models; plug and play, company driven, microgrid	Off-grid and/or feed to national or local network (heat or electricity)
Business	Corporate social responsibility, business efficiency	Solar, wind, hydro, biomass, heat pump, waste to energy	Meso and micro	Electricity or heat primarily for local consumption	Business as owner or host; direct or indirect return to business	Multiple models; plug and play, company driven	Off-grid and/or feed to national or local network (heat or electricity)

Figure 4: 'Five modes of implementation of renewable energy in the UK' (Walker & Cass 2007 p.462)

Since this table was published, the 'business' mode has been changed to 'organisational' to encompass both private and public sector projects (Walker & Cass 2011). Interestingly, we can see quite a bit of crossover between the organisational and community modes of implementation, both in terms of scale and technologies, but with different discourses underlying both modes. While these

modes of implementation are unable to capture the full variety and complexity of organisational types, it is a helpful reference point which integrates the technological, organisational and scalar components that are inherent in any analysis of local energy projects.

In order for the crossover between both modes to be theoretically grasped, the notion of a 'civic energy sector' is useful in identifying the potential variety of projects within the civil society sphere, particularly as section 2.3.2 above outlined the inherent interdependence between state, market and civil society actors in making local energy schemes a reality. The civic energy sector can be defined as encompassing:

'Schemes that capture values from energy generation either through co-operative, municipal, charitable, or citizen investment business models […] The use of the signifier civic as opposed to community reflects the importance of municipalities (the local state), citizen investors, and (the) importance of regions and geography' (Johnson & Hall 2014 p.152).

This definition shows that the diversity and totality of projects within the civil society sphere is very difficult to encapsulate both theoretically and empirically. This is particularly true in the UK, with a growing policy emphasis on local activity introduced via the Localism Act 2011 spurring experimentation with locally oriented community models and community activity (Catney et al 2014). In addition, the presence of organisational structures such as Community Interest Companies (CIC), and particularly Community Benefit Societies (CBS/BenComs), are prevalent throughout the community energy sector, alongside more established Co-operatives (Co-ops), adding further emphasis to the 'community' dimension present within the civic energy sector. As mentioned in the introduction, England also plays host to three local authority backed energy companies situated in Peterborough, Nottingham and Bristol, demonstrating the extent to which new organisational structures are consistently emerging (Armstrong 2015). What is certain is that this sector will continuously change, as a cross-sectoral set of actors at multiple scales (i.e. local, national, international) can be involved in energy projects in a number of capacities, be it in a financial, legal or advisory role. These actors work together to support both communities of 'place' and 'interest', showing that the notion of 'community' itself is highly fluid and variable.

Park (2012) notes that the definition of 'community' is so changeable that it should be conceived as a 'socially, culturally and politically constructed concept which is strategically deployed in diverse and complex forms' (Park 2012 p.392). Indeed, more critical perspectives on the increased use of community see it as a means through which to justify state retrenchment, a perspective that resonates strongly with a wider context of fiscal austerity. Catney et al (2014) question this increased use of 'community' in an age of neoliberal hegemony and the associated 'rollback' of the state under austerity, while Park (2012) notes that one reason for this 'is an increased policy emphasis on the responsibilities of communities which would in turn reduce the burden of the state' (Park 2012 p.393).

However, it is unclear as to whether the emerging civic energy sector is a partial response to the withdrawal of the capacities of the state at many scales, as many previously outlined policies and incentives have prompted and enabled the emergence of this sector, particularly with regards to low-carbon energy schemes. The civic energy sector also encompasses private, public and charitable organisations – with the main focus being on understanding *local* energy structures of ownership and control in an emerging decentralised energy infrastructure (Hall et al 2016). An ongoing concern is, however, the form and function of exactly *how* different community/civic projects are manifested and the social impacts of organisational form, echoing Sovacool & Dworkins (2015) concerns around which actors benefit from renewable energy deployment and what structures/forms are used. Walker (2008b) has shed light on the potential social impacts of different forms and organisational structures, asserting that:

'Where community is equated with locality […] different models of ownership may be seen as more or less inclusive and collective. For example, investment through share ownership brings benefits only to those able and willing to invest, while community trusts or charities may to varying degrees act in the collective interest of everyone in a defined area' (Walker 2008 p.4402)

This analysis of the implications of diverging 'community' models highlights the different ways in which the notion of 'community' can be used to justify differing strategies, and indeed, different notions of justice, as Park (2012) has outlined. The use of community in legal structures such as the CIC and CBS models therefore present interesting questions around their fundamental aims. For some, community renewables may simply mean an 'investment club' in which collective purchasing of renewable energy technologies guarantees a small return and contributes towards local decarbonisation. For others, it may mean efforts to increase solidarity and build shared visions and goals within a locality, in an effort to nurture social cohesion or 'enhance' social capital. In attempting to interrogate what exactly 'community renewable energy' should mean, Walker & Devine-Wright (2008) identify the uniqueness of community energy initiatives by demonstrating the local and collective nature of project 'outcomes' and the open and participatory 'processes' through which many projects are realised. These are both particularly distinctive features and characteristics of the community renewable energy approach (see below). Both these dimensions of process and outcome carry with them interesting energy justice implications, particularly when we consider the triumvirate of tenets in relation to these dimensions. For example, open and participatory processes may foster procedural justice, while local and collective outcomes may facilitate greater distributional justice:

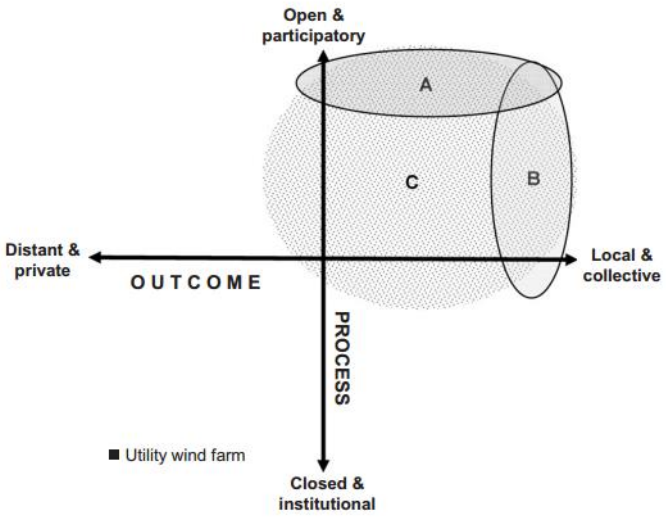

Figure 5: 'Understanding of community renewable energy in relation to project process and outcome dimensions' (Walker & Devine-Wright 2008 p.498)

In light of the above findings and reviews of literature, current and past research on projects within the civic and community energy sectors shows that they can engage communities and multiple actors in a variety of innovative ways, involving novel forms of interaction, dependence and support. Firstly, they have encouraged and enabled the active participation of members of the local community in energy transition processes, while introducing behaviour change schemes and energy reduction targets into communities. Secondly, many have drawn upon local investment and tapped into local expertise and enthusiasm for renewable energy installations, raising the necessary capital and increasing local acceptance. Finally, they have successfully initiated the collaboration of many different actors across multiple scales to engage in and support transitions, and, appropriately tailored renewable energy deployment to the technological, political and economic specificities of a locality (Walker & Cass 2007; Walker et al 2007; Seyfang et al 2013; Heilscher et al 2013; DECC 2013; Bauwens et al 2016). While these findings are overwhelmingly positive, Catney et al (2014) and to their own admission Seyfang et al (2013), note that much of the literature surrounding community energy projects focuses explicitly on the success stories of the sector, with little attention given to understanding *which* communities are unable to engage in these initiatives and *why*, leaving out considerations of how to bring about a more socially 'just' transition. Furthermore, Johnson & Hall (2014) find that a decentralised energy infrastructure with a 'civic energy sector' at its heart, could risk reproducing, or even worsening, existing socio-economic inequalities within society. Without consideration of pre-existing social inequalities, '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 & Hall 2014 p.160). This finding poses important questions for energy justice scholars interested in understanding how energy justice principles may tease out these 'winners' and 'losers' of the growing local energy sector.

These various aspects of local, civic and community energy reviewed above have profound energy justice implications and raise important questions for local energy justice, such as; which communities are engaging in these transitions and which are not? Why? In addition (and noted in Chapter 1), it is important to ask; what *organisational models* dominate the community energy sector and what are the energy justice implications of these models? One important consideration for this thesis is the extent to which these two questions overlap with one another. Indeed, little research has been done to date on the variety of community *and* civic energy organisational types and the different justice dimensions of each. A comprehensive knowledge of the different organisational types within civic energy sector low-carbon transitions is lacking, while critical analysis of their social impacts is still being developed as the civic energy sector grows. Furthermore, the civic energy sector offers a more comprehensive attempt to understand the many interconnections found between varying organisations and institutions, such as energy co-operatives and local governments, alongside addressing the importance of geographical and regional aspects to the scale and scope of decentralised energy schemes, including technological considerations. These interconnections and interrelations are crucial to advancing understandings of local energy justice, particularly as scholars such as Van Der Schoor & Scholtens (2015) have pointed out the increasingly important role of 'local networks' in supporting the growth of the civic energy sector.

Finally, it is important to note that this thesis is focused explicitly on the English context with reference to Bristol City, and not devolved UK regions such as Wales or Scotland that to some extent, use different organisational models and operate within a different policy context (Van Veelen 2017; Forman 2017). It is therefore necessary to outline the prominent models present within this specific policy context based on legal and organisational type, and to demonstrate the strong theoretical interlinkages between both the civic and community energy sectors empirically. Following this, directing greater research attention towards developing a more thorough understanding of the organisational structures that make the civic energy sector a reality will also contribute original knowledge to a currently largely outstanding research gap. In addition, the questions and issues raised above are integral to the methodology used to investigate Bristol's civic energy sector. In the next section of this literature review, different theories around energy transitions will be reviewed, with a broad distinction being drawn between 'top-down' and 'bottom-up' approaches to energy transitions. In addition, the potential energy justice implications of these theories are also considered.

Section 2.4: Theories of energy transitions: top-down and bottom-up approaches

2.4.1 Introduction: the inherent interdisciplinarity of energy transitions

Confronting the impacts of anthropogenic climate change, growing resource scarcity and increasing rates of resource consumption embody the definitive ecological challenges of this century. As such, the importance of energy transitions to more sustainable forms of energy production has slowly become embedded in the public realm and the study and development of energy transitions as a place of research and action has grown immensely over the past few decades. The impacts of this transition – from a fossil fuel based economy to a low-carbon economy – are predicted to have social impacts akin to other historic energy transitions, such as the transition from wood to coal; to the multiple industrial uses of crude oil; to the complex energy mix we have today incorporating natural gas, coal power and nuclear power, among many other growing renewable energy sources, such as geothermal energy, hydropower and solar and wind power (Bickerstaff et al 2013). Low-carbon transition processes harnessing these abundant renewable resources and utilising low-carbon technologies cannot be conceived solely as purely economic or technological challenges – they are also deeply embedded in the dynamics of social change and social relations. Whether this be in the form of a shift from centralised to decentralised energy systems, 'elite' energies to 'distributed' energies (Rifkin 2011), 'hard' paths to 'soft' paths (Lovins 1977), or the pursuit of divergent 'transition pathways', the energy justice implications of these transition processes are profound.

Indeed, as outlined in previous sections, the potential for more sources of energy production to be both localised and decentralised, in more renewable and sustainable forms, provides an interesting glimpse into the future of energy production and the creation of new energy infrastructures, especially in a wider context of intensifying global trends towards a low-carbon future (IEA 2015;2017). As discussed with reference to local and distributed energy, a great deal of where the different technological components of this new low-carbon system will arise, will do so according to a strong combination of multiple factors; natural resource endowments or the physical geography of renewable resources; the political willingness and technical and economic capability of a given region or territory; social and public acceptance of alterations and additions to local and national landscapes, and, the environmental and social impacts of the creation of new energy infrastructures, among others. These multiple factors all point to the inherent *interdisciplinarity* of energy transitions, as many different fields of knowledge and expertise are required to coalesce around both the theory and practice of energy transitions in order for them to be realised.

In light of this inherent interdisciplinarity, understanding transitions to local low-carbon energy systems requires a similar level of interdisciplinary interaction. Drawing inspiration from fields as diverse as evolutionary economics, innovation studies, management studies, and theories from

sociology, geography and the social sciences more broadly, this section attempts to map out the prominent theories that have been used to understand technological transitions in the prevailing literature, whilst also identifying bottom-up approaches that need to be acknowledged further by energy justice scholars. Each of these theories holds a great degree of relevance to understanding new decentralised energy configurations, while allowing researchers to utilise the most useful analytical components of different disciplines to enhance our understanding of energy transitions.

After critically analysing the relevance of each theory for understanding transition processes in relation to local, community and civic energy, a broad attempt will be made to show how energy justice or justice considerations can potentially be integrated into these theories. The impact energy justice concepts have on critical analysis of these theories will also be considered throughout this section, alongside a brief appreciation of how they connect to the idea of a civic energy sector more broadly.

2.4.2 'Top-down' approaches: MLP, TM and SNM

2.4.2.1 The Multi-level Perspective (MLP)

The MLP is seen as one of the most effective ways to understand and conceptualise technological transitions, with a concentration on transitions to 'sustainability' now being a core focus in many uses of this insightful theoretical framework (Geels 2010; 2011). The fundamental premise of the MLP describes technological transitions stemming from an interaction between three critical analytical levels, with each level representing different configurations of power and stability 'in terms of the number of actors and degrees of alignment between the elements' (Geels 2011 p.26) within each level. 'Niches' are the hubs for transformative, 'disruptive' or 'radical' innovations and experiments; these innovations can, in turn, challenge the structure of the 'regime', where established practices and enforced rules stabilise existing systems. The regime is thus seen as a set of existing configurations in which dominant incumbent actors and their associated interests are maintained. Both the niche and regime are influenced by the 'landscape' - the highest analytical level - in which the wider context, involving the technical, material, ideological, macro-economic and demographical background, all exert an external pressure that actors at both niche and regime levels have great difficulty in influencing or shaping over time (Geels 2011). This means there is a significant temporal dynamic in the elevation and normalisation of niches in becoming accepted and stable configurations throughout the regime level, in other words; niches often require significant amounts of time to break into the regime. However, this may vary according to the type of technological transition occurring, as seen in Geels (2002) historical analysis of the transition from sailing ships to steamships in the period 1780-1900. These temporal dynamics may shift according to the specificities of regime resistance, change

or adaptation - and the innovative capacity of niches to challenge the structure of the regime or indeed strengthen the power of incumbent regime actors.

In order for technological transitions to occur, shifts must take place within all three levels simultaneously. Dual pressures from both the niche and landscape levels open up 'windows of opportunity' within the regime as it itself becomes destabilised or conducive to niche innovation pressures, presenting the opportunity for niche innovations to be distributed throughout the regime. This diffusion of niche innovations into the regime then challenges existing configurations and the maintenance of 'technological lock-in', in which vast market networks secure and protect the use of certain technologies for private and commercial gain and to maintain competitive security (Unruh 2000). If niches are diffused to a sufficient level - or when a new set of stabilised configurations essentially replaces the incumbent regime - niche innovations can initiate wider systemic change and macro-level technological transitions. Seen below is a diagram illustrating the dynamic interactions occurring within the MLP between all three levels:

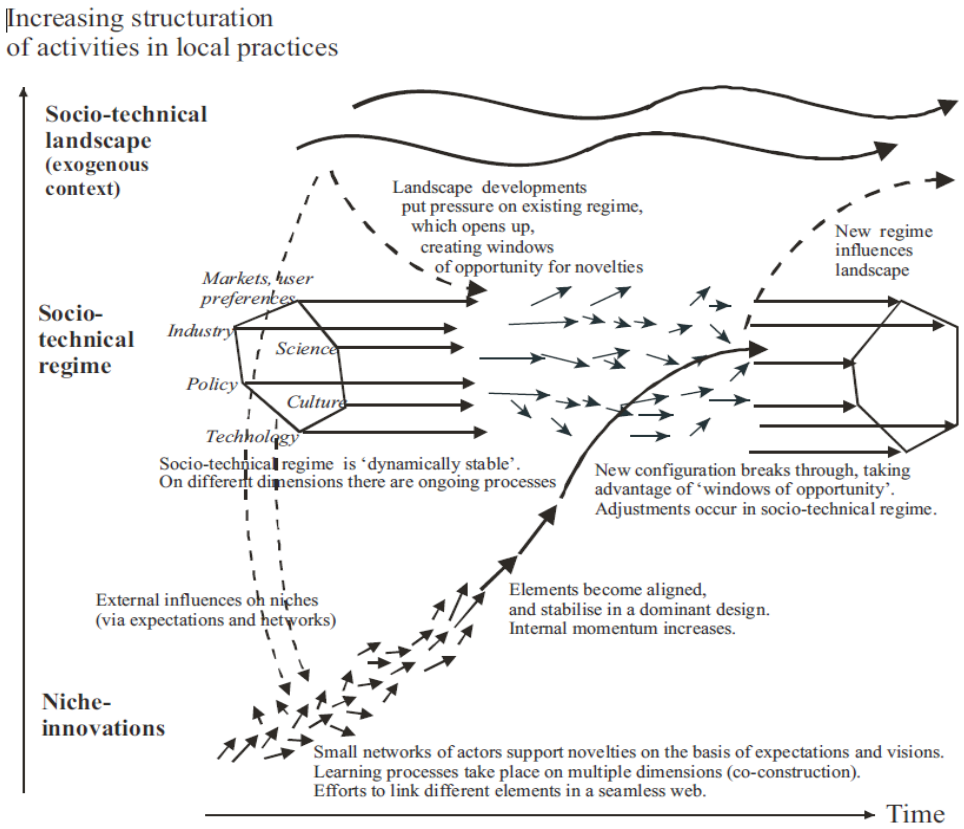

Figure 6: Multi-level perspective on transitions (Geels 2011, p.28)

When understanding and analysing the place of local energy projects within the MLP, it can be said that due to changes in what Geels (2011) terms 'economic frame conditions', such as the institutional and policy landscape as outlined in the introduction, new configurations of civic energy projects are able to take advantage of 'windows of opportunity' and become more established forms of low-

carbon energy production within the incumbent regime. Indeed, we can use the MLP to understand the technological development of renewable energy underpinning many local energy projects. Landscape pressures brought about by anthropogenic climate change filter into novel forms of niche-to-regime interaction. Internal regime influences on niches were brought about by new government incentives for renewables through the FIT and RHI, alongside pressure to develop and diffuse existing renewable technologies to meet emissions reductions targets established through legislation. While many of these renewable energy technologies already existed (admittedly in less efficient forms than today), these regime shifts opened up windows of opportunity for novel niche-innovations to break through into the regime. This consistent and relatively stable combination of changes within all three levels has resulted in the steady increase of renewable power generation in the UK. For example, in the year 2000, the proportion of the UK's electricity supplied from renewable sources stood at 2.7%. Using government figures, we can see that the share of electricity generation held by renewables was 17.8 per cent in 2014 (DECC 2014) and more recently, stood at 30% in 2017 (BEIS 2017). This upwards trend of renewable power generation, and thus deployment, is considered by many within the energy policy and energy transitions world to remain relatively stable, including at a global level (IEA 2015; 2017).

However, there are significant internal pressures within any given regime that may challenge the consistent growth of destabilising technologies across multiple scales of governance, despite global trends towards increased generation. This may, for example, be apparent in the impact of political cycles or general elections and the preference within different political parties for different transition pathways. Geel's (2014) introduced both power and politics into the MLP, where the notion of regime stability is considered the 'outcome of active resistance by incumbent actors' (Geels 2014 p.3), with specific reference to the UK electricity system. In this analysis, Geels (2014) details the variety of ways in which established regime actors exploit their networks, resources, co-dependencies and political and economic power to uphold a sophisticated system of regime resistance against renewable *and* low-carbon transitions. Geels (2014) also notes that the dominance of neoliberalism in institutional forms of resistance - arguably a powerful ideological dominance within the landscape level - has resulted in the increasing ability for corporate organisational structures to shape debates around low-carbon transitions and transition pathways. This has occurred since the 1970's:

'First, because of the emergence of a pro-business neo-liberal discourse, which highlights free markets, privatization and de-regulation, and second because of the political mobilization of corporate interests in response to social and environmental regulations' (Geels 2014 p.7)

This has had a direct impact on the way in which different transition pathways are conceived as realisable, or even possible, as the framing around transitions ensures that:

'Proposed solutions […] mainly entail large-scale technical options, which fit relatively well with the practices and interests of utilities and national governments. Other potential transition pathways are side-lined or marginalised on policy agendas' (Geels 2014 p.11)

When considering the types of visions espoused in both the *Thousand Flowers* vision and Verbong & Geels (2010) socio-technical pathways in the electricity sector, it is vital to consider that less is understood about the types of organisational structures that will lead these pathways. More is currently understood around both market and state-led transitions and the organisational structures these encompass, particularly when a largely privatised and heavily regulated energy market is dominated by an oligopoly of energy companies. Thus, incumbent structures will emphasise familiarity with their own structures as a form of resistance to reinforce the regime, while stressing the ambiguity of niche level structures to prevent the destabilisation of the regime and incumbent actors. This leaves a relatively higher level of ambiguity and uncertainty around civil society transitions and the complex array of associated organisational structures, increasing the perceived difficulty of pursuing bottom-up transitions such as the *Thousand Flowers* pathway and the de-alignment and re-alignment scenario, reviewed in more detail in the bottom-up approaches section.

When thinking about a more just energy transition, or indeed applying principles of energy justice to the MLP, one can see the importance of ensuring that niche innovations are aware of the principles of energy justice to ensure the diffusion of these principles into the wider regime. This has quite large implications, and also requires that both *actors* are wary of energy justice and *organisational structures* cater to the triumvirate of tenets or other energy justice principles in some way. This thinking becomes more important when we integrate wider arguments around increasing inequality, energy vulnerability and the impacts of fiscal austerity into debates around the social impacts of energy transitions.

While it would be more desirable to ensure that energy justice and its associated principles are integrated at the regime level, where incumbent actors seek to secure a more 'just' energy future, as technological change occurs and a variety of new structures of energy provision enter the energy market, it appears that the creation of a more 'just' energy system could reside around dynamic niche-to-regime interactions, in which shifts and experiments within both levels will determine the extent to which principles of energy justice are recognised. That is to say, if actors within both the regime and niche levels can collaborate over achieving energy justice, this may create some very interesting organisational structures, networks and partnerships in the field of energy provision.

Thus, according to Geels (2014) integration of power and politics into the MLP, there is clearly a very strong connection between the prevailing neoliberal discourse and the corporate organisational structures that dominate the energy market, supporting assertions made within the introduction and earlier sections of the literature review. It is therefore logical to assume that a drastic shift in political

ideology, albeit *away* from neoliberalism, would also result in a shift to different organisational structures in energy provision and a greater exploration of different decarbonisation and transition pathways.

This section has demonstrated that the MLP is a powerful explanatory tool for understanding technological transitions that is both highly relevant to understanding the civic energy sector and critical to engaging with questions of *power* in transitions. It is seen as a 'top-down approach' because change does not come from below - the niche level - but occurs as the result of dynamic interactions resulting from shifts within all three levels. Therefore, the importance of shifts within broader power structures involving landscape-level changes and 'windows of opportunity' within the regime, stresses the necessity of wider *system changes* aiding and facilitating technological transitions.

The MLP has also shown that the politics of regime resistance to change is fundamental to niche level innovations remaining small-scale experiments, unable to pose any notable challenge to the regime. When thinking about energy justice and the integration of energy justice principles into niche innovations, it is also important to consider wider influences, such as reigning ideologies within the landscape level, and also the ability for incumbent regime actors to partially integrate energy justice concerns whilst resisting fundamental technological and structural change, adapting prevalent organisational structures to 'co-opt' aspects of energy justice, rather than redesigning structures that have energy justice concerns at their core. Indeed this is arguably evident in Hiteva & Sovacool's (2017) analysis of business model innovation and energy justice. If the growth of energy justice emerges with the diffusion of more 'just' niche-level organisational structures, this would require a monumental reconfiguration of the energy market on a scale rarely, if ever, seen. This reconfiguration could require a complex combination of both the *Thousand Flowers* transition pathway interwoven with energy justice concerns at the core of new organisational structures effectively governing much of this transition. This type of vision leads us to question the management and governance of transitions in a highly networked era, where, increasingly, multiple actors are involved in the success, or failure, of transition initiatives. One field that has attempted to address these questions is known as 'Transition Management'.

2.4.2.2. Transition Management

Transition Management emerges from a context in which 'governance gaps' are growing, where networked coalitions of actors, united around a common theme, vision, purpose or goal, offer an alternative solution to the failures of both market forces and government intervention to plan for long-term structural changes to adapt to the definitive ecological challenges of this century (Verbong & Loorbach 2012). In essence, transition management theorists attribute the failure of more conventional and established management routes to the 'short-termism' of economic and political

cycles, seeing them as fundamentally incompatible to sustaining long-term transition strategies. This is reflected in an overarching ambition:

'To create a societal movement through new coalitions, partnerships and networks around arenas that allow for building up continuous pressure on the political and market arena to safeguard the long-term orientation and goals of the transition process' (Verbong & Loorbach 2012 p.15)

It is this desire to consolidate spaces of organisation somewhat 'detached' from the realm of market forces and government policy, in order to create resilient and enduring networks and coalitions of actors, which offers a more 'societal' approach based on notions of 'self-organisation' becoming increasingly more prominent. However, this is not to say that transition management is seen as a more 'bottom-up' approach, as it uses much of the language and ideas present within the systems oriented MLP. Seeing as it is 'analytically based on the concept of "transitions" as multilevel, multi- phase processes of structural change in societal systems' (Loorbach 2010 p.166), it also sees the dynamic interactions between all three levels of the MLP, particularly the niche and regime levels, as critical to sustaining long-term strategies, rather than bottom-up pressures sustaining transition initiatives alone. Indeed, it places more emphasis on the strength of networks and coalitions to sustain these strategies, than niches alone (Loorbach & Kemp 2008), demonstrating synergies with community energy research highlighting the importance of local networks for sustaining momentum (Van De Schoor & Scholtens 2015). Transition Management theorists developed a coherent governance framework to guide these networks and coalitions, consisting of four different stages known as the 'Transition Management Cycle'. Four associated 'governance activities' are used to manage societal transitions:

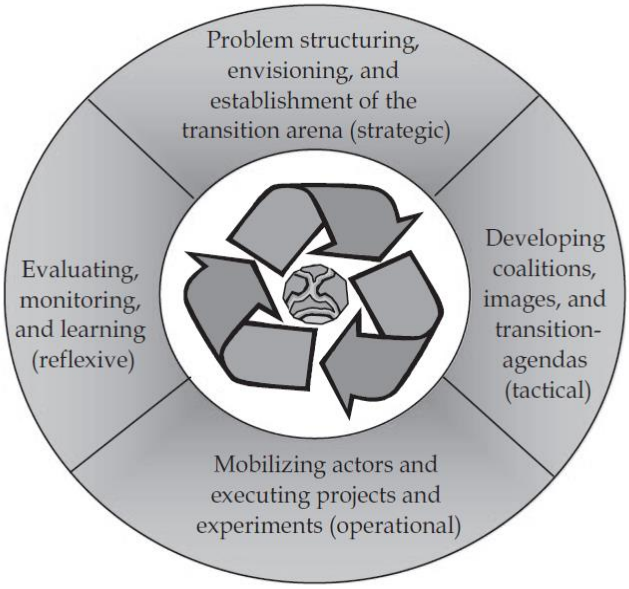

Figure 7: 'The Transition Management Cycle' (Loorbach 2010 p.168)

The first ‘Strategic’ stage, is intended to outline the main aims and objectives of a transition initiative, bringing into effect a ‘transition arena’ in which a multiplicity of actors can unite around a shared long-term vision for sustainability transitions. The second ‘Tactical’ stage, is intended to establish ‘transition agendas’, in which the most appropriate transition pathways are identified and the relevant financial and regulatory frameworks are acknowledged. These first two stages are the precursor to the third ‘Operational’ stage, in which newly formed transition networks are put into practice and transition projects or initiatives implement stated objectives. The final ‘Reflexive’ stage, is intended to critically analyse the first three stages within the transition management cycle in order to ‘make adjustments in the vision, agenda, and coalitions’ (Loorbach 2010 p.168), to create more robust strategic, tactical and operational stages. These three stages were the original foundation of transition management cycle thinking, as outlined in Kemp et al’s (2007) early transition management paper. However, through the implementation of the fourth reflexive stage, the revised transition management cycle (or newly ‘reflexive’) aims to strengthen the transition networks long-term ambitions as set out in the first three stages, identifying weaknesses and improvements within the first three stages in order to safeguard the long-term goals of new networks and their associated visions and transition pathways (Loorbach 2010).

When thinking about how to relate energy justice to a transition management framework, the extent to which energy justice is embedded within these transition arenas and thus transition networks depends on the presence of these principles and considerations within the first three stages of the transition management cycle. More importantly, if there is no consideration of social impact and community context within the vision or agenda, then transitions are at risk of ignoring their social context and supporting established power structures – increasing the likelihood of an ‘energy divide’. However, through a reflexive process, or the fourth stage of transition management, there may be room to build in justice considerations. While the transition management cycle is largely ambiguous in relation to which organisational form(s) should be at the helm of transitions, this would probably be apparent at the second, tactical stage of the cycle, in which transition paths are established. There is also a clear and notable lack of addressing *who* exactly, should be directing the transition networks and management cycles. Hendriks (2009) advances powerful critiques of the procedural inadequacies of transition management, noting that ‘its participants are mostly autonomous individuals with no formal connections or accountability to a broader constituency’ (Hendriks 2009 p.362), leaving transition initiatives struggling to ‘gain the kind of democratic legitimacy and accountability associated with institutions of representative democracy’ (Hendriks 2009 p.362).

As has been mentioned in previous sections of this literature review, little consideration is given within both sets of literatures published through the lens of proponents and critics alike, to how different organisational structures can address some of the issues raised. If, for example, a co-

operative organisational structure is at the foundation of a transition initiative, this may have interesting implications for how democratic structures of decision making can be built into the design and functioning of transition networks. However, while networks themselves are not necessarily inherently democratic, if a network is comprised of democratic organisational structures, this may help in addressing some of Hendriks (2009) criticisms. Democratic organisational arrangements may, however, lead to forms of localised economic democracy that are purely the reserve of affluent and able communities. This then risks creating niche level structures that are socially and geographically exclusive, undermining principles of energy justice in socio-technical transitions. These implications also extend themselves to the civic energy sector more broadly and indeed, such considerations are given further attention in the research findings chapters. On the merit of this final point, we must then examine more closely the internal dynamics of niches that are fundamental to sustaining transition initiatives. This leads us to a brief overview of strategic niche management theory, before subsequently moving on to a review of bottom-up theories and approaches to energy transitions in section 2.4 and their implications for energy justice.

2.4.2.3 Strategic Niche Management (SNM)

Strategic Niche Management (SNM) builds on the critical role of niches in transitioning to new socio-technical systems, focusing on how niches can be managed to become widespread innovations throughout the socio-technical regime. SNM theory can broadly be distinguished between an *analytical* concept and a *managerial* perspective. The analytical concept seeks to understand and conceptualise ways in which niche innovations can be successfully replicated and diffused throughout the regime, whereas the managerial perspective looks at the best practices and strategies for managing this process (Verbong & Loorbach 2012). There is also a further distinction that is recognised, between 'market niches' and 'technological niches', of which the civic energy sector encompasses both (Seyfang & Longhurst 2016; Hall et al 2016), particularly with regards to low-carbon technological niches at the level of civil society and within spaces of civic innovation (Foxon et al 2010). Additionally, Hatzl et al's (2016) study of citizen participation initiatives (CPIs) in relation to both 'market-based' and 'grassroots' niches in solar PV deployment, argues that market structures for CPIs offer significant potential for facilitating the breakthrough of niche innovations away from their protected spaces into the regime. However, in relation to literatures on grassroots innovations explored in the next section, in which grassroots innovations can exhibit large amounts of variation in terms of their underpinning rationale and organisational structure, SNM theory has developed from a focus on purely 'technological' niches to one concerned with general processes of niche building and diffusion throughout the regime, encompassing both 'market' and 'grassroots' niches as well (Schot & Geels 2008; Seyfang & Longhurst 2016; Hatzl et al 2016).

There is also a contextual and geographical element to niches found within the 'local experiments' and 'global niches' distinction; local here refers to experiments in local contexts, in which supportive local networks and contextually specific solutions to aid the success of niches are key to their growth. In contrast, 'global niches' refers to a shared institutional infrastructure in which networks and supportive solutions transcend borders and where niches contain shared characteristics that elevate them above the specificities of local contexts (Verbong & Loorbach 2012). As will be explored further in chapter 3, the focus here is on local niches within the UK, and more specifically within Bristol City in the case studies, however, the spread of community energy and decentralised energy schemes globally also relates empirically to the idea of a 'global niche', demonstrating a dual relevance for both concepts in amongst the critical analysis of niches within this thesis.

SNM theory, drawing on a broader MLP oriented framework for understanding transitions, proposes three critical processes for niches to be diffused throughout the wider regime level; *actor network* building, *learning* mechanisms and articulating *expectations*. Taking the actor network building process first, according to whether niches are local or global, the character of their networks will vary in scope, scale and in the specificity of shared interests. However, in a similar fashion to the Transition Management literature, a strong coalition of actors within *networks* concerned with niche innovation processes is crucial for niche success. Indeed, some SNM authors pointing out that forming networks that include 'external' actors within regime networks and 'internal' actors within niche networks strengthens the likelihood of niche diffusion throughout the regime (Seyfang & Haxeltine 2010).

Next, learning mechanisms consist of both 'knowledge acquisition', whereby skills are acquired to successfully manage and operate niches, and 'knowledge provision', where skills, experience and information are shared and passed on to other niches and interested organisations – both learning processes feed back into the network building process, creating a dynamic and reciprocal environment of learning (Hatzl et al 2016), connecting again to the 'reflexive' stage of the Transition Management cycle (Loorbach 2010). These learning mechanisms and knowledge building and sharing processes also point towards literatures which emphasise the critical and growing importance of *intermediary organisations* for supporting niche innovations and sustainability transitions more broadly (Kivimaa 2014; Hargreaves et al 2013), with Bird & Barnes (2014) addressing the role of intermediaries in supporting the growth of community energy and community activism in Bristol specifically. Therefore, it is important to recognise that:

'Niches […] comprise intermediary organisations and actors. These serve as […] 'carriers' of best practice, develop standards, consolidate and institutionalise learning, and mobilise resources through

networking and lobbying. Niches are emergent from, informed by, and in turn inform, local projects/experiments' (Seyfang & Longhurst 2016 p.3)

Thus, within the framing of SNM theory, intermediaries form a key component of all three processes within SNM theory – including the third process – articulating expectations. Lastly, and demonstrating further links to Transition Management and indeed its associated cycle (Loorbach 2010), the articulation and management of 'expectations' for niches as a third process, or 'visioning' as stated by Schot & Geels (2008), is intended to outline realistic and achievable goals and aims for niches, which in turn give some direction and structure to learning mechanisms (Schot & Geels 2008). As pointed out by Hatzl et al (2016), within the community energy sector in the UK, these expectations are targeted at broad sustainability and organisational goals, often extending *beyond* sole concerns with sustainable energy to niche expectations and visions of innovative experimentation with new organisational structures. These expectations and visions must be both credible and specific in order to establish legitimacy within associated networks and to provide some structure to knowledge acquisition and dissemination in the learning process. These three processes described above are considered crucial amongst SNM theorists for the successful penetration of niches into the regime (Schot & Geels 2008; Seyfang & Haxeltine 2010; Verbong & Loorbach 2012; Seyfang & Longhurst 2016; Hatzl et al 2016).

In a similar vein to both of the theories of energy transition explored above, namely, the MLP and Transition Management, SNM theory lacks critical engagement with the social justice - or indeed energy justice impacts - of niche innovations, whether they be strictly 'market', technological' or 'grassroots' niches. Indeed, SNM theory has failed to engage in 'justice' considerations thus far, focusing instead on various technologies and innovations over social impacts. In a similar fashion to the above critiques on Transition Management, scholars of various 'justice' oriented fields would suggest that, in the articulation of expectations as one of the three key processes of managing the successful transition from the niche to regime level, ideas of justice, perhaps through key tenets such as distributional or procedural justice, are placed centre stage. Additionally, in relation to the focus on organisational structures that is present within this thesis, considerations of the potential social impacts of niches will often relate to their organisational form; while some SNM literatures have begun to address different niche organisational forms in more detail (e.g. Hatzl et al 2016), virtually no SNM literature considers the *social justice* impacts of any of the niche forms described above. This is certainly a promising area for future research by SNM scholars and a research gap for energy justice scholars alike. Furthermore, the growing attention to the supportive role of intermediary organisations within SNM processes stands out as potentially vital to energy justice scholars, particularly as Bird & Barnes (2014) showed that many of the activities they engaged in within Bristol hold strong implications for the three tenets of energy justice. Therefore, based on Bird & Barnes

(2014) findings, it is important to assess whether *'intermediaries due to their specific networking and articulation capacities are actors that are particularly important in empowering'* (Kivimaa 2014 p.1378) not just niches, but also actors, communities and the people at the very heart of socio-technical transitions. While this SNM subsection has been placed in the 'top-down' approaches to energy transitions subsection due to its managerial focus and reliance on systems thinking around niche-to-regime interactions, it provides a necessary conceptual and analytical 'bridge' to the following section addressing bottom-up approaches to energy transitions and their potential justice implications.

2.4.3 Bottom-up approaches: Grassroots Innovations, Social Movements and the *Thousand Flowers* transition pathway

As has just been explored in the theory of the MLP, systemic change within energy systems is reliant on simultaneous changes within all three analytical levels – the niche, landscape and regime. As Figure 6 illustrated, a hierarchy of levels exists in the MLP, with both 'windows of opportunity' in the regime level and shifting 'landscape pressures' allowing for the entrance of niche innovations. This hierarchical ordering of technological systems leads to the MLP being envisioned as a top-down theory of transitions; as only when the analytical levels above the niche level are ready or offering the right opportunity, can change emerge 'from below'. In other words, STS scholars seek to stress that *'niche innovations are rarely able to bring about regime transformation without the help of broader forces and processes'* (Schot & Geels 2008 p.545). This can be interpreted as a slightly stifling view of how bottom-up change can occur, or how niche level innovations can be diffused, as their effectiveness relies on co-ordination with other analytical levels – or dependence on 'change from above'. Indeed, it supports the notion that transitions are something that are done *to* communities, rather than something than communities can engage in themselves, on their own merits. This critical interpretation doesn't negate the analytical validity or widespread use of the MLP in advancing our understanding of the dynamics of energy transitions, but rather, allows us to categorise it as a certain approach to energy transitions. Similarly, Transition Management, by virtue of its conceptual and historical origins, is also a top-down theory of transitions. As made clear in the analysis of critical literatures on Transition Management and its associated cycle, a relatively undemocratic and self-appointed elite is required in order to manage transition processes and ensure the effective implementation of each stage of the cycle. While Transition Management understandably seeks to be effective by creating coalitions and networks of transition actors that are relatively self-sustaining, these coalitions and networks are conceptualised in a rather top-down fashion. By contrast, SNM theory seeks to support niche development and growth, arguably focusing more on bottom-up processes of management and analysis of niches. However, SNM takes a *managerial* approach to ensuring the wide diffusion of innovations throughout a sociotechnical regime – if the three processes outlined by scholars and theorists are followed or 'obeyed' by willing actors, then niches should in

theory be more successful in breaking through into the regime. SNM also relies heavily on the conceptual and analytical framework of the MLP, and as such sees successful interaction with other analytical levels as key to the strategies of niche management. SNM however, as alluded to in the conclusion of 2.3.3, acts as an interesting conceptual bridge between these sections addressing top-down and bottom-up approaches to energy transitions.

Thinking more about this conceptual link provided by SNM, it is important to understand that a multitude of different niches exist as outlined in section 2.3.3. This section on bottom-up approaches to energy transitions therefore looks at three different areas of specific relevance to the civic energy sector and local energy justice; Grassroots Innovations, Social Movement Theory and the *Thousand Flowers* transition pathway. In this section, the grassroots innovation and social movement theories are categorised as bottom-up 'approaches' to energy transitions, whereas the *Thousand Flowers* concept is seen more as a bottom-up *pathway*, which provides details for an unprecedented role for civil society, community and civic energy actors in the transition to a low-carbon energy system in the UK, alongside a substantial reduction in CO_2 emissions by 2050, as commanded by law in the Climate Change Act 2008.

2.4.3.1 - Grassroots Innovation Theory

Seeking to direct the scholarly lens of academia towards the plethora of innovative local niche experiments occurring across the world in an era of growing interest in 'sustainability', Grassroots Innovation theory has attempted to give a voice to and make sense of local and community contributions to sustainable development and energy transitions (Seyfang & Smith 2007; Seyfang & Haxeltine 2012). The idea of Grassroots Innovations, specifically in relation to energy initiatives, stems from combining insights from the fields of innovation studies, the role of niches in the MLP and analysis of community-level action from the bottom-up. A useful and succinct definition of this concept can therefore be found in understanding Grassroots Innovations as: '*networks of activists and organisations generating novel bottom–up solutions [..] that respond to the local situation and the interests and values of the communities involved' (*Seyfang & Smith 2007 p.585), when situated within civic and community energy contexts. Thus, this definition demonstrates strong connections to the projected proliferation of local actors in the *Thousand Flowers* transition pathway, and indeed, offers useful attempts to conceptualise community and civic energy innovation (e.g. Seyfang & Haxeltine 2012; Hargreaves et al 2013).

Seyfang & Smith's (2007) early work on grassroots innovation in relation to sustainable development explored an explicit commitment to local and community-led experimentation within the civil society sphere, in which grassroots innovations seek to carve out a space for social innovations and the use of green technologies that is not necessarily separate from, but *distinct* from 'market' or 'state'

innovations (Seyfang & Smith 2007). Indeed, Grassroots Innovations can seek to change markets and market systems, despite sometimes being framed as an alternative to the market or as a more radical response to the failure of dominant and mainstream institutions to sufficiently address climate change or environmental issues (Feola & Nunes 2014). They do this through the utilisation of a set of unique characteristics that set them apart from other market and technology-oriented niche innovations, which gives further strength to the emphasis on 'bottom-up' experimentations stemming from the 'grassroots'. Hargreaves et al (2013) identify these unique characteristics as five definitive aspects of grassroots innovations, which consist of; 'Distinct organisational forms'; 'Different resource bases'; 'Divergent contextual situations'; 'Alternative driving motivations' and 'the pursuit of qualitatively different kinds of sustainable development' (Hargreaves et al 2013). Indeed, the prominent theorists of Grassroots Innovations suggest that, whilst it is particularly hard to correlate similarities across cases of local innovation that are tailored to the specificities of a locality, many grassroots innovations will draw upon social enterprise models or function more broadly within the social economy *(*Seyfang & Smith 2007; Hargreaves et al 2013; Smith et al 2014). Furthermore, broad categorisations have been asserted by theorists to advance our understanding of core shared characteristics and of *shared principles* amongst grassroots innovations. Thus, it is important to note that:

'Grassroots innovation processes share a broadly similar vision and shared set of principles, regarding local inclusion and control in processes of technology development and innovative social organisation […] grassroots innovation movements confront similar fundamental challenges, even though manifesting in particular ways in contrasting settings' (Smith et al 2014 p.115)

Drawing on these core grassroots innovations literatures, it is clear that understandings of these niche innovations and their associated characteristics straddle the line between market systems and civil society systems in a complex and dynamic fashion. Indeed, given the underlying goals and five core aspects identified above, it is possible to suggest that grassroots innovations can be said to be confronting some of the economic challenges brought about by decades of neoliberalism. Thus, where grassroots innovations become further distinguishable from other niches is through their own internal politics and ideals, connecting to the 'expectations' process of niche building within SNM theory:

'Grassroots innovations differ from conventional market-based innovation: they are driven by ideological commitment rather than profit seeking […] they tend to involve communal ownership structures and operate in the social economy, often relying on voluntary labour, grants, or mutual exchange' (Seyfang & Longhurst 2016 p.4)

Indeed, the use of these types of structures and resource bases are common when it comes to combining social and market-oriented goals in social enterprise models or innovative organisational forms. An example of this can be seen in the academic analysis of the relationship between Transition

Town movements - which seeks to prepare communities for anthropogenic climate change and peak oil through localising various forms of sustainable production and local economic activity - and grassroots innovations theory (Seyfang & Haxeltine 2012; Feola & Nunes 2014). Feola & Nunes (2014) in the first international survey of Transition Town initiatives, analysed initiatives within 23 countries and responses to 276 online surveys. They found that the majority of initiatives studied took on a legal form, which included a 'trust, co-operative or charitable incorporated organisation' (Feola & Nunes 2014 p.237) which the Transition Network, the formal centre for advice, guidance and accreditation, recommended. In seeking to understand the success of Transition Town organisations as grassroots innovations, the authors note that two important factors require consideration; an organisations 'social links to members of local communities, building capacity and empowering social actors' as well as 'their external impact or contribution to improved environmental performance' in a locality or within a community (Feola & Nunes 2014 p.246). Both of these can be strongly related to the internal functioning and make-up of the supporting organisational structures adopted by grassroots innovations.

Importantly, it is useful to note here that in the UK, the Transition Town movement provided valuable networks and organisations that the community and civic energy sector has drawn upon for support and innovation guidance; these networks and organisations have provided the foundations for many local activities around renewable energy production to grow (Aiken 2012). Furthermore, Feola & Nunes (2014) analysis showed that the majority of the Transition Town initiatives studied took on legal forms, while Hargreaves at al (2013) noted that 'distinct organisational forms' are a core aspect of grassroots innovations. Thus, future research needs to address the degree to which different structures can sufficiently address these aspects of success in bottom-up transition initiatives, which is addressed in this thesis using energy justice theory.

What is particularly interesting amongst the grassroots innovation literature, is that both the success of these innovations and the shared principles alluded to above relate to pertinent issues of local 'inclusion' and 'control', alongside 'democratic organisational principles' and 'empowering social actors' in communities – these aspects are highly relevant to energy justice considerations. Similar to the transition theories detailed in the top-down approaches section, many theorists of grassroots innovations lack critical engagement with tenets of energy justice and there is yet to be research that explicitly scrutinises the distinct aspects of grassroots innovations using justice principles more broadly. However, unlike other theories of transition outlined in the top-down approaches to energy transitions subsections, grassroots innovations literatures appear to give more space to *social* justice considerations (Smith et al 2014; Smith & Ely 2015). Scholars have acknowledged that the very make-up and ethos of these innovations may in theory be exclusive and that niches need to be opened up to a variety of different communities and actors:

'Grassroots initiatives exhibit their own micro-politics and can be exclusive to some and inclusive to others. Much work needs to be done regarding 'whose' alternative values are being mobilised in niches' (Seyfang & Smith 2007 p.599).

In addition, recognition is given to the need to be cautious of expressing the social benefits and empowerment potentials of niche innovations without explicitly acknowledging the socio-economic background and geographies of the communities and actors that are involved in such niche practices (Seyfang & Smith 2007; Smith et al 2014). Furthermore, Smith et al (2014) address social justice explicitly when considering some of the core future challenges for grassroots innovations and issues of 'inclusive innovation' more broadly:

'If social justice is more central to the innovation process, then grassroots attention to local participation and social control implies an emphasis on justice that recognises the perspectives of the poor and marginalised and is procedurally fair towards them […] grassroots initiatives often arise in contexts and because of situations that are unjust in terms of the distribution not only of resources but also political power' (Smith et al 2014 p.120)

This recognition of the role of political power connects to one of the key aspects of social movements addressed in more detail in the following subsection and indeed, connects to wider discussion around the internal and external influences on the politics of niche innovations themselves. Building on some of the points made in the MLP section regarding the internal politics of niches, Smith et al (2016) have advanced this analysis further by presenting three distinct perspectives on grassroots innovations in relation to community energy ('CE' in Smith et al 2016) in the UK; SNM theory, 'niche policy advocacy' and 'critical niches'. While niche policy advocacy seeks to ensure that regime 'influence arises by aligning niche innovations with prevailing policy discourses' (Smith et al 2016 p.409), the 'critical niches' perspective is most relevant here for enhancing energy justice perspectives. Critical niches are not concerned with solutions that can function and diffuse throughout the regime, rather, they are more concerned with a socially transformative and challenging politics within regimes that seeks to question the accepted standards of energy provision and organisation. Therefore, scholars call upon future research on grassroots innovations to:

'Open up discussions about how CE initiatives embody new ways of thinking about and acting upon energy [..] making the most of community energies demands an agenda that looks beyond instrumental imperatives and explores how socio-political programmes can develop that are more transformational than those currently prevailing in energy regimes' (Smith et al 2016 p.409)

Indeed, this links to Seyfang & Haxeltine's (2012) emphasis on the tendency for grassroots innovations, in the context of governing energy transitions, to prioritise *social* innovations over market and technological innovations. However, in order for both critical niches and social

innovations within the local energy space to be 'just', principles of energy justice may need to be adopted more widely. Some confusion arises here as scholars warn that *'grassroots innovations need to be inappropriate in the short-term, in order that they might induce changes that make them appropriate to a more just future' (*Smith et al 2014 p.120). This shows some commonality with the temporal dimensions of more top-down theories of energy transitions, in that it is vital to consider larger timeframes for innovative transitions to become more embedded within socio-technical regimes. However, there is no reason as to why grassroots innovations, or more specifically critical niches and social innovations need to be 'inappropriate in the short-term' if we understand that recognising principles of justice are key to the social impacts of innovation processes. In addition, if niches are diffused throughout a regime without energy justice principles at their heart, then this apparent need for potentially socially harmful niches will become more widespread, undermining the potential of grassroots innovations shared principles to adopt justice principles more widely. There are therefore limits to the ability for the social innovation capacity of the networks and organisations at the heart of grassroots innovations to be socially just, forcing scholars of energy justice to ask; what else are social innovations for? Or, what is the overriding purpose of social innovation if it so distinguishable from market and technological innovation? One way of measuring this, may indeed be by applying the three tenets of energy justice to a variety of grassroots innovations in the civic energy sector. Indeed, this application may be more pertinent than ever given the wider backdrop of austerity increasing inequality, thus social innovations may take on new and interesting meanings in the context.

This section on grassroots innovations has demonstrated that a more explicit focus on 'bottom-up' activity that is representative of the values and concerns of the local communities involved, alongside deploying organisational structures that prioritise communal ownership and alternative resource bases, ultimately forces scholars to contend with the wider political and social landscape that transitions take place within. Geel's (2014) recognised the importance of political power in relation to a systems perspective and the MLP, while Transition Management theorists sought to create networks and coalitions of actors that were relatively self-sustaining despite potential political and economic shocks, along with the potentially elitist politics and 'top-down' systems of organisation that may accompany this (Shove & Walker 2007). However, it is clear that bottom-up transitions are deeply affected by political power, arguably as much as the 'top-down'. Thus the civil society sphere, when thinking about its potential contribution to transitions, must consider that political and social movements are also highly relevant for bottom-up activity and approaches to transitions. In the next subsection, Social Movement Theory, alongside the ubiquitous concept of social capital, are given a brief overview, before turning to a short review of the *Thousand Flowers* transition pathway and its relevance for this thesis.

2.4.3.2 Social Movement Theory & Social Capital: the power of networks

Social Movement Theory or more broadly, theories of 'social movements' are not considered explicitly amongst transitions theory per se, or more specifically, as a standalone theory within prevailing transitions literature. However, this brief overview of core ideas within the social movements literature is required given the presence of the theory within both SNM and grassroots innovation literature and indeed, it's relevance to the importance of political power at the local level and thus bottom-up approaches to transitions. Furthermore, there are many similarities between the emphasis on the importance of *networks* within both SNM and grassroots innovation theory, and concepts of social movements and social capital. Indeed, a classic definition that captures the essence of social movements, can be seen in understanding them as *"networks of informal interactions between a plurality of individuals, groups and/or organisations, engaged in political or cultural conflicts, on the basis of shared collective identities*" (Diani 1992). Diani's (1992) original work on understanding the concept of social movements proposed four key characteristics to encapsulate their ability to influence the political process and mobilise a variety of civil society actors in pursuit of socially and politically transformative goals. These are; 1) 'Networks of informal interaction' 2) 'Shared beliefs and solidarity' 3) 'Collective action' and 4) 'Action which displays largely outside of the institutional sphere and the routine procedures of social life'. Building on this comprehensive set of characteristics, Della Porta & Diani (2009) later provided an additional core feature of the concept, which noted that social movements are 'involved in conflictual relations with clearly identified opponents' (Della Porta & Diani 2009 p.20). In the case of this theories relationship to bottom-up energy transitions and its relevance to the development of the civic energy sector, many theorists of SNM and grassroots innovations see the power of social movements as key to the success of niches. In this context, the 'opponents' may be conceived of as the dominant incumbent actors within a regime in the MLP, while the role of networks of informal interaction contrasts to Transition Managements more formal coalitions of actors and networks. In the case of the civic energy sector, these opponents may be large energy companies that dominate the energy market (Strachan et al 2015), and networks may be both formal and informal, alongside operating at multiple scales, in order to support the development of local energy schemes, economies and systems (Van Der Schoor & Scholtens 2015). The degree to which the civic energy sector can be said to be a social movement itself is questionable; instead, it would be more accurate to see that various social movements feed into the civic energy sector in a variety of ways. The emphasis placed within social movements theory on 'dense informal networks' reifies and consolidates both the more 'horizontal' and 'bottom-up' nature of social movements, as 'no single organized actor, no matter how powerful, can claim to represent a movement as a whole' (Della Porta & Diani 2009 p.21). Therefore, within transitions, social movements are seen as forces to be harnessed to aid bottom-up transition processes. Smith's (2012) vital contribution to understanding the role of civil society in sustainable energy transitions

details the role of social movements in relation to 'unsettling' the regime, while niches set out to 'destabilise' the regime. Thus, social movements are framed as aids and potential supporters of processes of niche diffusion and niche success within a socio-technical regime:

'The grassroots innovations model […] frames social movements as agents of change within sociotechnical systems, and there are three ways in which successful niches can influence the regime. They can replicate, bringing about aggregative changes through many small initiatives; they can grow in scale and attract more participants and actors; and they can translate their ideas into mainstream settings' (Seyfang & Haxeltine 2012 p.5)

However, we see some tension here between the founding characteristics of social movements and the need to appeal to mainstream actors and institutions; social movement action and activity is conceptualised as taking place 'outside of the institutional sphere'. This tension is further reiterated by grassroots innovations scholars emphasising that social *'movements that secure alliances with political elites […] gain access to policy institutions […] and enjoy favourable public opinion, have good chances of success'* (Smith 2012 p.192) in energy transitions. While this may be the case, particularly in the context of the civic energy sector, there seems to be a glaring risk of more mainstream processes and spaces co-opting and exploiting social movements and grassroots innovations to help meet policy objectives and government goals of carbon emissions reduction and economic growth. While this consideration has received attention from grassroots innovation scholars (e.g. Smith & Ely 2015), not enough has been said about how innovative organisational structures may counter the mainstream dominance of neoliberalism and indeed, offer interesting alternative possibilities for local economies and new systems of ownership. This is explored further in section 2.5, however, social movement's theorists do *not* see organisations as representative of the concept;

'Social movements are not organizations, not even of a peculiar kind […] they are networks which either include formal organizations or not […] a single organization, whatever its dominant traits, is not a social movement' (Della Porta & Diani 2009 p.25).

This recurring and consistent emphasis on networks as a definitive feature of social movements demonstrates strong links to understandings of social capital, a concept that is prominent in critiquing local, community and civic energy activity within a large diversity of academic literature, much of which has been reviewed in earlier sections of this critical literature review. Appearing throughout various publications concerned with the social impact of the spread of community energy schemes throughout the UK and also a popular concept within policy, the use of social capital in both the appraisal and critical analysis of the local and community energy sector in particular is frequent (Park 2012; Catney et al 2013; Catney et al 2014; Krzywoszynska et al 2016). When a community or society 'has' social capital, it is broadly understood as *'the presence of dense networks within a society, and the accompanying norms, generalised trust and reciprocity, (which) allows citizens to*

overcome collective action problems more effectively' (Hooghe & Stolle p.4). These 'collective action problems' connect to Diani's (1992) third characteristic of social movement's, demonstrating the extent which both social movements and social capital are highly dependent on the effectiveness of their associated networks for action. In the case of social capital, these networks are seen as key to the very existence of social capital within a locality or community at large, and indeed constitute the building blocks of its creation and maintenance:

'People connect through a series of networks and they tend to share common values with other members of those networks; to the extent that these networks constitute a resource, they can be seen as forming a kind of capital' (Field 2003 p.5)

Interestingly, many of the theories of both top-down and bottom-up approaches to transitions fail to sufficiently recognise the relationship between differing levels of social capital and the ability to engage and mobilise communities in energy transitions. However, academic literatures on community networks and community energy have recognised this glaring inequality, with Catney et al (2013) acknowledging that *'some communities are better equipped than others to meet energy challenges due to their economic and organisational resources and social capital'* (Catney et al 2013 p.510*)*. Indeed, Catney et al (2014) see it as a fundamental part of their aforementioned 'reality check', in which they urge future research and analysis of community energy schemes to consider a local communities *'power, resources and ability to engage in environmental initiatives'* (Catney et al 2014 p.11) in order to address the unequal levels of social capital between communities. In addition, Park (2012) sees the potential for areas high in social capital to hinder the development of the community energy sector, as the sector becomes an exclusive pursuit that permanently scars the image of community energy as a *'special interest which exists only for better equipped and capable communities'* (Park 2012 p.404). Park (2012) is also worried that this aspect of the sector will ultimately constrain the possibilities for a potentially wider diffusion of local energy schemes, outlining an interesting relationship between greater community involvement, equity and issues of scale within the sector. Johnson & Hall's (2014) warning - that community energy will simply become a middle-class pursuit in which affluent communities 'capture the value' of local energy generation projects - highlights the ability for the sector to potentially deepen existing socio-economic inequalities at the local and indeed regional level. All three perspectives, in one way or another, are related to the differing levels and unequal presence of social capital within communities.

This overview of both social movement theory and the concept of social capital has highlighted the importance of networks within both theories, and indeed the *power* of networks in relation to the strength of social movements and the presence of social capital. This points to the ways in which engaging with local energy networks is therefore crucial for understanding bottom-up approaches to energy transitions and energy justice. In addition, the sections on SNM and grassroots innovation

theory also stress the importance of networks for the successful diffusion of niches throughout a regime. Therefore, when thinking about connections between energy justice and these bottom-up approaches, the degree to which energy justice ideas and principles are present *within the networks themselves*, may greatly impact upon bottom-up understandings of local energy justice. The next and final subsection of this section on bottom-up approaches to energy transitions turns to literatures on the *Thousand Flowers* transition pathway, which provides additional insight through detailing a possible bottom-up *pathway* for the UK to meet its climate change targets.

2.4.3.3 Transition pathways – *Thousand Flowers*

Influenced by work on socio-technical transitions and the multi-level perspective (Verbong & Loorbach 2012; Geels 2002), the *Thousand Flowers* pathway originates from the work of the *'Realising Transition Pathways'* research consortium, an 8-year multi-institution project spanning 2008 - 2016, which produced considerable material and research outputs to assist UK government policymakers and academic research communities in grappling with the complexities of transitioning to a low-carbon energy system by 2050, detailing potential routes or paths that would achieve this momentous transition (http://www.realisingtransitionpathways.org.uk/). Following this goal, associated outputs also sought to *'bring social structures and agency, including institutions and politics, into scenario […] studies of sustainable energy futures'* (Foxon 2013 p.12), to enhance understanding of the political and economic challenges of UK low-carbon futures. Thus, the consortium attempted to map out different institutional and technological configurations for meeting the UK's legally binding commitment to the terms set out in the Climate Change Act 2008; namely, to reduce GHG emissions by 80% by 2050 against a 1990 baseline. As a result, three different transition pathways are idealised; *Market Rules*, *Central Co-ordination* and *Thousand Flowers*. Each pathway adheres to different governance logics under the dominance of market, state and civil society actors respectively (Foxon et al. 2010; Foxon 2013; Barnacle et al. 2013; Chilvers et al. 2017). Featured below is a summary of the governance logics, dominant actors and descriptions of each pathway:

Pathway	Governance logic	Dominant actor	Description
Central Coordination	State	Central government	Central to this pathway is the role of the nation state in actively delivering the transition.
Market Rules	Market	Private sector (e.g. large energy firms)	After the creation of a broad, high-level policy framework, the state allows competition and private companies to deliver the transition
Thousand Flowers	Civil Society	Civil society (e.g. community and environmental groups)	Energy systems should meet the needs of citizens, who should therefore take a leading role in the decisions relating to how the energy system operates.

Figure 8: Summary of 3 idealised pathways developed by the Realising Transition Pathways Project (Johnson & Hall 2014 p.152)

As is clear from the table above, all pathways have different power structures implicit in their governance logic and amongst dominant actors. It is crucial, therefore, to consider that power structures resulting from different transition pathways may determine whether *'power is exercised by a small number of large actors or a large number of small actors'* (Foxon et al 2010 p.1210) in socio-technical transitions, and that consequently *'depending on which of these kinds of actors is deemed to have most 'power', different kinds of relationships between actors exist and different forms of transition may develop'* (Foxon et al 2010 p.1210). While the energy market in the UK is largely dominated by a *Market Rules* transition pathway as a result of privatisation, the energy system increasingly plays host to a complex state of interacting and 'hybrid' pathways, in which there is considerable crossover between the three, with recent government interventions and growing civil society involvement in energy systems enabling a greater role for both state and civil society actors.

However, this thesis focuses more explicitly on empirical examples of the *Thousand Flowers* pathway in action in order to generate further insight into bottom-up approaches to energy transitions and build on the empirical contributions to understanding this pathway (Seyfang et al. 2013). Indeed, the presence of more top-down initiatives and schemes within both the *Central Co-ordination* and *Market Rules* pathways are key to their institutional and technological makeup; in contrast, the *Thousand Flowers* pathway provides one of the few detailed explorations of the greater role that civil society can have within UK energy transitions going forward. As such, within this pathway, there is a *'growing dominance of civil society in the governance of UK energy systems, which leads to an increase in diversity of local bottom-up solutions for providing decentralised generation and energy conservation options'* (Barnacle et al. 2013 p.60). One natural outcome of this growing role for civil society governance logic over energy infrastructures, is the development of a civic energy sector (Hall et al. 2016). Therefore, in amongst efforts towards theorising local low-carbon transitions on the ground, the emergence of a civic energy sector within and from the *Thousand Flowers* transition pathway is useful in identifying concepts to draw upon that support contributions to local approaches to energy justice.

When looking in more detail at the various components of the *Thousand Flowers* transition pathway, Foxon (2013) usefully outlines core pathway aspects and associated characteristics, including key actors, concepts and technological and infrastructure aspects crucial to the development and substantiation of this pathway. These are detailed and expanded upon in the table below:

Pathway aspect	Characteristics
Key governance aspects	Dominance of **civil society logic**, in which citizens take a leading role in the decisions relating to how their local and national energy systems operate.
Key technologies	**Onshore wind; offshore wind; renewable CHP; solar PV**; imports; tidal barrage; wave and tidal power.
Key concepts	**Move to ESCO business model; technological and behavioural changes lead to significant end-user demand reductions**; positive feedbacks lead to 'virtuous cycles' in deployment of small-scale distributed generation technologies; greater community ownership of generation, including onshore wind and biomass CHP.
Key actors	ESCOs (both new entrants and diversified existing energy companies); local communities; NGOs.
Key multi-level patterns	Landscape pressures (climate change and energy security) on regime actors and government support for small-scale and community-level initiatives leads to focus on demand reduction and small-scale technologies; small-scale renewable technologies emerge from niches.
Key learning processes	**Learning to achieve commercial deployment of range of distributed generation technologies**, with the emergence of a small number of 'dominant designs'; large energy companies diversify into ESCO business model; focus on community-led renewable district heating schemes reduces the expected demand for electric heating, but rise in demand from electric vehicles.
Key infrastructure aspects	50% distributed generation requires development of 'smart grid' technologies to handle two-way power flows; 50% still connected at high-voltage transmission level by 2050, dominated by high efficiency gas generation and offshore wind concentrated around Scotland and in the North Sea, implying need for significant levels of transmission reinforcement.

Figure 9: Key characteristics of 'Thousand Flowers' pathway (Foxon 2013 p.13)

Interestingly, using the language of the MLP and SNM theory, certain pathway aspects and their characteristics note the vital importance of 'small-scale renewable technologies emerging from niches' alongside the development of commercially viable models for increased distributed generation. The pathway also suggests that 50% of all electricity generation can come from distributed sources by 2050, identifying a clear goal for bottom-up and local actors to work towards up until 2050. This stands in contrast to SNM and grassroots innovation theories which look more at the internal functioning and management of niches rather than setting a goal for their wider diffusion and presence within the regime, and importantly, the pathway suggests that this share of the electricity generation mix is indeed *possible*. Furthermore, all of this is made possible by an unprecedented expansion of a civic energy sector across the UK energy system.

However, while the concept of the civic energy sector is not present in earlier work on Transition Pathways, more recent publications, stemming from the 'Realising Transition Pathways Engine Room' (RTP Engine Room) report *'Distributing Power: A transition to a civic energy future'* (2015) and the work of Johnson & Hall (2014) and Hall et al (2014; 2016), have helped to advance understanding of the civic energy sector as a direct outcome of the *Thousand Flowers* transition pathway. As of 2015, the sector comprised little more than 1% of the UK's generation capacity (RTP Engine Room 2015), however, it is crucial for enhancing civil society participation in energy systems, as above literatures on local and community energy have demonstrated. Therefore, analysis of the civic energy sector is a critical part of understanding local energy justice and bottom-up pathways to low-carbon futures.

In contrast to the grassroots innovation and SNM literature, The *Thousand Flowers* transition pathway seeks to explicitly identify a greater role for more formal actors to commercialise distributed generation, particularly as it acts as both the intellectual and conceptual precursor to the idea of the civic energy sector. Indeed, where the *Thousand Flowers* differs conceptually also relates to the level of detail it provides for the potential institutional and technological configurations that could ensure a much greater role for civil society actors in the bold vision of a civic energy sector powering 50% of

electricity generation by 2050. The Grassroots Innovation and SNM theories do not provide this level of detail, but rather seek to identify the unique characteristics of their respective forms of bottom-up and community-led action and niche-to-regime dynamics that may facilitate niche penetration into the regime. The areas in which these theories clash can be seen in the tensions between different sectors, as more informal and lesser used structures can often be broadly found within the 'civil society' sphere, whereas more formal and frequently used structures can be located within the 'market' sphere, and the key role of local government as both an enabler and facilitator for local energy schemes located within the 'state' sphere. However, the degree to which these different sectors interact with one another are crucial for understanding the complexity of bottom-up approaches for energy transitions. Indeed, when thinking about the *Thousand Flowers* connections to other socio-technical transition pathways, the *Thousand Flowers* pathway articulates a future scenario similar to the 'de-alignment and re-alignment' pathway as theorised by Verbong & Geels (2010), in which local infrastructures and distributed generation make up a large proportion of energy generation and provision. This pathway envisions a radically shifting energy market in which *'new entrants can include local utilities and companies, consumer co-operations, housing associations and municipalities'* (Verbong & Geels 2010 p.1218). These new entrants, akin to those identified within the civic energy sector, fundamentally restructure the energy system and shift energy provision, where possible, from a centralised mode of production to a decentralised mode of production. However, and in a similar vein to the MLP, Transition Management and SNM theories reviewed above, very little is said about the social impacts of both the *Thousand Flowers* pathway and 'De-alignment and Re-alignment' scenario. Thinking briefly about the *Thousand Flowers* and energy justice, scholars of the different pathways could consider integrating justice principles into both the governance logics and key concepts of the 'pathway aspects' as outlined by Foxon (2013), in order to provide some foresight of the potential social justice implications of different governing institutions. However, this was admittedly not within the remit of the Transition Pathways research objectives (Barnacle et al 2013; Chilvers et al 2017). Therefore, it is up to energy justice scholars to critically interrogate these pathways to mitigate against any social harms or injustices going forward.

As the articulated changes in both pathways mentioned above further complicate the energy market and diversify the local energy sector, it is vital to consider that different organisational types and ownership structures utilised as vehicles for the instigation of transitions are at the forefront of these bottom-up and distributed transition pathways. Thus, if scholars of energy justice acknowledge that *'individual values, power and agency are deeply influenced by organisational structure'* (Bulkeley et al 2010 p.144), the justice implications of the forces and structures propelling bottom-up pathways forward are profound. Similarly, we must also consider the ways in which individual agency shapes and guides the choices around which structures are most suitable for civil society-based niche innovations (Seyfang & Smith 2007; Verbong & Loorbach 2012). When considering the types of

visions espoused in both the *Thousand Flowers* vision and Verbong & Geels (2010) socio-technical pathways in the electricity sector, less is understood about the types of organisational structures that will lead these pathways. More is currently understood around both market and state-led transitions and the organisational structures these encompass, lending some degree of both economic and political expediency to the continued use of these structures in energy markets. As this bottom-up transitions section has demonstrated, there is an interesting connection between both informal and alternative arrangements amongst local actors that binds the approaches of both Grassroots Innovations and Social Movements theories. However, it is also useful to note that much of the Grassroots Innovation literature is conceptually grounded in the language and ideas of the MLP, in which grassroots niches may seek innovatory strategies to become more widely diffused throughout a socio-technical regime. The social movement literature draws upon its own frames of reference and language, which is more heavily related to ideas of collective action and political movements for social and environmental change. Both approaches also note the importance of organisations and organisational structure, however, to support the general principles and aims of grassroots innovations and social movements. However, organisations are seen as distinct entities in the context of social movements, which are separate from a broader network of actors, whereas grassroots innovations see distinct organisational forms as crucial to its networks of actors seeking to diffuse niche innovations.

Importantly, this leaves a relatively higher level of ambiguity and uncertainty around civil society transitions and the complex array of associated organisational structures, increasing the perceived difficulty of pursuing the *Thousand Flowers* pathway amongst dominant institutions within the UK's socio-technical regime. In the next and final section of this critical literature review, an exploration of the new forms of ownership underpinning new energy economies are explored, providing some needed clarity to the understanding of possible structures that may underpin civil society energy transitions in an age of neoliberalism.

2.5 New energy economies: alternative forms of ownership under neoliberal capitalism

Building on section 2.3, this section seeks to expand on the prominent organisational structures within the civic energy sector and connect them to broader concepts around dominant forms of ownership under contemporary neoliberal capitalism. It assesses outputs from relatively limited literatures on the legal and organisational structures used to facilitate local, community and municipal ownership of low-carbon energy sources. This limitation of literatures connects to the 'niche' status of many of these structures, as they still lack wider diffusion throughout the energy market or 'regime'. After reviewing key literatures and reports, it finishes with explaining the 'generative' and 'extractive' distinction of economic ownership, connecting to important work produced by the *Democracy Collaborative* concerning building 'community wealth' and creating innovative local economies centred around principles of *economic democracy*. In short, the opportunities presented by the

increasing decentralisation of energy and the rise of alternative forms of energy ownership and provision allow for new energy economies to emerge, building on the implications of the grassroots innovation literatures on community energy and future visions of a civic energy sector more broadly. This section explores the politics of ownership in an age of corporate neoliberal capitalism in more detail than previous sections, and therefore addresses outwardly normative concerns focusing on more 'just' ownership forms.

At the same time as local, community and civic energy schemes were just beginning to gain ground in the UK, the 'Centre for Research on Socio-Cultural Change' at Manchester University produced a timely report called the 'Manifesto for the Foundational Economy'. In this report, Bentham et al (2013) challenge the way that revenues generated from fundamentally necessary economic activities, such as unavoidable household expenditures towards rent, food, water and *energy*, are often siphoned off to private or corporate interests. They argue that this could be reconfigured in a way in which regions and localities retain the value of this 'foundational economy' activity, to strengthen their economies. They assert that new organisational structures, innovative ideas and a new vision for localised economies were therefore needed to develop:

'Foundational activities in the UK to create employment, build stronger supply chains and networks and provide a more local basis for decisions about how products are sourced and distributed, how services are managed and how assets are controlled for social value which includes taking the future seriously. As a part of this we need to reinvent democratic politics and empower the regional and local' (Bentham et al 2013 p.20)

This type of thinking around reinventing local economies has certainly begun to take influence after the devastating social and economic impacts of the financial crisis, and after 30 years of neoliberal hegemony, as pointed out in the introduction and throughout this literature review. Thus, when Bentham et al (2013) propose a new kind of 'liberal collectivism' and note that neoliberalism itself *'does not so much shrink the state as change the form in which state power is exercised so that it becomes hugely more amenable to corporate influence'* (Bentham et al 2013 p.12), spaces can emerge for economic experimentations which seek to challenge corporate organisational structures and their relative dominance under neoliberalism. Indeed, authors such as Parker (2017) in the 'critical' business studies and 'critical' management studies fields see a post-crisis context opening up spaces for alternative enterprises within capitalism, such as co-operatives, mutuals, cross-sectoral partnerships and social enterprises, among others (Spear et al 2017). Cumbers (2016) also situates a global wave of 'remuncipalization' in response to decades of sweeping privatisations under neoliberalism, in which public and collective ownership models over key resources emerge at a variety of scales in a variety of sectors, including within the low-carbon transition (Cumbers 2016).

As pointed out in section 2.3, there are some interesting manifestations of these types of experimentations emerging within the civic energy sector. This growing presence of different organisational structures - what Ofgem, the electricity and gas market regulator for the UK, have decided to label as 'Non-Traditional Business Models' or 'NTBM's' – is slowly challenging the way the energy market is structured, and providing some glimpse as to the organisational complexity and variety that it may embody in the future, particularly if a *Thousand Flowers* type pathway gains more traction.

As noted by both Roberts et al (2014) in *'Community Power: Model legal frameworks for citizen-owned renewable energy'* and the Co-operatives UK (2017) publication *'Simply Legal: community based legal forms and organisational types'*, there are a complex and diverse range of community-oriented legal structures and organisational forms present within the UK and indeed, the growing civic energy sector. Bringing together the vast wealth of legal knowledge in both documents, it is clear that Hall et al's (2014; 2015; 2016) understanding of a civic energy sector includes many legal forms present within both reports. As mentioned in section 2.3, these organisational structures often include BenComs, CIC's, Co-ops, Charitable legal models and in the case of municipal energy companies, limited company structures designed to generate profits for local councils. The civic energy sector also emphasises the creation and maintenance of *local* energy infrastructures and initiatives, at various scales, that are key to its vital role within the *Thousand Flowers* transition pathway. Indeed, similar ideas of emerging civic energy actors are alluded to in Roberts et al's (2014) understanding of 'community power', as they state that future energy markets with a greater presence of local and community initiatives:

'May range from individual households to various forms of social enterprises, as well as public ownership by municipalities. The choice of form often relates to the interest or goal of the particular community, including but not limited to profit opportunities, special tax treatment, achieving energy autarky (or self-sufficiency), climate goals and community resilience' (Roberts et al 2014 p.15)

When thinking about bottom-up approaches to energy transitions, therefore, the proliferation of these types of structures are key to the target of 50% of energy generation being attributable to distributed generation sources governed and managed by the civic energy sector. These types of structures also pose some conflicts with, or departure from, the types of community structures identified within the grassroots innovations and social movement literatures, as these structures are typically more concerned with more mainstream ideas around profit opportunities relating to energy generation or low-carbon technologies, instead of a broader focus on values and ideologies at the grassroots level, or challenging the energy politics of the regime, as seen in the idea of critical niches (Diani 1992; Seyfang et al 2013; Smith et al 2016).

The Co-operatives UK (2016) document intends to act as a guide for community organisations getting started, and in its concluding section, notes that the interests and goals of particular communities can be strongly reflected in their choice of legal entity and structure. Legal structure is in essence *'made up of the legal form – how the organisation is seen in the eyes of the law – and its governing document - how it plans to work and govern itself'* (Co-operative UK 2016 p.71). The authors find that after considering whether an organisation should be incorporated or unincorporated – essentially decisions around how to spread financial risk and how liabilities should be apportioned - community groups should look through the different types of organisation available within the third sector, and then, make critical decisions about ownership, membership and governance. These considerations are vital in developing *a 'structure that is fit for purpose and – importantly - reflects an organisations ethos'* (Co-operative UK 2016 p.71). Therefore, when considering the different structures used to purchase local renewable energy, Becker et al (2017), in their study addressing organisational structures used to 'embed' community energy projects in European states, assert that:

'Legal forms are important as they operationalise the inclusion of social values and the participation of members or various stakeholders into decision-making […] it is […] crucial who the owners and stakeholders of a social enterprise are' (Becker et al 2017 p.29)

As touched upon in section 1.2, this points to the way in which the choice of structure is the first point in which actor's values and goals are reflected in a project or initiative, and demonstrates the extent to which issues of justice are considered. This decision around legal structure is therefore a crucial consideration for theorists and scholars of energy justice, and one that has so far been largely neglected in the field, as it determines key questions around the ownership, governance, management, financing and participation in a project. Hiteva & Sovacool (2017), in the one of the first energy justice analyses of this area, look at the role of business model innovation in fostering energy justice. In their vital concluding points, they find that the organisations they studied were:

'Purposefully created organizations with energy justice elements at their core, rather than existing organizations from whom energy justice values have been introduced as innovations in their business models […] until energy markets fundamentally change, examples of corporate or company entities providing business services that match energy justice principles may remain the exception, rather than the norm' (Hiteva & Sovacool 2017 p.638)

This type of fundamental change in the energy market that the authors allude to can be seen in the types of scenarios posed by both the de-alignment and re-alignment scenarios of Verbong & Geels (2010) and the *Thousand Flowers* transition pathway, however, the degree to which energy justice may be both compatible and realised within these new structures is still largely unexplored and also unclear. This prompts links to questioning the architecture of enterprise and ownership itself (Kelly

2013), in which different types of alternative structures and their governing principles inform their social, economic and environmental impacts.

Writing about the potential to redesign ownership for a transition towards a different economic future, Kelly (2013) notes that considerations around ownership design have changed throughout history, often to suit the type of economy that is dominant within that era – agrarian, mercantilist or financialised capitalism - and to serve a particular purpose. In our financialised world, in which corporate capitalism and financial capitalism dominates large swathes of the economy, the *'dominant form of ownership of our age serves the needs of capital markets by generating endlessly growing financial wealth'* (Kelly 2013 p.62). In *'Owning our future: The emerging ownership revolution*', Kelly & Korten (2012) explore two vastly different types of ownership structures which are termed 'Generative' and 'Extractive' ownership designs. Throughout this work, they explore various different real-world examples of locally rooted ownership models, leading Kelly (2013) to suggest that, when thinking about how to envision a future in which these models have a much greater role in our economy:

'We can be guided by the accumulating experiences of the alternative ownership designs that already exist —such as cooperatives, employee-owned firms, social enterprises, and commons ownership designs […] these structures point to a fundamentally different kind of economic system' (Kelly 2013 p.61-62)

Thus, research by Kelly (2013) and Kelly & Korten (2012) demonstrates sympathies with the literatures above concerning civic energy ownership models and ideas around a building a more locally oriented 'foundational economy', in which ownership and wealth are spread and distributed across communities, whilst also striving for a degree of geographical embeddedness and rootedness in those communities, as seen through the many case studies presented within Kelly & Korten's (2012) work. Below is a table summarising the main aspects of generative and extractive ownership types:

EXTRACTIVE OWNERSHIP	GENERATIVE OWNERSHIP
1. *Financial Purpose:* maximizing profits in short term	1. *Living Purpose:* creating the conditions for life over long term
2. *Absentee Membership:* ownership disconnected from life of enterprise	2. *Rooted Membership:* ownership in human hands
3. *Governance by Markets:* control by capital markets on autopilot	3. *Mission-Controlled Governance:* control by those dedicated to social mission
4. *Casino Finance:* capital as master	4. *Stakeholder Finance:* capital as friend
5. *Commodity Networks:* trading focused solely on price and profits	5. *Ethical Networks:* collective support for ecological and social norms

Figure 10 - 'The Design of Economic Power: The Architecture of Ownership' (Kelly & Korten 2012 p.18)

Expanding on this distinction, Kelly & Korten (2012) align much of the contemporary economic malaise, such as the global financial crisis, and to some degree the global environmental crisis, with the dominance of extractive models of ownership that see the maximisation of profits as the overriding structural purpose driving the global economies rapid growth. Thus, the extractive model is beholden to an international shareholder elite and the speculative growth-oriented power of international financial markets, whilst seeking to make the largest possible profits in the shortest time frame (Kelly & Korten 2012). In addition, notions of social and environmental sustainability are often disregarded or given low priority within extractive models; the highest priority is extracting large profits from the capitalist system through corporate ownership models, with all other goals subordinate to this governing purpose. This extractive model can certainly be linked to work on neoliberalism, particularly when we see that neoliberal capitalism has been aided and supported by the spread of corporate power and dominance within the global economy, and indeed, within energy systems (Harvey 2005; Helm 2003). Generative ownership posits oppositional values and designs; seeking to root membership in local communities and regions rather than in the hands of an international financial elite, harnessing legal structures that potentially democratise wealth and seek to distribute and localise profits over the long-term, while caring more explicitly about social and environmental sustainability and the future relationship of ownership designs to people and planet (Kelly & Korten 2012: Kelly 2013).

Here we can see tremendous synergies between the grassroots innovations literatures and work that explores more thoroughly alternative ownership designs, within both the ‘foundational economy’ and amongst more ‘generative’ ownership designs. Relating this further to the insights of Co-operatives UK (2016) and Roberts et al (2014), there are signs of new energy economies emerging which harness the various structures presented above to actualise alternative ownership forms in an age of neoliberal capitalism. However, the degree to which the civic energy sector can said to be more ‘generative’ is yet to be explored. More importantly, it is important to build on analyses such as Hiteva & Sovacool’s (2017) which open up more critical interrogation and also appreciation of the types of innovations in business models and social enterprise that may help local communities realise energy justice in practice.

2.6 Conclusion

This critical literature review has given an extensive overview of various relevant literatures that are vital to laying the foundations for conceptualising, researching and contributing a bottom-up understanding of energy justice. In particular, it will be crucial to see how the 'bottom-up' theories and approaches to energy transitions, namely, the *Thousand Flowers* transition pathway, Grassroots Innovation theory and the importance of local networks for social movements, shed light on the practice and real-world dynamics of local low-carbon energy transitions in Bristol. Indeed, this will form a core part of allowing key transition theories to 'speak' to the action and activity on the ground.

Core research gaps were also identified in this review, most notably, around the lack of research on the energy justice implications of the legal and organisational structures used in the UK civic energy sector. In addition, it is clear that local and bottom-up perspectives to energy justice are lacking, particularly in the conceptual / theoretical sense; this is required to counter a theoretical and conceptual bias towards a 'systems approach' which dominates thinking around energy justice in the scholarly community. Indeed, one key deduction from the literature review, is that many energy justice scholars understanding of energy systems and transitions stem from the MLP. This then feeds into the development of conceptualisations of 'energy systems justice' and creates and normalises a dynamic process of systems-led transitions theory – energy justice theory interaction and exchange. One particularly notable example of this can be seen in Jenkins et al's (2018) attempt to *'humanize socio-technical transitions through energy justice'*, with a core focus on the MLP and little on bottom-up theories and perspectives. This continuing trend shows the need for more bottom-up theories and perspectives to interact with energy justice, a gap this thesis will begin to address.

This literature review has - whilst providing insight into energy justice, community energy, civic energy and energy transition theories literatures respectively - also touched upon the ways in which new energy economies are being conceptualised and the potential for new legal structures to counter 'extractive' economic models. This, in and of itself, has particularly fascinating justice implications, particularly when we consider these questions in light of the thesis's core research questions. But how, then, are we to assess these implications? As made clear in the review of energy justice literatures, the three tenets provide a remarkably clear, practical and effective way of taking different social, economic and political considerations into account, asking fundamental questions about the social justice impacts of energy systems. This relative simplicity stands in sharp contrast to Sovacool & Dworkins (2015) 8-principle approach. Thus, these tenets will be used in the field to offer both subjectivist *and* objectivist accounts of energy justice. Given that the three tenets have been outlined as the core conceptual framework of the thesis, in which they are used to critically examine civic energy sector low-carbon transitions in Bristol City, they will be used; 1) In an evaluative sense, to respond to the core research questions and critically evaluate the impacts of organisational structures, intermediary organisations and local energy networks; and 2) In an interpretivist sense, whereby

research participants will offer their own interpretations of the three tenets and detail the ways in which distributional, procedural and recognition justice make sense to them. Therefore, a balance is struck between both objectivist and subjectivist approaches to using the three tenets as an analytical framework. This is to ensure that the three tenets are used to; 1) Generate novel contributions to bottom-up perspectives on energy justice through a critical examination of community-led organisational structures, and 2) Allow the tenets to undergo a process of critical reinterpretation through gauging research participants understanding of them. This is to ensure that, rather than imposing or advancing an academic agenda, exploring local energy justice is understood as a collaborative and iterative process with the research community at hand. Thus, this balance is underpinned by a desire to maximise the original contributions to knowledge and advance, as noted in chapter 1, new local and bottom-up perspectives on energy justice. The next chapter in this thesis explores the context for collecting data in this thesis, the methodology used to collect data and the process of data collection during the years 2015 – 2017.

3. RESEARCH METHODOLOGY AND EMPIRICAL CONTEXT

3.1 Introduction: selection criteria for Bristol City

This section will outline the selection criteria for the core setting of this PhD research and present key information about the research context. As this section demonstrates the extent to which Bristol is relevant to many of the themes and concepts present within the literature review, it will also set the scene for the rationale behind the employed research methodology explored in section 3.2.

The initial empirical focus of this research stems from an early acknowledgement within transitions literatures of the importance of civil society in the future of sustainability transitions (Smith 2012), whilst seeking to understand real-world manifestations of the *'Thousand Flowers'* transition pathway and the civic energy sector (Seyfang et al 2010; Foxon et al 2010; Hall et al 2014; 2015; 2016). As researchers of grassroots innovations sought to *'outline an important research agenda, which takes civil society seriously and recognises its potential role as a driver of sustainability transitions' (*Seyfang et al 2010 p.17), it was important to then identify a contemporary context which played host to active civil society initiatives focusing on sustainability transitions. In addition, while the energy justice research agenda has grown rapidly, additional calls to address issues of social equity and justice in *urban transitions* have emerged, stemming from the evidence for trends towards global urbanisation and subsequently, the 'urban' as a critical space for contesting the politics of sustainability transitions (Agyeman 2013; Bickerstaff et al 2013; Eames et al 2013; Hodson & Marvin 2014). Concurrently, critical literatures on local and community energy contain specific calls to expand empirical research addressing social inequalities into cities and urban contexts (Eadson & Foden; Johnson et al 2014). The *People, Place* and *Policy* special issue on community energy in particular pushed this agenda forward (Eadson & Foden 2014). Through acknowledging Johnson et al's (2014) warning that local energy projects pose the risk of becoming the exclusive preserve of affluent communities, the editors of the special issue note that:

'Further empirical investigation into the role of such projects in addressing the needs of deprived urban communities is one area of pressing concern […] this recognises that community energy […] clearly resonates with wider debates about how to revitalise disadvantaged areas. The growing expectation, at least within the UK, that regeneration should be community-led rather than delivered through top-down area-based initiatives further emphasises the salience of debates on community energy' (Eadson & Foden 2014 p.147)

In amongst adhering to this call for greater empirical investigation, the separate phases of the fieldwork also aspire to maintaining researcher 'reflexivity'. As will be demonstrated later on in this chapter, the empirical foci shifts from an initial focus on Bristol-based community energy projects according to solar PV deployment and organisational type, to look more broadly at Bristol's civic

energy sector, critically interrogating the role of the city council, new local energy companies and important networking and intermediary organisations that support the civic energy sector and encompass civil society groups. Taken together, the majority of phases apply the three core tenets of energy justice to critically analyse the many facets of a civic energy sector. These phases also found that the civic energy sector includes actors that may not have been considered, such as energy activist groups, alongside a multiplicity of community organisations seeking to save money, generate money, or become more sustainable and environmentally focused. Opportunities were therefore taken to interview organisations and actors traditionally 'outside' of the local energy sector, but very much within relevant civic energy networks in Bristol. Indeed, this was the intention of the focus group organised through the Bristol Energy Network (BEN).

Given Bristol's extensive network of civil society organisations focused on the challenges of sustainability transitions, the calls within relevant academic literatures for exploring issues of equity, justice and the role of local energy projects in deprived urban communities inspired the analysis of Bristol's civic energy sector, whilst also providing evidence for realising the *Thousand Flowers* transition pathway at the local level. Also connecting to influential policy literatures, there is a strong need to extend analysis of low-carbon transitions beyond technical fields such as economics and engineering, as alluded to by Sovacool & Dworkin (2015) in their critical assessment of the lack of 'justice' oriented studies in the most widely ready energy journals. Indeed, this call is echoed by Gouldson & Millward-Hopkins (2015) in their 'mini-stern review' for Bristol:

'Economics is not the only discipline that has something useful to say on the transition to a low carbon economy/society. A wider analysis should also consider the social and political acceptability of the different options, as well as issues relating to the social equity and broader sustainability of the different pathways towards a low carbon economy and society' (Gouldson & Millward-Hopkins 2015 p.11)

In heeding many of these calls within critical literatures, it is also important to note that the civic energy sector is an area which is largely under-researched in the UK, given its relatively new introduction into the energy market through energy transition processes, and in particular, an area that has not been subject to critical energy justice-led analyses. Bristol therefore provided a fascinating and relevant context to explore bottom-up transition processes and facilitate bottom-up contributions to the energy justice field. In addition, Bristol also provided a core setting for data collection that demonstrated resonance with many of themes within the literature review, as will be further explored in the following subsections.

3.1.1 Civic energy in the city

The city of Bristol, chosen for this research because of its innovation in local and community energy and expanding civic energy sector, is a mid-size UK city located in South West England, with a population of around 450,000. It is also the largest city and economy in the South West (BCC 2016). Given the range of local energy actors within Bristol similar to those defined by Johnson & Hall (2014), there is evidence for an active and diverse civic energy sector in the city, despite Strachan et al.'s (2015) accurate assessment of the overall UK energy market as one that favours large energy corporations and side-lines local energy schemes.

Over the last decade, Bristol has played host to an increasingly supportive policy and governance framework for civic energy, within which there are many active civil society initiatives focusing on a variety of local energy issues (CSE 2011; BEN 2013; BCC 2015b) and leading transition processes from the 'bottom-up'. Some of these organisations, groups and initiatives have been present in Bristol for well over a decade, reinforcing its global reputation as a hub of civil society initiatives and socially and environmentally conscious organisations (Della Porta & Diani 2009 p.135-137; Brownlee, 2011). In addition, and owing to its growing ambition to become a more sustainable city, Bristol was 'European Green Capital' in 2015, awarded by the European Commission to help EU cities become leading low-carbon hubs in Europe, signalling the assistance of top-down intervention and assistance by a supranational organisation to grow the cities low-carbon economy.

Thinking about more bottom-up activities, in 2013, Bristol developed its own 'Community Strategy for Energy' (BEN 2013), bringing together a range of actors led by Bristol Energy Network (BEN), an umbrella organisation for community action on energy sustainability, before the Department for Energy and Climate Change (DECC) released the national 'Community Energy Strategy' (DECC 2014). The strategy has brief mentions of how the growth of local energy projects can be linked to the alleviation of fuel poverty within the city, containing acknowledgements of energy justice issues within this local transition (BEN 2013). Although there is no explicit mention of social or energy justice in the strategy, the normative principles outlined within the strategy share many similarities with some of the ethics of energy justice scholars and calls within energy justice literature for; greater affordability, empowerment, ownership, management and engagement in energy systems, as explored in Chapter One. Through its 'five core themes' outlined in the extracted figure below, the strategy makes clear that 'community resilience & fuel poverty' are a key focus, with mentions of 'equal access' to energy across the city.

Figure 11: 'Five core themes of the Bristol Community Strategy for Energy' (BEN 2013 p.8)

This city-based strategy outlines how the citizens of Bristol can foster their own civic energy sector, engage in energy citizenship and become an integral part of a new renewable energy infrastructure powering the city, demonstrating sympathies with the *Thousand Flowers* transition pathway:

'Our vision is for "a city where everyone has access to sufficient affordable low-carbon energy for their needs; where wise and innovative use of energy empowers citizens, and enhances the economy, with active communities across the city generating and managing a significant amount of their energy need' (BEN 2013 p.3)

The Centre for Sustainable Energy (CSE), a national charity in the UK and key intermediary organisation for local and community energy schemes, is based in Bristol. On their 'about us' section of their website, they state that *'Our vision is a world where sustainability is second nature, carbon emissions have been cut to safe levels and fuel poverty has been replaced by energy justice '* - clearly acknowledging fuel poverty, energy justice and their own role in seeking to address these issues (https://www.cse.org.uk/about-us).

More recently, the Bristol Energy Company (https://www.bristol-energy.co.uk/) was established by the City Council as a pioneer in municipal energy in the UK (alongside Nottingham's Robin Hood Energy) and, whilst it operates independently from the Council, it is fully funded and wholly owned by it. Bristol Energy is forecast to be profitable by 2021 (BBC 2017), with profits going back to the council treasury to provide much needed funds in a time of fiscal austerity. In addition, it also

advocates a new approach to providing 'fair and transparent tariffs' to local citizens, with the company motto seeking to reinforce the organisations commitment to providing 'electricity and gas for social good' (https://www.bristol-energy.co.uk/switch-for-bristol/my-bristol-tariff). Despite these interesting innovations within the civic energy sector and the noble aims within the BEN strategy and among organisations such as Bristol Energy, one of Bristol's core challenges lies in addressing severe problems around high level of social inequality within the city whilst the low-carbon economy expands.

3.1.2 An unequal city – green growth amidst rising inequality

Bristol's green economy has recently witnessed a substantial increase in growth and investment, including, during the Green Capital year, securing a total of £12.6m in grants and sponsorship (Bristol Green Capital Partnership, 2015) to support a range of environmental initiatives at different scales. Bristol Energy also offers a 'Green tariff' and seeks to increase the presence of renewable generation in their fuel mix over the coming years (https://www.bristol-energy.co.uk/about-us/our-fuel-mix). In addition, Bristol currently plays host to the largest community energy organisation in the UK by generation capacity - Bristol Energy Co-operative (BEC), which since its inception in 2011, has raised over £9m in investment to fund its solar PV projects, and, has 9.1MWh annual renewable energy capacity in its generation portfolio (BEC web). Furthermore, in thinking about Bristol's low-carbon future, Gouldson & Millward-Hopkins (2015) suggest that the creation of between 2,000 – 10,000 jobs could occur in Bristol's low-carbon economy between 2015 – 2025, depending on different levels of cross-sectoral investment and political action (Gouldson & Millward-Hopkins 2015). This activity and such forecasts bolsters Bristol's reputation as a green city and a hub of green energy activity and eco-innovation.

However, amidst this growing green economy, Bristol has also seen an increase in social inequality and deprivation since the introduction of austerity measures in 2010, with Bristol City Council (BCC) noting that:

'A greater proportion of Bristol's population live in the most deprived areas in England in 2015 than in 2010 – 16% of Bristol's total population live in the most deprived areas compared to 14% in 2010 […] Bristol continues to have deprivation 'hot spots' that are amongst some of the most deprived areas in the country yet are adjacent to some of the least deprived areas in the country' (BCC 2015a p.2)

Alongside a highly unequal geography of socio-economic division, in which deep divisions exist between highly affluent areas and areas with comparatively severe levels of deprivation, Bristol has also been criticised for high levels of racial inequality and a lack of ethnic diversity in both education and employment statistics within the City (Elahi et al. 2017; Finney & Lymperopoulou 2015). When compared to England and Wales as a whole, ethnic minorities experience greater disadvantages in

education and employment in Bristol (Elahi et al. 2017). Furthermore, some of the most deprived areas in the city, such as Lawrence Hill, have high levels of black and minority ethnic (BME) populations (BCC 2015a). These forms of geographical and racial inequality are definitive features of the modern politics of Bristol, and are crucial social challenges that the city is facing in coming years. Aiming to understand these distinct - yet simultaneous - processes of green growth and rising inequality informs the use of energy justice theory in critically analysing the civic energy sector, bringing together current issues of both 'energy' and 'social justice' in Bristol.

Further exploring these linkages in the context of energy, the BCC report *'Our resilient future: a framework for climate and energy security'* (BCC 2015b), details what is needed to meet the UK's legally binding emissions targets and ensure Bristol's transition to a low-carbon economy. It also addresses issues of social inequality within Bristol, noting that energy transitions are an opportunity to simultaneously address issues relating to existing social inequalities *and* new inequalities arising from transitions, connecting to key policy reports on social justice and climate change (Banks et al 2014):

'Changing how we use energy in the city creates huge opportunities to make the city a better place to live for everyone […] It enables us to address some key social and health issues, in particular fuel poverty, but also creates some threats which could increase inequality' (BCC 2015 p.iv)

The report also explicitly mentions how grassroots actions directed towards climate change mitigation are reflective of those inequalities, demonstrating clear links with critical literatures on localism (Davoudi & Madanipour 2015), alongside widespread disparities in community capacity and social capital (Catney et al 2014; Park 2014), as it notes that:

'There is some evidence that historically, actions similar to those set out in this Framework have proportionately low take up from equalities communities such as black and minority ethnic (BME) communities, older people, etc. For this reason, full Equalities Impact Assessments will be required for each action as it commences implementation' (BCC 2015 p.59)

In addition, BCC has recognised that fuel poverty is a problem in Bristol and using the latest available data, they note that:

'Approximately 13% of all households in the City of Bristol lived in fuel poverty during 2012 and whilst levels of fuel poverty vary greatly across the City, in the worst affected ward, 27% of households were considered as being fuel poor' (BCC 2015b p.9)

As recognised within the critical literature review, fuel poverty is understood as a distinct form of inequality which, whilst 'fundamentally a problem of distributive justice' is also implicated in the lack of recognition of vulnerable and marginalised groups, and crucial to pursuing procedural justice through wider involvement in decision making around local energy initiatives (Walker and Day, 2012). When considering fuel poverty, alongside the *increase* in deprivation and social inequality in

Bristol, it is therefore important to critically question the direction of funding in the city and new sources of revenue generation, such as local energy generation schemes. Indeed, local energy actors across the UK have seen the *potential* for revenue sources generated by local energy projects to take on a vital role in the context of austerity and widening inequality, to tackle issues such as fuel poverty (see Adams & Bell 2015 p.1474). In addition, Gouldson & Millward-Hopkins (2015) also see the growth of the low-carbon economy as an opportunity to capitalise on '*more local and immediate benefits, such as minimising the leakage of capital from local economies […] and addressing fuel poverty'* (Gouldson & Millward-Hopkins 2015 p.12). In the context of this restricted funding in a time of austerity, The 'Bristol Fairness Commission' report, supported by Bristol's previous Mayor George Ferguson (in office from 2012-2016) suggests that the impact of austerity measures on the local authority budget*'…Makes it even more critically important to optimise the funding and resources that do exist and focus them in areas that can have the biggest impact for the most vulnerable'* (Bristol Fairness Commission 2014 p.16).

Marvin Rees, Bristol's current elected mayor running from 2016-2020, is an advocate for social justice and addressing social inequality in the city, alongside showing determination to stick to Bristol's commitment to transitioning to low carbon energy sources (Cuff 2016). However, these aspirations will be severely challenged by austerity and the need to make substantial budget savings resulting in job losses for over 1,000 people, the reorganisation and downsizing of many council departments, and, potential outsourcing of key services, as a result of £92m worth of cuts to the council's budget by 2022 (BBC 2016). This fundamental reconfiguration of the local authority and associated services is key for researchers interested in issues of social justice. Indeed, this thesis will therefore assess how the connections between energy justice and climate change mitigation are altered by austerity measures and changing roles of governance within and beyond the public sector, with non-state intermediaries and civic energy actors potentially playing an increasingly important role in acknowledging and responding to these connections in their activities.

The analysis of the research context above provides a straightforward rationale for juxtaposing the activity Bristol harbours in civic energy-led low-carbon transition processes with pressing issues around rising social inequality, deprivation, fuel poverty and a restructuring of local forms of governance. It also shows that there are a variety of actors in Bristol, from BEN, to the council and the newly elected Mayor, that acknowledge the connection between social justice and climate change, are conscious of the many issues Bristol faces around social inequality, but are constrained by macro-level issues around severe public funding cuts. In addition, research on social enterprise models in Bristol and its connections to the low-carbon economy have demonstrated an interest in the social impacts of these models, prompting more explicit justice-oriented research into this area (Morgan et al 2013; Bird & Morgan 2015).

The selection criteria outlined above are not only pertinent to many of the theories and issues discussed in chapter one, but more broadly, demonstrate how Bristol is an empirically rich, highly relevant and dynamic context in which to explore issues of local energy justice in times of austerity. In addition, the civic energy sector and its associated organisational structures has to date, undergone few analyses guided by the critical lens provided by energy justice theory. Therefore, it is vital to select a methodological approach that supports the analytical power of energy justice, whilst simultaneously exploring the fields largely neglected bottom-up, locally-led dynamics and indeed, potential.

3.2 Research Methodology

3.2.1 Analysis of Bristol: a qualitative approach

As mentioned in the above sections, Bristol provides fertile ground upon which to explore the local energy justice implications of civic energy sector low-carbon transitions. Given Bristol's proximity to Cardiff University, it was deemed necessary to live in the city to enhance research and networking opportunities during fieldwork. After making the decision to move from Cardiff to live and work in Bristol after one year in Cardiff, it was important to then identify research methods that would both support the theoretical framework of energy justice and help to meet research objectives. This also means taking advantage of being resident in Bristol in order to enhance opportunities for researcher involvement and participant observation during the fieldwork phase.

Engaging with literatures on local and community energy illuminated the importance of using qualitative, as opposed to quantitative, research methods in the analysis of Bristol's civic energy sector. This is because, rather than attempt to create replicability in research findings or extract generalizable patterns from datasets and statistics, as is common in a lot of quantitative research, the thesis seeks to achieve an in-depth level of inquiry and understanding of Bristol's civic energy sector, with a view to ultimately generating original knowledge concerning the dynamics of Bristol's civic energy sector and the multiple actors therein. These actor dynamics will then be used to inform an understanding of local energy justice in Bristol. While quantitative analyses can prove fruitful in other domains of local energy justice research, such as developing bottom-up statistical models for understanding energy use in deprived areas, to more effectively target fuel poor homes for retrofit (Reames 2016), this thesis seeks to unravel complicated relationships and interactions between a variety of civic energy actors, utilising a variety of in-depth knowledge, skills, experience and perspectives amongst those actors. These research aims and objectives are most effectively fulfilled by qualitative research techniques (Hennink et al 2011; Franklin & Blyton 2013; Leavy 2014). Furthermore, drawing on a series of academic research on community energy projects across the EU, many of which were reviewed in the literature review, the most prominent form of research methods

used to explore many different facets of community energy - such as public acceptance, legitimacy and social understandings of local energy technologies - were qualitative in nature (Zoellner et al 2008; Warren & McFayden 2010; Musall & Kuik 2011; Seyfang et al 2013). Many of these studies were rooted in examining the politics and internal dynamics of various different localities, and as such, drew upon the power of qualitative research to *'identify issues from the perspective of […] study participants, and understand the meaning and interpretations that they give to behaviour, events or objects'* (Hennink et al 2011 p.9). This brings forth the fundamentally unique ability for qualitative research to *'explore, describe, or explain social phenomenon […] build a depth of understanding about some aspect of social life […] explore new or under researched areas; or make micro-macro links'* (Leavy 2014 p.2) in the context of sustainability transitions research.

As noted in the introduction, research exploring the equity and justice implications of local energy projects has only recently risen to prominence, with few publications explicitly locating the research in the context of austerity and its social impacts. This research *also* largely employs qualitative research techniques, with both Adams et al's (2015) and Bulkeley & Fullers (2012) analyses using qualitative research methods, emphasising semi-structured interviews with local energy actors. Indeed, the call for greater empirical investigation by Eadson & Foden (2014) into understanding local energy deployment in deprived areas was both crucial for the trajectory of empirical research and the selection of a case study approach, as will be explored later in this chapter.

Considering the factors that have been outlined above, concerning both previously used methodologies in local energy research and the need to gather sufficient primary data to support a bottom-up approach to energy justice, an appreciation for the methodological field of Participatory Action Research (PAR) was developed. While helping to achieve a deep level of insight and promote researcher involvement in Bristol's civic energy sector, this methodology would also assist in extending the use of qualitative research techniques *beyond* community energy to the civic energy sector more broadly. Indeed, this methodology was deemed suitable to facilitate sufficient involvement, data gathering and observation to complement the development of a bottom-up perspective on energy justice issues in a local energy context. As a result, the core aims, methods and indeed *ethics* contained within PAR were deemed highly suitable and compatible to the overall research aims as outlined in chapters one and two.

3.2.2 Participatory Action Research (PAR) and local energy justice: philosophical alignments

PAR is a dynamic and rich qualitative research field, with common techniques used including *in-depth interviews*, *focus groups* and *participant observation* (McIntyre 2007; Kindon et al 2007; Bergold & Thomas 2012). Before briefly exploring the use of each of these techniques in turn, it is important to first outline the philosophical basis for using PAR in this thesis. This is to make clear the strong normative connections between energy justice and PAR, whilst engaging with key

epistemological issues in using the interpretive paradigm, in order to show how research methods can be effective in both reflecting and advancing the values and ethics within a researcher's theoretical framework. As such, it is crucial to acknowledge that PAR is a field that is philosophically;

'Underpinned by a strong social justice ethos […] much of the development of PAR theory and practice has emerged from work in the developing world, or with deprived, disadvantaged and disempowered communities (of interest or place)' (Franklin & Blyton 2013 p.73)

This tendency for PAR advocates and researchers to seek to advance social justice, while practising research with marginalised or deprived communities, embodies a strong methodological 'fit' with Eadson & Foden's (2014) call to further empirical investigation into how local energy can be understood in the context of regeneration efforts, alongside Gouldson & Millward-Hopkins (2015) call for deeper investigation into the social equity issues surrounding the localisation of energy production and new forms of wealth creation within local economies. Furthermore, it provides a highly complementary methodological connection to advancing the liberal political philosophy underpinning energy justice thought. As energy justice seeks to use the triumvirate of tenets to enhance the prospective functioning of energy systems and transitions across multiple scales, PAR is used as an immersive research method in which researchers strive to improve a social situation or seek social change through research processes. Both share similar goals in that they seek to advance the pursuit of social justice, however, one is action oriented and the other largely theoretically driven, with energy justice only recently engaging with policy-led approaches (Kirsten et al 2017). By bringing together both energy justice theory and PAR's methodological practice, a greater understanding of energy justice issues in the civic energy sector will be sought through employing its traditional techniques - in-depth interviews, focus groups and participant observation.

Being mindful of some of the inherent political biases within this philosophical alignment, the research therefore seeks to adopt a critically 'reflexive' approach, assuming awareness of one's 'positionality' and understanding how reflexivity demonstrates *'attention to how power and bias come to bear during all phases of the research'*, while acknowledging that *'the social justice imperative of many qualitative projects is a driver of reflexivity, as are critical and power-sensitive theoretical traditions'* (Leavy 2014 p.5), such as energy justice. Thus, PAR, a reflexive approach and energy justice are combined within this thesis to form a cohesive methodological whole that share broadly similar values, ethics and goals that mutually reinforce one another.

Further underpinning this philosophical alignment is an adherence to the epistemological value of the interpretive paradigm, which stresses the highly contextual nature of knowledge construction. The interpretive paradigm, in contrast to the positivist one, represents many of the traditional methodological, ontological and epistemological distinctions between quantitative and qualitative research. At its core, the interpretive paradigm asserts that humans have subjective understandings of

reality and therefore, there can be a variety of perspectives on reality amongst different qualitative research participants and indeed, a difference of perspective among the researchers conducting the research themselves (Hennink et al 2011; Leavy 2014). As such, intepretivism:

'Questions the notion that research is truly value-free, and that researchers have no influence on data collection or interpretation […] and acknowledges that the background and values of a researcher do influence the creation of research data' (Hennink et al 2011 p.15).

As has been previously addressed, there are clear normative preferences within this thesis that relate to ideas around more just energy systems and transitions stemming from the energy justice literature, with the triumvirate of tenets at its heart. These inherent epistemological limitations stemming from the use of PAR largely restrains the research to relevancy concerning Bristol and the dynamics of its local landscape and civic energy sector. It should be noted, however, that this doesn't entirely negate its relevance for other localities in the UK and for advancing analyses of organisational structures, particularly within England. As noted in Chapter 2's conclusion, an objectivist approach to applying the three tenets will be used when critically analysing and evaluating different organisational structures. However, the merits of this analysis are clearly restricted to the UK legal framework where these specific structures can be utilised.

Despite these restrictions, this limitation fits neatly with one of the key research objectives; namely, to unpack how energy justice is understood from 'below' or the generation of new 'bottom-up' perspectives, at the local level, and to then contribute this perspective to the energy justice field more broadly. Indeed, the critical analysis of Bristol's civic energy sector is seen as a means to generate understanding of how energy justice can be realised at the local level, whilst also contributing further to bottom-up perspectives on energy justice. Given this contextual nature, the research will centre on examining how Bristol as a city and locality negotiates and deliberates energy justice from the 'bottom-up', diving deep into the tensions and inequalities within and between communities, rather than exploring its connections to global or national energy systems and supply chains, as seen in the 'whole systems approach' and notions of energy *system* justice. Indeed, it could be argued that such an approach would also require a very different set of methodological tools. Therefore, given the 'local' scale upon which the research's fieldwork is limited to, the use of PAR is intended to both forward the energy justice research agenda within Bristol *and* harness energy justice's analytical and critical power to provide insight into Bristol's civic energy sector dynamics.

Despite these *empirical* research impact limitations, the research also acknowledges the *theoretical* relevance of top-down and bottom-up interactions, as seen in the role of 'niche innovations' in the MLP and the critical support of either national, regional or local policy framework's (or a combination of them) for the general success of Grassroots Innovations. Indeed, both the external and internal influences on energy justice at the local level will not be disregarded. However, the thesis

also helps to contribute towards opening up a new *theoretical* research agenda that begins to explore dynamic interactions between bottom-up transition theories / approaches / pathways and energy justice. This use of PAR therefore also contributes original empirical data to support the expansion of this theoretical research agenda.

3.2.3 Using PAR: levels of participation and core methods

The use of a PAR methodology for data collection openly reveals the normative assumptions and biases within this thesis, namely; that a greater presence and understanding of energy justice principles and concepts will shed light on critical social equity issues around transition processes in Bristol's civic energy sector. Thus, one of the core aims of this participatory approach is to spread awareness of the three tenets of energy justice. This categorises the methodological work as aiming to both 'document' and 'critique' various activities within Bristol's civic energy sector, whilst aiming to 'advise' understandings of the social impacts of organisational structures from an energy justice perspective (Leavy 2014 p.724; Hiteva & Sovacool 2017).

These normative assumptions, using the theoretical framework of energy justice guided by the triumvirate of tenets, will be put to test in the field. Indeed, the intention to use a self-critical and reflexive approach is not only useful methodologically, but more importantly, will aid in advancing original knowledge construction in the field of energy justice. This process of knowledge construction is further affected by the degree to which researchers maintain a certain distance from researched communities or fully participate in associated research activities and events led by key organisations, varying from *passive*, *functional* and *interactive* levels of participation (Kindon et al 2007 p.16). As such, there are different levels of participation within the PAR research process that are dependent on the researcher's goals. Indeed, PAR emphasises the *need* to become integrated with the study community during the research process;

'Whereas traditional scientific research has emphasised the need for social distance between the researcher and the researched in order to protect objectivity, PAR embraces 'connectedness' between the researcher and researched' (Franklin & Blyton 2013 p.85-86)

However, through living and working in Bristol and having frequent access to relevant energy networks, there is the possibility of getting close to 'going native' (Leavy 2014) and engaging more with the *interactive* level of participation throughout fieldwork. In response to this, Kindon et al (2007) address the need to strive to maintain a healthy distance from the research community at hand:

'Several researchers talk about the dangers of a friendly facade (..) and manipulating friendships (…) but at the same time, there are those who argue that maintaining distance can also be perceived as being aloof and actually reinforces the hierarchical relationship between researcher and researched' (Kindon et al 2007 p.77)

Therefore, the level of participation sought during fieldwork will move between *'functional'* and *'interactive'*, in order to maintain a certain professional distance from the research participants in the interests of the research outcomes, allowing for critical analysis and insight to be generated where necessary. This to ensure that no conflicts of interest within the research process conflict with the core research objectives, whilst also seeking to ensure researcher independence where possible. Additionally, familiarity and trust is sought amongst Bristol's civic energy sector communities, so a *'passive'* level of participation is considered ineffective to achieve this aim. Where necessary, suitable and indeed mutually beneficial, an *'interactive'* level of participation will be utilised, so long at is does not compromise the overall goals and research objectives mentioned above and in chapters one and two. Thus, according to this 'participation continuum' (Kindon et al 2007), the level of participation will dynamically fluctuate between *'functional'* and *'interactive'* in order to effectively meet the core research objectives and aims of the thesis. Indeed, this also lends itself to the reflexive approach to data collection that is necessary within the process of knowledge construction within this thesis. Finally, the original contributions to knowledge and data collection within this thesis are underpinned by the three aforementioned qualitative techniques within PAR outlined above; in-depth interviews, focus groups and participant observation.

Participant observation stems from the broad remit of ethnographic research methods and the long-practiced use of 'observation' by researchers to collect qualitative data in a variety of disciplines, featuring prominently in fields such as anthropology (Dewalt & Dewalt 2002) and geography (Hoggart et al 2002). Where the observation will become participatory within this thesis, will be in notifying actors and organisations of the process of observatory data collection as a *participant,* rather than a *passive* observer (Kindon et al 2007). Therefore, participant observation will be used firstly as a means to gain familiarity with the civic energy communities in Bristol, and secondly to record key discussions and occurrences at events in and around Bristol. Drawing on the insights of Kawulich (2005), it is therefore useful to note that:

'The process of conducting this type of field work involves gaining entry into the community, selecting [...] key informants, participating in as many different activities as are allowable by the community members, clarifying one's findings through […] formal interviews, and informal conversations, and keeping organized, structured field notes' (Kawulich 2005 p.28)

Given the confined temporal and chronological nature of the process of participant observation, and reiterating earlier points on the process of data collection itself; the data collection is intended to be both an iterative and dynamic process. Thus, the participant observation will be used to support in-depth interviews and focus groups, whilst continuing and sitting alongside the use of both techniques to generate further exposure to the civic energy community and enhance the ability to exploit fruitful

research avenues and opportunities. This complementary relationship between the three PAR techniques is crucial, and in addition, enhances the validity of the data captured, particularly as:

'Participant observation be used as a way to increase the validity of the study, as observations may help the researcher have a better understanding of the context and phenomenon under study. Validity is stronger with the use of additional strategies used with observation, such as interviewing' (Kawulich 2005 p.4-5)

This leads to the use of in-depth interviews, the core method for data collection in this thesis. As one of the most insightful and commonly used research methods within the broad remit of qualitative methods used in the social sciences, the choice to use in-depth semi-structured interviews for this PhD is multifaceted. Firstly, it is necessary to utilise this intensive method in order to effectively explore the complexity and depth behind key actor's decisions to adopt certain organisational types and explore their core motivations for different civic energy projects and initiatives. In particular, in-depth interviews are necessary;

'When research seeks to unravel complicated relationships or slowly evolving events. This approach is warranted whenever depth is required. Conducted sensitively, intensive interviews can facilitate the explanation of events and experiences in their complexity' (Hoggart et al 2002 p.205-206)

By allowing time for sufficient explanation of key actor's motivations to use different organisational structures, the in-depth interviews will expand the scope for detailed comparative analysis between organisational structures, alongside expanding out discussion to consideration of the energy justice framework used within this thesis, revolving around the three core tenets. Secondly, drawing on the strength of correspondence to these tenets within the context of in-depth interviews, it is anticipated that this research technique will be incredibly useful in revealing the extent to which these organisational structures allow for a strong or weak relationship to the different dimensions/tenets of energy justice. This use of in-depth interviews with various actors within the civic energy sector will, therefore, form the core means of data collection used.

Lastly, focus groups will be used to extend the process of data collection away from a one-to-one setting for interviews to a group setting for discussion, allowing for a different set of dynamics to reveal a different set of data from research participants; essentially stemming from the dynamics of group discussion rather than an intensive interview, a core feature of focus groups (Stewart & Shamdasani 2014). This will also diversify and expand the types of data collected in the thesis, in order to provide a thorough and rounded set of data on activities within Bristol's civic energy sector and to ensure that the three core methods of PAR are deployed. Thus, it is important to note that:

'A primary difference between focus group research and other types of research, such as [...] individual interviews […] is that data collection occurs in, and is facilitated by, a group setting […] the usefulness and validity of focus group data are affected by the extent to which participants feel comfortable about openly communicating their ideas, views, or opinions' (Stewart & Shamdasani 2014 p.17)

Indeed, critical analysis of power dynamics within focus groups shows that often, researchers have the ability to dominate the group and negatively impact upon group dynamics. Indeed, Kindon et al (2007) note that:

'In focus groups, researchers aim to facilitate discussion, but often end up the centre of attention as they manage a series of solo oral contributions […] the balance of control, knowledge production and analysis shifts in their favour' (Kindon et al 2007 p.109)

In order to mitigate against any possible shift towards a negative balance of power within a focus group, it is important therefore for researchers to see themselves as 'facilitators' and 'discussion guides' rather than the dominant figure of authority within a focus group, giving sufficient space and time for participants to discuss their thoughts freely and openly. Indeed, one of the key roles of a researcher here is to ensure that participants feel comfortable enough to engage in critical and sensitive discussion without judgement (Stewart & Shamdasani 2014). This level of comfort and openness will be achieved by the use of a both a functional and interactive level of participation with associated organisations and actors in Bristol's civic energy sector, with the intention of gaining familiarity with potential focus group participants beforehand. In concluding this subsection before turning to an overview of the thematic analysis of data and case study design, it is vital to return to and acknowledge the roots of PAR's suitability for this thesis, and to consider Kindon at al's (2007) impassioned assertion of the immense potential of PAR's ability to contribute towards positive and progressive social change. As such, the PAR research process is seen as key to prioritising:

'Local community concerns, the immediate social and natural environments in which they are located, and ground up processes […] PAR can help to unpick the hierarchical scaling of events, things and processes, conceptually, practically and politically [...] it can help participants to re-engage with wider structures and processes of inequality to effect change […] and alter spaces of empowerment and action, when it contributes to policy […] transformation' (Kindon et al 2007 p.50)

Thus, the three methods that have been reviewed here should be seen as methodological tools that assist in generating a bottom-up perspective on energy justice within this thesis and supporting the philosophical alignment of energy justice and PAR in practice. In addition, it is hoped that at least some of the potential of a PAR approach will help contribute towards the kinds of positive social and

political changes as so eloquently outlined by Kindon et al (2007). The next section turns to a review of the data collection results during 2015 – 2017, before providing an overview of the thematic analysis of data and case study design.

3.3 Data collection results & analysis

This section will give an overview of the fieldwork and data collection stages of the thesis, in which all primary data was obtained. Section 3.3.1 looks first at the duration of the fieldwork and size of the qualitative data sample collected, then goes on to explore researcher reflexivity in the data collection process, demonstrating a shift in focus from 'community' energy to 'civic' energy more widely. Section 4.2 then turns to a summary of the participant observation phase, detailing the 9 core events which provided the foundation for further networking opportunities and exposure to the energy communities of Bristol, alongside securing many of the subsequent interviews and informing the case studies of the thesis. Each event is also given their own identifier. Section 4.3, focusing on the in-depth interviews and focus group, outlines the different phases of data collection from 1-4, providing examples of; the range of questions asked to interview participants in the semi-structured in-depth interviews; an overview of the information and tools used to organise the focus group with the collaborative assistance of BEN, and, the leaflets used to organise further focus groups and interviews, in particular the interviews with Lockleaze residents in phase 4 of the data collection. Finally, the section finishes with an explanation and overview of the identification system for representing all primary data in the remaining chapters, whilst also outlining the identification systems for different case studies. It then gives an overview of a case study approach for presenting the majority of the qualitative data. Both work together to represent a complete identification system for chapters 5, 6 and 7 of the thesis and all sections therein.

3.3.1 Fieldwork overview and sample size

After deciding to use the three methods of PAR to collect data for the thesis, the fieldwork took place over a 24-month period from the 25.02.2015 to the 27.06.2017. This facilitated the use of in-depth interviews (n=31) from 2015 – 2017 and a focus group (n=7) in 2016 to gather primary data, while the use of participant observation spanned the first 12 months, feeding into a dynamic, iterative process of data collection. Indeed, during this fieldwork stage, revising the literature review and consistently increasing the amount of data collected led to a 'reflexive process' (Leavy 2014) of shifting the core focus from 'community' models of solar PV deployment to the 'civic' energy sector more widely, as alluded to in chapters 1 and 3. This enabled the research to expand its focus on a broader range of organisational structures and local and bottom-up activities within the city, and to factor in previously unknown and little considered actors in the civic energy sector, such as the energy activist organisation RADE, discussed in depth in section 6.3, and the new municipal energy company

'Bristol Energy', explored in greater detail in chapters 5 and 6. It also allowed for the research to apply the three core tenets of energy justice to a wider variety of actors and innovative grassroots innovations within bottom-up transition pathways, such as the *Thousand Flowers* pathway, and to explore, alongside local government actors and community co-operatives, the role of comparatively under researched organisations, such as networking and intermediary organisations.

As a result of this intended expansion, the length of data collection took longer than originally anticipated; the aim was to collect all data within a 24-month period at most, to fit the requirements of PhD completion within the outlined 4 year period. However, in order to acquire sufficient data, or an *above average sample* for qualitative PhD studies as outlined by Mason (2010), the data collection period had to be extended. This extended period of data collection was down to two important reasons. Firstly, due to not being a 'born and raised' Bristol resident and not having familiarity with any of the 'energy community' in Bristol, it took some time to become familiar with various actors, institutions and networks within the city and to establish myself as a trusted and recognisable researcher. In other words, to reach the right level of 'embeddedness' to facilitate a 'functional' form of participation within *and* with the desired community required for PAR (Kindon et al 2007). Secondly, in order to obtain the appropriate sample size and a representative sample of different organisational structures, it was necessary to continue the data collection until the required number of research participants and sufficient variety of legal structures had been met. Following the guidance of Mason (2010) on reaching research saturation and both Mason (2010) and Baker et al (2012) on appropriate qualitative sample sizes in PhD research, the aim was to ensure that between 35 – 40 research participants in total were present within the thesis, with the majority of those participants coming from Bristol city. By mid-2017, this objective was successfully achieved, with the final sample being above the mean sample size of 31 participants in qualitative PhD studies (Mason 2010).

In total, 38 individual participants signed consent forms, read over information sheets and participated in the data collection for the thesis. 31 of these research participants were from Bristol or from organisations based in Bristol. The focus group consisted of 7 participants, while the in-depth interviews made up the remaining 31 participants. In addition, over the 24 month data collection period, over 20 events were attended throughout Bristol and the UK, of which 9 events formed a part of the *recorded* participant observation process. All of these recorded events were in the South West of England, with 1 event taking place in Exeter and the remaining 8 taking place in Bristol. The next section provides a summary of this participant observation phase, before going on to explore the in-depth interviews and focus group conducted throughout phases 1-4 .

3.3.2 Summary of participant observation phase

Whilst seeking to integrate myself into the civic energy community of Bristol during the data collection phase from 2015 – 2017, I attended numerous events, seminars and meetings focused on the civic energy sector and local energy economy in Bristol and the U.K. As explained in section 4.1, the majority of these took place in Bristol. During these events, multiple actors and organisations within Bristol's civic energy network attended, and through consistent exposure to various organisations activities and persistent networking, many contacts were established and links to different organisations within Bristol's local energy economy materialised. During this phase of data collection, written field notes were used to record all of the key information at the events that influenced and informed the selection of PhD case studies, rather than audio recordings or more formal interviews after events. This is because field notes are:

'The primary way of capturing the data that is collected from participant observations. Notes taken to capture this data include records of what is observed, including informal conversations with participants […] notes provide an accurate description of what is observed and are the product of the observation process' (Kawulich 2005 p.21)

Before each of the recorded (written notes) events took place, I engaged the relevant individuals to ask for verbal consent to make notes for my PhD research, or where necessary, approached individuals for further conversation to clarify some of my field notes. I explained that all notes regarding any participants will ensure individual anonymity if used within the thesis. As alluded to by Kawulich (2005), such informal interactions during the process of participant observation are very common, and are often used to engage relevant communities and actors before participant observation takes place.

Thus, through a series of recorded field-notes over a 12-month period spanning from the 25.02.2015 to the 03.02.2016, nine key events emerged as core periods of participant observation. During this period I attended numerous events, exceeding 20+. During other events that were attended, field notes were not taken and informal, verbal consent was not gained, so they could not be considered as part of the participant observation phase, instead, they contributed to the overall networking process and also increased my exposure and familiarity to the energy communities of Bristol. Thus, some events were solely learning or networking opportunities, while others acted as springboards for further interest in an organisations activities or plans. In support of integrating myself into the civic energy community, however, these nine events, presented in a table below, were the most important and relevant to the contents of the thesis.

Event Title & Identifier (E1-9)	Organisation	Date	Online link/Organisation web
'Open networking event- Green Capital' **E1**	Bristol Energy Network	**25.02.2015**	http://bristolenergynetwork.org/event/bristol-energy-network-open-meeting-2015-green-capital/
'Engaging with Communities' **E2**	Bristol Energy Network	**22.06.2015**	http://bristolenergynetwork.org/event/engaging-communities-energy-issues/
'Energy and Communities' **E3**	Exeter University	**02.07.2015**	http://rkt.cmail1.com/t/ViewEmail/r/D12D72350ECBFCF52540EF23F30FEDED
'Social Innovation in Community Energy' **E4**	Bristol Energy Network	**30.07.2015**	http://bristolenergynetwork.org/event/social-innovation-community-energy/
'Planning group meeting' **E5**	Ambition Lawrence Weston	**26.11.2015**	N/A https://www.ambitionlw.org/
'Planning group meeting' **E6**	Ambition Lawrence Weston	**28.01.2016**	N/A https://www.ambitionlw.org/
'New Community Energy Models' **E7**	Regen SouthWest	**02.02.2016**	N/A https://www.regen.co.uk/
'Open Meeting' **E8**	Bristol Energy Network	**03.02.2016**	http://bristolenergynetwork.org/event/bristol-energy-network-event/

Table 1 – Summary of nine core participant observation events & identifiers

Whilst each event has been given its own identifier, ranging from E1 to E9, not all of the events identifiers will appear throughout chapters 5, 6 and 7 of the thesis. As alluded to earlier in this section, all events were useful and contributed either directly or indirectly to the data collection process in this thesis, however, two events in particular stand out; E3 and E4. E3 contained significant discussion of different organisational structures in local and community energy, and heated debates around how these structures impact on local communities and wider society. While the focus on organisational structure had already been established in 2014 within the early stages of the literature review, E3 was a springboard for some of the interviews that followed in phase 1, offering the opportunity to connect with policymakers and experts in the community energy field. Finally, E4 appears in the *'Proximities of energy justice'* case study in section 5.3, as much of the debate, discussion and networking that followed fed into the data collection process for this case study. E4 also influenced the subsequent attendance of E5 and E6, and contributed further to establishing connections and securing in-depth interviews in phase 2 of data collection. The next section explores phases 1-4 in more detail.

3.3.3 In-depth interviews and the BEN focus group: summary of phases 1 – 4

This section contains a brief overview of the four different phases of data collection using two techniques from the PAR tradition; in-depth interviews and focus groups. Taking each phase of data collection separately, this section will present the questions used in the semi-structured interviews and in the focus group. It will also provide snapshots of the leaflets used to gain the consent for interviews in phase 4, and provide images, text and information used to help organise the focus group in phase 3.

It also addresses both the successes and failures of the data collection phase, acknowledging that not all communities or actors were willing to be involved in research on energy and social justice. While, as addressed in the opening overview section concerning sample size, a successful sample of 38 participants was obtained, it is important to note these successes and failures, as these will also be addressed in the 'limitations of the study' section in the concluding sections of the thesis.

Phase 1 – In-depth interviews with UK community energy experts (2015 – 2016)

The purpose of the first phase of fieldwork was to reduce the complexity inherent in analysing organisational types and outline the prominent organisational forms within the community energy sector in England. More specifically, the focus was on legal structures most often used to facilitate community-led deployment of solar PV projects in England, at both micro and meso scales. This first phase consisted of conducting in-depth semi-structured interviews with 8 community energy specialists in a variety of fields, sectors and roles. These fields included finance, policy, law and research and roles included practitioners, directors, a lawyer and public and private community energy specialists. The interviews all varied in length, lasting between 40 to 80 minutes. All interviews were either conducted in person or via telephone and were recorded and fully transcribed. Seen below are the set of questions used to guide the interviews. As noted in the methodology chapter, these were all semi-structured interviews; questions were designed to allow deviation from the topics at hand from both the researcher and research participants, in order to allow participants to speak freely about their specialism and interests.

Phase 1 – Semi-structured interview questions

1. **Given the recent outcome of the general election, what is the future of community energy in England? (not devolved administrations)**
2. **Thinking about the main organisational models within the community energy sector, please can you describe your knowledge of the different organisational types?**
3. **Which of these do you feel will become more prominent or share a greater proportion of the community energy mix in England? Why?**
4. **Do you see any 'social justice' concerns embedded within any of these models? (If not) What impact will these models have on social equity – or who in society will be most able to 'capture the value' from community energy projects? Why?**

Figure 12 – Phase 1 semi-structured interview questions: 2015 – 2016.

As can be seen from the structure of the questions, the first was to assess the political impact of the new conservative government on the community energy sector. Then the two core questions looked at

establishing participant's knowledge around different organisational models and their impressions of what models may come to dominate the community energy landscape. The final question was intended to open up the interview to questions of social justice, in order to ascertain participants own personal understandings if the potential social impacts of the models they had just described. This final question opens up nicely for the phase 2 questions which present and explore energy justice theory in more explicit detail.

Phase 2 – In-depth interviews with civic energy actors in Bristol (2015 – 2017)

As discussed in the opening paragraphs of this chapter, and building on opportunities presented in the participant observation phase, this phase sought to focus exclusively on Bristol based or associated organisations and actors within the civic energy sector. Excluding the 1 participant in phase 1, the 7 participants featured within the focus group in phase 3 and the 5 participants in phase 4 from Bristol - this phase consists of a total of 18 participants. All of these participants are from the organisations featured in Table 3 in Section 3.3.4 establishing identifiers for phase 2 participants.

Following on from the themes and questions in phase 1, the interview questions were designed to engage participants in conversations around their organisational structures and legal models, before going on to questions concerning how these models relate to the three core tenets of energy justice. Below is the list of interview questions used to facilitate discussion throughout the semi-structured interviews in phase 2:

Phase 2 Interview questions

1. Please can you describe the legal model that you have used to form your organisation and the reasons behind why you chose this model? *(CIC, BenCom, Co-op, Joint venture – tax relief, FIT and cost of solar etc)*

2. Do you think that the legal type that you use is a reflection of your organisations values? Or do you feel that the directors/founders of your group determine organisational values? What is the relationship between the two? *(What is the balance between agency and structure in relation to core organisational values)*

3. 'Energy justice' is the main analytical framework within my research - how do you think your model factors in the three core tenets of energy justice? *(Explanation may be required)*
    a. Distributive justice . . . .
    b. Procedural justice . . . .
    c. Justice as recognition . . . .

4. Which of these tenets do you feel is most lacking with regards to your model, why? What, if anything, would you like to see change within your model?

5. How important are intermediaries, such as CSE, and networking organisations, such as BEN, in shaping or influencing your goals and project agendas? *(The role of intermediaries and networks in relation to CE projects)*

6. How important are external organisations, such as networks, intermediaries, the city council and national government, in establishing an agenda for energy justice within Bristol's community energy sector? What role can other actors and CE groups, such as yours, play in this?

Figure 13 – Phase 2 semi-structured interview questions 2015 – 2017

After the first two questions address the organisational structure used and how much the participant's feel that this structure is a reflection of their values, questions 3 and 4 introduce energy justice and relate energy justice back to the participants model in question. As mentioned earlier in this chapter, the data collection process was iterative and dynamic, allowing for reflection upon the relevance of certain questions and approaches. As is evident, questions 5 and 6 move the discussion forward onto the role of networks and intermediaries in relation both the organisation under question and to energy justice itself. As will be seen throughout the remaining chapters of the thesis, these questions were vital in revealing a crucially under-explored area of local energy justice, with the role of intermediaries in facilitating energy justice explored in much more depth in section 6.4. The next section explore both failure and success in striving for data collection through the use of focus groups with relevant civic energy actors in Bristol, building on both the participant observation phase and the deepening of links with relevant actors in phase 2 of data collection.

Phase 3 – Focus groups with civic energy actors in Bristol (2016)

The purpose of this phase was twofold; to explore a new method of data collection within the PAR tradition and to also 'open-up' the process of data collection to a new set of actors involved in BEN's activities. It is important to mention that a total of three focus groups were planned; one through BEN

discussing energy justice with civic energy actors; one with members of Ambition Lawrence Weston (ALW) and another with shareholders of Low-Carbon Gordano (LCG). Unfortunately, the latter two did not occur due to a lack of response from any willing participants.

With regards to facilitating a focus group discussion with members of ALW, it was necessary to first gain the trust and recognition of various members of ALW, which was done through attending numerous planning group meetings, such as events E5 and E6 featured in the participant observation phase. Once a recognisable figure, the leaflet below was handed out in two rounds at two separate meetings; the first round received no response as potential participants felt there was nothing to be gained from the focus group. After the addition of an incentive of 20 Bristol pounds, as seen in the leaflet below, unfortunately no further interest was gained.

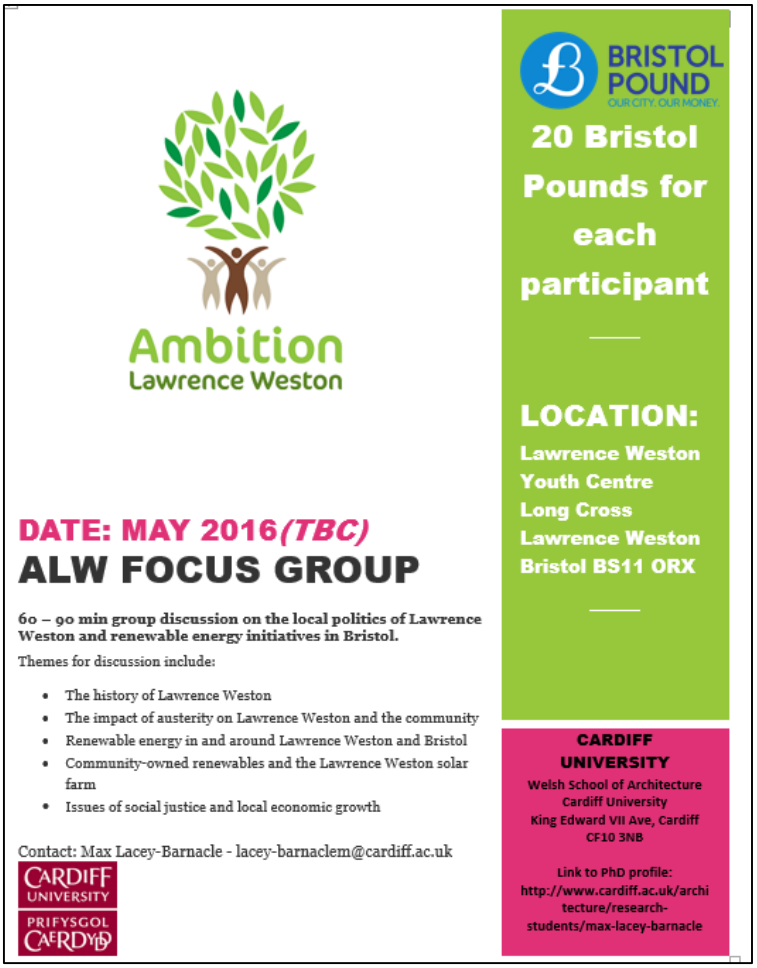

Figure 14 – Ambition Lawrence Weston Focus group leaflet

Additionally, after being granted a space on LCG's monthly e-newsletter to advertise a focus group session with shareholders, unfortunately no responses were received. This was all done via email and despite the support of the LCG directors, a focus group didn't take place.

Seeing the difficulties of organising a focus group alone, Bristol Energy Network (BEN) were approached, after familiarity had been gained in events E1, E2, E4 and E8, to see if they would be interested in organising a collaborative event which featured a focus group discussing energy justice. Through the generous help of different individuals within BEN, they offered to split an event into two; the first half would feature my focus group, while the second half would feature a funding support session for community energy groups and other organisations interested in the Bristol Community Energy Fund. Seen below is a snapshot of the event invite:

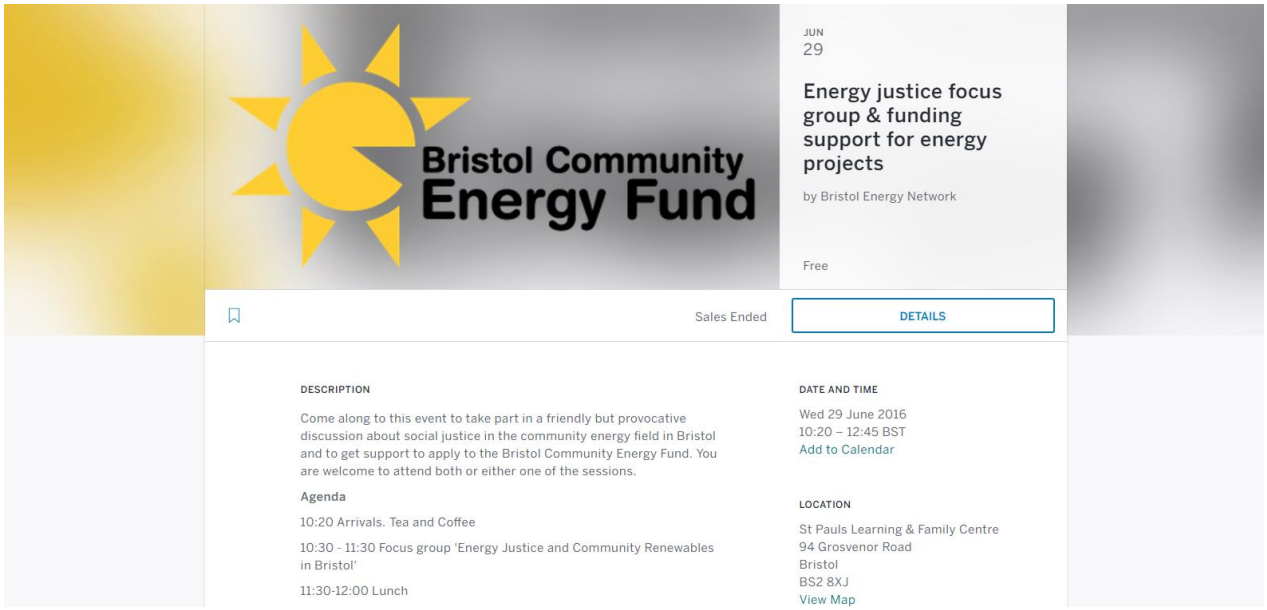

Figure 15 – Screenshot from the collaborative BEN Focus group invite. June 2016.

In addition to this screenshot, below is the text provided to all willing participants of the focus group, outlining the preliminary information provided before participants read over the information sheets and signed consent forms.

'Focus Group: 'Energy Justice and Community Renewables in Bristol'

*We would like to invite you to be part of a 60-90 minute focus group session concerning issues of social justice in community energy in Bristol. The discussion will aim to be both friendly and provocative and will be mediated by ********* of Bristol Energy Network and a PhD researcher who is looking at energy justice in Bristol. Energy justice is an exciting new research field that has gained prominence in the past 4 years and has practical applications in critically analysing energy systems and contributing towards making energy systems more 'just'. It revolves around three different concepts: distributive justice, procedural justice and recognition justice. When applied to community energy, these concepts relate to the economic distribution of costs and assets, involvement in decision-making and the recognition of socially excluded groups in the context of the growing deployment of 'environmental goods' in Bristol, such as renewable energy and energy efficiency schemes. While the value presented by these schemes has often been captured by a well-meaning, white and middle-class demographic, many directors of community energy initiatives also seek to address issues of social justice in a variety of ways. These issues present a series of substantial challenges in a highly diverse, multicultural and increasingly unequal city like Bristol during a time of austerity. We would also like to discuss the role of intermediary organisations, such as the Bristol Energy Network, Bristol City Council and the Centre for Sustainable Energy, in mediating multiple energy justice claims across the city. This will inevitably invite participants to express their views on the broader topics of the politics and geography of Bristol and how this relates to the many social issues present within Bristol's highly active community energy sector. We also invite all participants to express their own areas of concern and topics they feel are important in deepening the links between social justice and environmental /energy justice more broadly. This focus group forms part of Max Lacey-Barnacle's PhD research. A short description of his research can be found here: http://sites.cardiff.ac.uk/architecture/research-student/max-lacey-barnacle'*

Figure 16 – Text from the focus group invite

This information features many of the topics and issues that were discussed during the focus group, which was intended to be semi-structured around prominent themes within the PhD, but flexible enough to incorporate many of the participants own experiences, organisations and viewpoints.

After the focus group had finished and had been transcribed, RADE were contacted to talk about the possibility of a future interview in late 2016. Given the vibrancy and liveliness of the discussion within the focus group, alongside the original material that had been discussed, the focus group set the stage for further in-depth interviews, counted under phase 2, that would inform the RADE case study in chapter 6, section 6.3. Lastly, phase 4 looks at the in-depth interviews conducted with Lockleaze householders that were part of Bristol Power Co-operatives solar scheme.

Phase 4 – In-depth interviews with Lockleaze householders

Building on the networking opportunities presented in events E1 and E2, and following on from the in-depth interviews with various Bristol based actors in phase 2**,** interviews with the Bristol Power Co-operative (BPC) led to further interest in their activities across Bristol. Knowing that BPC had previously implemented solar PV on rooftops in Lockleaze, North Bristol, one of the directors was contacted for relevant householder information after the in-depth interviews had taken place in phase 2. In this request, it was made clear that in-depth interviews would be conducted with the Lockleaze households if possible. The director kindly emailed over a spreadsheet with the addresses of all of the householders who had solar PV installed on their rooftops. With the consent of the director, a leaflet

was then produced to either hand to the householders or post through the door if no one was present. A copy of this leaflet can be seen in the image below:

Figure 17 - Lockleaze phase leaflet for householders

The spreadsheet sent over by the director of BPC contained information, including addresses, of all 25 households that received solar PV on their rooftops in Lockleaze, as part of the BPC scheme. As is partially clear from the leaflet, the households were visited or a leaflet was placed through their letterbox to request an interview in early August 2016. After all 25 households were visited, 5 individuals in 5 houses consented to being interviewed. Once a date and time was fixed, all participants signed and dated a consent form and read over an information sheet. Each interview lasted roughly 30-40 minutes and were centred on the questions posed above in Figure 17. The next subsection gives an overview of the thematic analysis conducted on the data collected, before exploring and explaining why a case study approach was taken in both the analysis and presentation of the findings.

3.3.4 Thematic data analysis and case study approach: an overview

Once all of the in-depth interviews had been fully transcribed, a broader thematic analysis of the data was conducted. A thematic analysis of the PAR data (participant observation, focus group and in-depth interviews) was used to help make sense of the vast amount of qualitative data gathered over the 24-month period, whilst ensuring an efficient and effective form of data analysis extracted the most out of the data collected in relation to the research questions, assisting the broader goal of contributing towards a local and bottom-up perspective to the energy justice field.

As noted by Vaismoradi et al (2016), researchers have a large degree of flexibility and freedom when deciding on core 'themes' as part of a thematic analysis. Being most familiar with the data collection process and results, researchers align these core themes with their central research questions, aims and objectives. Noting similarities to the analytical process employed in qualitative content analysis, inspiration was drawn from understanding a thematic analysis as consisting of:

'Coding, collecting codes under potential subthemes or themes, and comparing the emerged coding clusters together and in relation to the entire data set […] The same set of analytical interventions used in qualitative content analysis is applied in thematic analysis' (Vaismoradi et al 2016 p.101)

Taking this analytical process as a rough guideline, core themes were derived from the research questions underpinning the thesis, as well as prominent themes within the literature review, such as the impact of austerity. Indeed, the 'entire data set' was collected to contribute towards a local and bottom-up perspective on energy justice, with core themes demonstrating strong interconnections underneath this broader research goal and/or objective. As such, the data was analysed and separated out according to its relevance to; (1) the three-tenets (distributional; procedural & recognition justice); (2) organisational structures; (3) the impact of austerity on local communities; (4) local geographical and spatial politics/implications; (5) local networks and intermediaries; and (6) broader social inequalities within and between communities in Bristol, connecting to the fourth and final research question outlined in chapter one. In addition, once this process had been completed, some interconnections were explored between these themes, such as observing the relationship between distributional justice and the impact of austerity, or the relationship between recognition justice and social inequalities within and between different communities. These interconnections are explored further in the case studies.

The selection of these themes during the thematic analysis of the data collected led to clear indications of four different case studies within the large set of qualitative data gathered. Moreover, both the research questions and the data collection techniques used also connected strongly to supporting a case study approach, facilitating a clear way to demonstrate adequate responses to these questions via case studies that flowed naturally from the thematic data analysis.

Thus, upon deeper analysis of the primary data according to shared activities, actors, organisations and geographical locations, the primary data collected clearly demonstrated a wealth of data around *four core case studies in Bristol*. These explicitly focused on; the vital role of intermediaries in and across Bristol, one on two solar projects in the area of Lawrence Weston, one on the role of Bristol Power Co-op in Lockleaze and lastly, one on the role of RADE in relation to energy activism and local energy justice (identifiers are detailed below). Indeed, the presentation of the primary data via four separate case studies proved useful and necessary with regards to answering the core research questions and assisted in-depth critical and evaluative analysis of separate activities within a broadly similar context (Bristol). As such, the nature of the research questions informed both the selection of core themes in the thematic analysis and the resulting decision to employ a case study approach in the presentation and analysis of the findings using the three tenets.

When thinking about how the tenets were introduced in the interviews and how the research unfolded in practice, the three tenets were purposefully introduced into the discussion/questions not as immutable definitions that research participants had to agree to, but rather, flexible tenets that were open to interpretation and intended to allow participants to voice the ways in which they understood and engaged with the tenets, allowing them to use the tenets to shed light on the ways in which *they* could make sense of their project, initiative, community or locality and feed-back the justice implications of these energy activities. This collaborative approach to mutually understanding, engaging with and advancing the three tenets complements the aims and objectives of PAR methodologies more broadly, whilst also allowing for a process of local and community engagement to contribute novel understandings of bottom-up energy justice. Moreover, the use of the three-tenets as a broader analytical framework sitting atop the thesis, meant that both the ‘organisational structures’ chapter (4) and the ‘core case studies’ chapter (5) could demonstrate both analytical, conceptual and narrative consistency, with both chapters using the three tenets to shape, structure and guide the analysis of the data that was organised and separated out during the thematic analysis.

Given that the thematic analysis fed into and supported a case study approach in the research findings chapters, it is important to explain why a case study approach was used. Firstly, given that research questions 2 and 3, as outlined in Chapter 1, relate to specific categorisations, such as ‘organisational structures’ and ‘intermediaries’ and ‘civic energy networks’, it was deemed suitable to separate out the analysis of these different categories - using the three tenets - into separate thematic sections. Thus, to reiterate, the nature of the research questions and thematic analysis, in many ways, led to a natural presentation of the data via the medium of separate case studies (Baxter & Jack 2008; Mills et al 2017). Indeed, this is typical of case study approaches (Baxter & Jack 2008). Furthermore, Mills et al (2017) are explicit about the flexibility of case study research and the ability to harness this approach to support your overriding research objectives:

'The versatility of case study research to accommodate the researcher's philosophical position presents a unique platform […] that can generate greater insights into areas of inquiry. With the capacity to tailor approaches, case study designs can address a wide range of questions that ask why, what, and how of an issue and assist researchers to explore, explain, describe, evaluate, and theorize about complex issues in context' (Mills et al 2017 p.16)

Additionally, core literatures note that case study approaches, which are increasingly common in innovative sustainability and social justice oriented social science research (Franklin & Blyton 2013), allow *'the researcher to explore individuals or organizations, simple through to complex interventions, relationships, communities, or programs'* (Baxter & Jack 2008 p.544) with a targeted approach, guided by a core analytical framework – in this case the three-tenets. Thus, this approach, from a methodological perspective, supported direct engagement with the demands and data needs of the research questions. Secondly, shifting the focus of the thesis from the community energy sector to the civic energy sector more widely also led to the collection of a wider range of data from various different actors and organisations in Bristol. Organising this data meant that a structured, coherent and straightforward approach to the application of the three tenets supported the development of separate case studies as a means of both organisation *and* presentation. Lastly, connecting to an earlier point in this methodology chapter, the call for greater empirical investigation by Eadson & Foden (2014) into understanding local energy deployment in deprived urban areas influenced the decision to shape the research analysis and presentation process around separate case studies in Bristol. Indeed, each case study, in its own way, responds to the specificities of this call and provides ample material to fill this knowledge gap in both community energy and local energy justice research. Furthermore, these case studies also respond to Gouldson & Millward-Hopkins (2015) call for deeper investigation into the social equity issues surrounding the localisation of energy production and new forms of wealth creation *within Bristol's economies*. Thus, each case study has the potential to contribute towards this fundamental knowledge gap and simultaneously address the needs of the underlying research questions.

The final section of this chapter will provide an overview of all organisations and participants present within the thesis, as well as providing them with identifiers for all remaining chapters and the individual case studies.

3.3.5 Coding system – Identifiers for chapters 4, 5 & 6

In order to gain a deeper understanding of the sections on organisational structure, core themes within the PhD and the four core case studies of this thesis, each subsection of section 6 will have its own identification system with its own set of identifiers. This is to assist in the dissemination of research findings through publication in relevant academic journals and books, so as to allow parts of the thesis to have referencing systems that apply only to that specific section of the thesis to enhance their

suitability as a journal article or book chapter respectively. This format for the presentation of data also allows readers the option of engaging with individual sections of the thesis, without having to gain knowledge of a large and complex referencing system for the entire thesis, thereby increasing potential engagement with individual sections of the thesis.

However, the four tables presented below outline all of the research participants in phases 1 - 4 of data collection. This system for the presentation of data is necessary for two reasons. Firstly, this allows consistency across sections 5 and 7 in the referencing system, and secondly, where possible, the references have stayed the same as the individual referencing systems in section 6, so as to enhance consistency in the presentation of data overall. In order for this consistency to be maintained within the presentation of data in sections 5, 6 & 7, organisations within and beyond Bristol will be referred to by their names, however, individual respondents will be anonymised by not referring explicitly to their names, whilst their respective organisation and their position will be referred to. When specifically requested, an individual participant's position has been changed or altered to ensure their anonymity. In addition, an asterisk (*) is also provided underneath the table description to highlight whether the referencing system is the same as any of the subsections within section 6.

Position / Occupation	**Organisation**	**Identifier**
Director	Green Fox Community Energy Co-operative	P1-1
Programmes Manager	Co-Operatives UK (Community Shares)	P1-2
Senior Associate	Financial Conduct Authority	P1-3
Project Manager	Centre for Sustainable Energy	P1-4
Director	Community Energy England / Bath and West Community Energy	P1-5
Researcher	Independent / Self-employed	P1-6
Senior policy and projects officer	Respublica	P1-7
*Government source	Department for Energy and Climate Change	P1-8

Table 2 – Identifiers for Phase 1 & Chapters 4 & 6
*participant asked specifically for their position to be anonymised

Position / Occupation	Organisation	Identifier
Policy and Strategy Manager Renewables and Origination Manager	Bristol Energy	P2-1&2
Chair & Director Director	Low-Carbon Gordano	P2-3&4
Director Co-Director	Bristol Power Co-op	P2-5&6
Chief Executive	Centre for Sustainable Energy	P2-7
Co-founder & Director Director Co-ordinator Community Outreach Officer	Bristol Energy Network	P2-8,9,10 & 11
Senior Manager	Regen SouthWest	P2-12
Director Secretary	Bristol Energy Co-operative	P2-13&14
Development Manager & Resident Member & Resident	Ambition Lawrence Weston	P2-15&16
Director and Co-founder Director and Co-founder	Residents Against Dirty Energy	P2 -17&18
Investment Manager Community Energy Manager	Bristol City Council	P2 – 19&20

Table 3 – Identifiers for Phase 2 & Chapters 4 & 6

Position / Occupation	Organisation	Identifier
Participants 1-7* (See pdf of focus group transcription for more details)	Bristol Energy Network - Focus Group Easton Energy Group, RADE, Community Energy investor, Green party councillor, BEN	FG1-7

Table 4 – Identifiers for Focus Group (Phase 3)
*Please note this is the same identifier system as section 5.4

Position / Occupation	Organisation	Identifier
Lockleaze Resident and Householder*	Recipient of rooftop solar PV from Bristol Power Co-op	LRH1-5

Table 5 – Identifier system for Lockleaze Residents & Householders (Phase 4)
*Please note this is the same referencing system as section 6.3

Chapter 5 - subsections identifier systems

5.1 Intermediating energy justice? The role of intermediary organisations in Bristol

Type of actor	Organisation	Identifiers
Non-profit Intermediaries	Regen Southwest (RSW), Centre for Sustainable Energy (CSE), Bristol Energy Network (BEN)	NP1-6
Local government	Bristol City Council (BCC)	LG1-2
Local energy group	Bristol Energy Co-operative (BEC), Easton Energy Group (EEG), Residents against dirty energy (RADE),	LE1-4
Energy Company	Bristol Energy (BE)	BE1

Table 6 - Identifiers for section 5.1

5.2 Proximities of energy justice: the case of Lawrence Weston

Position / Occupation	Organisation	Identifier
Development Manager & Resident Member & Resident Energy project officer*	Ambition Lawrence Weston	ALW1-3
Chair & Director Director	Low-Carbon Gordano	LCG1-2
Community Energy Manager Investment Programme Manager (Energy)	Bristol City Council	BCC1-2
Director Secretary	Bristol Energy Co-operative	BEC1-2
Co-Director Community Outreach Officer Project Development Officer*	Bristol Energy Network	BEN1-2

Table 7 – Identifiers for section 5.2 *One participant occupied two part-time positions (ALW3)

5.3 Conflicting narratives of energy justice: Bristol Power Co-op and Lockleaze residents

Position / Occupation	Organisation	Identifier
Director Co-Director	Bristol Power Co-op	BPC1 BPC2
Lockleaze Resident and householder	Recipient of rooftop solar PV from Bristol Power Co-op	LRH1-5

Table 8 – Identifiers for section 5.3

5.4 Residents Against Dirty Energy (RADE) and energy activism: new frontiers for energy justice

Position / Occupation	Organisation	Identifier
Director and Co-founder Director and Co-founder	Residents Against Dirty Energy (RADE)	RADE1 RADE2
Participants 1-7	Bristol Energy Network - Focus Group	FG1- FG7

Table 9 – Identifiers for section 5.4

This referencing system allows for different sections of the findings of the thesis to act as independent sections in their own right, however, where possible, consistency has been maintained so as to allow greater clarity in the final concluding section of the thesis, chapter 6.

The next chapter, chapter 4, will address the findings around organisational structures and also discuss some of the core themes that will guide the analysis of the case studies in chapter 5 and also the concluding discussion in chapter 6.

4. RESEARCH FINDINGS: THE ROLE OF ORGANISATIONAL STRUCTURES

4.1 Introduction: the energy justice impacts of civic energy organisational structures

Building on the energy justice research gaps as identified within the critical literature review, very few studies to date have specifically addressed the potential energy justice impacts of different organisational structures in detail. While Hiteva & Sovacool (2017) took a business model perspective on the ability for social innovation to be harnessed by organisations to achieve energy justice, paving the way for one of the first 'organisational model-oriented' studies within the energy justice field, very little has continued to emerge on the energy justice impacts of community and civic energy organisational structures in the UK. This chapter aims to address that knowledge gap and provide original insights into how prominent structures within the civic energy sector impact upon distributional, procedural and recognition justice. Studies focusing on this topic are therefore vital in providing critical and in-depth insights into the inner workings of the organisations at the forefront of local low-carbon transitions and their associated justice implications (Hiteva & Sovacool 2017). Indeed, the community and civic energy structures analysed in this chapter form a key part of many bottom-up and local energy initiatives involving communities, localities and local government. Understanding this allows researchers to further appreciate how this data advances the wider overarching contribution to local perspectives on energy justice in this thesis.

The chapter first begins by addressing what the Phase 1 interview data suggests are the most prominent models for UK community energy and why. Linking up nicely with the analyses of relevant policy reports and grey literatures reviewed in the critical literature review, it addresses the three legal structures most commonly used in the community energy sector; the Co-operative (Co-op), Community Benefit Society (CBS/Bencom) and Community Interest Company (CIC). Understanding that many community and civic energy models are emerging alongside a broader transition towards a low-carbon economy, it is also important to appreciate how certain structures are also contingent upon wider macroeconomic conditions, legislative changes, supportive policy frameworks and indeed, widespread political and societal support. After section 4.2 has 1) identified the most prominent models 2) explored the reasons for the most prominent models emerging and 3) considered the social justice implications of these models, section 4.3 expands analysis to the civic energy sector through engagement with the much rarer municipal energy model in the UK. Currently, there exists only a handful of established examples of this model in the UK, with 'Robin Hood Energy' in Nottingham (see Hiteva & Sovacool 2017) and 'Bristol Energy'- which is analysed in this thesis - being two notable examples. Section 4.3 uses the three tenets of energy justice to shape the analysis of different organisational structures according to the different models that appeared within phases 1-4, drawing in particular from the in-depth interviews and focus group data found within phases 1-3. This section

teases out critical insights from the first two phases on how different organisational structures relate to the three core tenets in both theory and in practice. As intended, the data contains examples of all of the structures noted above, allowing for the three tenets to neatly frame and structure the analysis of their potential justice impacts.

Crucially, the data presented in this chapter reveals the extent to which many models are interrelated and in certain cases, how different models are used alongside one another. For example, some community energy organisations use the CIC model to take on financial risk, while using a CBS or Co-op model as their core model and governance structure. Others also establish or support the setting up of charities alongside their core model, to manage the donation of surplus revenues. These model overlaps and organisational hybridity are addressed in more detail in a concluding subsection of this chapter. Moreover, these complex overlaps and hybrid structures are shown to support broader overriding goals of realising local and community pathways to low-carbon energy transitions, demonstrating substantial sympathies with creating a civic energy sector in Bristol as explored in chapter 3.

4.2 Prominent organisational structures: CIC's, Co-ops and the CBS

This section will explore the implications of the findings of phase 1 of data collection, looking at how various actors within the UK's local, civic and community energy sectors conceptualised the most prominent legal structures and the reasons underpinning why various niche actors select these structures. It also considers, from the perspectives of the research participants in phase 1, some of the earliest insights into the social justice implications of the growth of the community energy sector and associated organisational structures.

4.2.1 The shifting policy landscape for community energy schemes

As pointed out in Chapter's 1 and 2, the emergence of a supportive legislative and policy framework for community energy, including the introduction of the FIT through the Energy Act 2008 and support for community-oriented legal structures in the Co-operative and Community Benefit Societies Act 2014, facilitated the emergence of models conducive to community-owned renewable energy that could be potentially replicated throughout the UK. As pointed out by a participant from Co-operatives UK, when thinking about this shifting policy landscape:

'*The biggest change by far was the introduction of the FIT. Because it's the first time we've had a clear business model for community energy […] there wasn't a clear and repeatable model for community energy and FIT's created that. That was a massive shift' (P1-6)*

This emergence of the FIT is particularly important for local and community energy schemes, as it enabled communities to form organisations with the confidence of knowing they will be able to

generate revenue and sustain a business model for the lifetime of the FIT, which was guaranteed by legislative fiat for 20 years. This strong connection between the FIT and new organisational structures is further attested to by a government source within DECC:

'If you are going to apply for the Feed-In Tariff or for various government support schemes or other institutional support schemes, then you will need to have a formal organisational structure […] I would say that co-operative societies and the Bencoms and the CIC's are the usual models that you will see' (P1-8)

As the latter part of that statement demonstrates, the DECC source was confident that the CBS, CIC and Co-op structures would emerge alongside the introduction of the FIT to support greater community renewable energy generation in the UK. While community energy, and indeed many grassroots innovations, consist of some more informal models (Seyfang et al 2013), that was not the focus of this phase. Instead, phase 1 sought to investigate the formal legal structures that were capable of generating sustained revenue for local economies and building a lasting contribution to reshaping the energy market. Indeed, building on bottom-up perspectives on energy transitions, it is important to remember here that research on niche models points towards the fact that *'social innovations need not only emerge from grassroots, environmentalist civic participation. They also arise in response to a process of market-based, entrepreneurial financial investment'* (Hatzl et al 2016 p.58). The assertion that the three models that DECC had identified would come to dominate the community energy sector was further supported by the majority of the interviewees, with a project manager from CSE stating:

'The main models that we tend to see, tend to be either CIC's and now the registered societies, previously called the IPS […] Lots of groups refer to themselves as co-ops. In the legal sense, this is more to do with how they are governed […] how they are recognised in the eyes of the law is much more about whether they are a registered society or a company limited by guarantee' (P1-4)

Thus, under the Co-operative and Community Benefit Societies Act 2014, Industrial and Provident Societies then became 'Registered Societies' with the CBS and Co-op being the two main mutuals. While these changes have roots in the 'Co-operative and Community Benefit Society and Credit Union Societies Act 2010', the CBS wasn't officially recognised as an independent legal structure in the form used by community energy schemes until 2014. Despite this relatively late introduction into the UK, many interviewees, when questioned on what model may prevail, noted that due to a shifting tax regime that was favourable to the CBS model, the CBS would come to dominate the community energy landscape. For example, one interviewee stated:

'It depends entirely on which models are allowed, particularly in terms of registration with the FCA and tax relief and the definition of 'community energy' under the FIT regulation, so at the moment it's looking like the CBS model' (P1-6)

The policy reports and associated grey literatures explored in chapter 2 were unable to keep up with the fast pace of the rapidly shifting tax regime which helped incentivise investors and direct community groups to favourable structures. Thus, the interviews assisted in generating insight into how *'a lot of the community owned sector has been making extensive use of the various different tax incentives or tax reliefs – that seems to be a major part of the business model* (P1-3). The data shows that three main tax relief systems were used by these structures to incentivise investor's in the most supportive period of the community energy sector's growth (2010 – 2015). These tax relief systems were; 'SITR' – Social Investment Tax Relief; the 'EIS' – Enterprise Investment Scheme and the 'SEIS' – Seed Enterprise Investment Scheme. All schemes are or were administered by HMRC in order to provide attractive incentives to willing investors in community energy projects, mostly through guaranteeing tax relief to investors who purchased shares in community initiatives or projects through public share offers. While small variations occur between these systems, such as the SITR system favouring social enterprises and charities more exclusively, the basic premise was broadly consistent – to lure in investors through generous and attractive tax reliefs or tax breaks.
For example, when using SITR, individual investors received a 30% tax break on their investment, to support the creation of more social enterprises. Interestingly, this had strong implications for the prevalence of other models. For example, the original set of models conceptualised before conducting phase 1 of interviews consisted of three additional models; the limited company, the charitable model and the joint ownership model. However, as findings within phase 1 made clear, many of the joint ownership models would very often use one of the three aforementioned structures – CIC, CBS or Co-op – to partner up a community or locality with a private sector venture or large-scale project, while the charitable model was considered largely defunct or extremely rare by interviewees. In addition, some scepticism about the CIC model was expressed with regards to the tax system shifting from EIS to SITR:

'You see, a CIC can't get that tax relief, only a CBS can get that tax relief. That is why community energy – or new registrations are going down the CBS line. So your CIC is out and your charity is out […] historically it was co-operatives and now it's switching to CBS and the reason for that happening is the FCA. So that is the structure within England that you have got. You can look at other structures – like the CIC – but they are not relevant. Because they won't be adopted by an organisation because you can't get the tax benefit' (P1-1)

Despite this rejection of the relevance of CIC's, it was important to look at how a CIC operated in practice, particularly as the majority of other interviewees recognised this structure as one of the three main models in the community energy sector. Indeed, the use of CIC's are presented in the conclusion around model overlaps, revealing an interesting overlap of different structures in practice.

Thinking further about the connections between phases 1 and 2, the data captured in phase 2 largely reflects the shifting reality of the community energy sector as attested to by the phase 1 participants, with the CBS structure dominating the majority of organisations purchasing solar PV featured within this thesis. Indeed, this change was already underway in 2015, as a DECC source noted:

'We are starting to see […] more groups are changing their structure from a co-op to a BenCom or are establishing themselves as a BenCom, because you will have those tax relief benefits which are significant for attracting investment' (P1-8)

Thus, the combination of favourable tax regimes, the timing of the FIT and the approval of the Financial Conduct Authority (FCA) for model adoption led interviewees to overwhelmingly come out in favour of the CBS as the model of choice:

'So the model that I think will continue to see a lot of success in the community energy sector will be the CBS with an asset lock, we've seen so much interest in it and growing interest. The reason is, is because it ticks a lot of boxes - people get it, it's quite simplistic and it's done some pretty major things – lots of people use it, lots of people like it and it can get tax relief and can issue share capital to members of the public. It ticks a whole lot of boxes basically' (P1-2)

In addition, other interviewees expressed a strong moral and principled preference for the CBS:

'My preference is for the CBS […] I believe they provide the best balance – in terms of checks and balances – in terms of protections for the community. Whilst also giving you the ability to raise finance for the company […] my preference for the CBS is that, within its objects, you have to focus on benefits to the community and not just benefits to members. I think that's fundamental to the community model' (P1-5)

While others set out to distinguish between the Co-op structure and CBS structure further:

'The main difference between a CBS and a co-op […] is that with a CBS you are primarily set up to serve the community, so therefore instead of paying your shareholders first, you pay your community benefit fund first. You pay your shareholders – or the members – second. That is a big difference between the two' (P1-1)

This contrast between the Co-op model and the CBS is important, as it pertains to the different model rules and governing documents as laid out in relevant governing legislation. Both the interview data, relevant policy reports and supporting legislation suggest that in theory, the Co-op exists to serve its members, while the CBS has a legal mandate to go beyond its members and concern itself with providing some form of benefit to the wider community – both of which have important distributional

justice implications. In practice, however, the models prove more flexible and show a vast amount of crossover, particularly with regards to the democratic governance structure built into them:

'In a lot of ways they are two sides of the same coin – they are all about one member one vote. Co-operatives exist for the benefit of their community as well as the benefit of their members […] although they are primarily for the benefit of their members they also have a wider community benefit tacked on' (P1-2)

In addition, interviewees suggested that any criticism of energy co-operatives as insular or exclusive needed to be approached with caution, and assessed on a case by case by basis, with an independent community energy researcher stating that:

'Even a co-operative society, when compared to a CBS, will have clear social goals and in fact cannot be a co-op unless it has those clear social goals […] for the benefit of members co-ops still do a huge amount of wider social things […] A member's co-op is very different from a private investors club' (P1-6)

While the above statements demonstrate the fast shifting economic and policy landscape for community energy structures as adaptive niche innovations in the energy market, taking advantage of subsidy schemes in the form of the FIT and tax relief schemes in the form of the EIS, SEIS and SITR, there is also an ideological underpinning informing why actors may choose to adopt certain structures. As attested to by P1-5 earlier in this section, certain structures will reflect upon the values and aims of the individuals involved:

'The values of the mutuals – the 'one member one vote' and democratic control – they are providing a return on investment to their members or member investors. All of those things fit quite nicely with what community energy is trying to achieve in many cases, the legal structure fits quite nicely with many values that these groups are trying to embed within their activities' (P1-8)

Thus, connecting to both procedural justice concerns and concerns about a democratic deficit within transition processes as pointed out in the critical literature review (Hendriks 2009), these structures attempt, where possible, to democratise the governance of local low-carbon transitions. Therefore, summarising the core concerns within phase 1, the data shows that the use of these structures aids processes of; decentralising low-carbon energy infrastructures; giving communities greater control and ownership of energy infrastructures, and, localising the economic gains derived from local energy schemes. Interestingly, these concerns go to the heart of how economic organisations relate to communities and vice versa in a context in which a wave of neoliberal privatisation has proliferated across many sectors of the British economy, providing further connections to the final subsection of chapter 2. For example, a lawyer within the Financial Conduct Authority (FCA) saw the legal distinction between *societies* and *companies* as fundamental to their underpinning rationale:

'Societies are formations of people whereas companies are formations of capital. The fundamental concept within co-operatives is that labour controls capital rather than capital controlling labour […] they have always been ideological in the sense that they want to achieve something better, not just for themselves […] They've always wanted to network – to spread that common ownership aspect of it' (P1-3)

Indeed, many of the assertions of the participants in phase 1 expressed sympathy with exploring new structures that would enable community ownership of renewables, in some ways moving beyond the traditional political dichotomy of privatisation and nationalisation and instead favouring a stronger ownership and governance role for *civil society* legal forms. Furthermore, when thinking about these three prominent models, the FCA participant's remark has further salience in light of the fact that CIC's are legally recognised as companies and regulated under the Companies Act 2006. Therefore, it seems that some disparity may exist – in theory - between those actors seeking to use one of the two registered societies and those actors seeking to use a CIC structure, which is more closely aligned with a 'company' structure. The FCA interviewee went further to explore the ideological origins of these structures and their founding purpose:

'Historically, you had companies limited by shares, you had state-owned things and you had charities. Then societies came along […] in a society shareholders denotes membership as a formation of people, in a company shareholdings denotes capital investment and it's a formation of capital. So there is some very fundamental intrinsic differences between a company and a society legal form. Which is why the co-op movement is so attached to it' (P1-3)

Thus, many of the attempts of the community energy sector to employ these structures and to advance the realisation of a *Thousand Flowers* type transition pathway can be connected to the overriding aims of societies and co-operatives – to enable like-minded individuals, communities and localities to share the ownership and governance of assets or an organisation, putting the needs of people before the needs of capital. Indeed, these aims have roots in the fact that '*historically co-ops have been common ownership enterprises' (P1-3).* However, as the above findings have pointed out, this preference for the CBS model within community energy is also largely due to the shifting tax relief system *in favour* of the CBS model, as opposed to an outright moral or ideological rejection of the CIC model by those in the community energy sector, demonstrating the fundamental importance of wider macroeconomic changes for the prevalence of certain organisational structures. While the underlying aims of the co-operative movement and the emergence of societies as supportive legal structures present novel opportunities for community ownership and civil society governance of local low-carbon transitions, many interviewees questioned the social justice implications around widespread engagement in these opportunities in such a divided and unequal society. The next section explores these implications in more detail.

4.2.2 The social justice implications of community energy models

Drawing on the insights of the critical literature review in chapter 2, the use of the prominent organisational structures identified above certainly connects strongly to broader bottom-up perspectives on energy transitions. The use of these structures demonstrates tremendous resonance with the aims of the *Thousand Flowers* transition pathway and the literatures on Grassroots Innovations, as they provide an innovative means through which people can control and engage with local energy infrastructures through achieving direct ownership of them. Indeed, as pointed out by Hargreaves et al (2013), these *grassroots energy innovations* are supported by 'distinct organisational forms'. However, and connecting further with critical literatures on community energy as found in Walker (2008a), Catney et al (2014) and Johnson & Hall (2014), these types of aims and ambitions are largely reserved for those able to purchase shares and invest in the structures mentioned above. This social justice issue is addressed by various interviewees in phase 1, with one participant acknowledging that:

'People that are involved in community energy projects are relatively well-off, with the money to invest. It's not really the 'community' […] it's more broadly the wealthy members of those communities, often retired people who have a lot of time on their hands to manage these things […] What it means for the future of community energy – the models that are likely to be more prominent – it's not going to be the community per se, it will be wealthy members and individuals within those communities' (P1-7)

As pointed out in the earlier parts of this section, this exclusivity is important in light of the temporal dimensions of community energy initiatives, which, according to the lifespan of PV or wind technology and the guarantee of the FIT, will be in existence for the next 15- 20 years depending on their initial operating date. Therefore, the way in which these organisations relate to their localities is crucial for understanding their social impacts going forward.

In light of this fundamental concern, many of the phase 1 participants' views reflected the social equity concerns of the critical literatures on community energy and bottom-up transitions, and, recognised the fundamental problem of inequality and disparity between those who can and cannot engage in community energy projects (Walker 2008; Park 2012; Catney et al 2014; Johnson & Hall 2014; Forman 2017). Indeed, DECC demonstrated acute awareness of these issues:

'A lot of the people involved in community energy are retired, professional, white middle-class, middle-aged […] who have the time and the skills and the capacity to drive these projects forward […] There are undoubtedly equity issues […] economically and socially there is this huge disparity of where you see community energy activity and the types of people and economic capacity of the people that live there' (P1-8)

In addition, CSE raised similar issues and questions towards the end of the interview, echoing the shared thoughts of other interviewees and pointing to the need to diversify community engagement:

'How can community energy can get more people involved from areas that it normally doesn't reach? […] you are talking about deprived areas and getting more ethnic diversity involved in community energy […] if you went across almost every community energy group you would see an obvious stereotype of the type of people that are involved in it based on income and demographics and everything else' (P1-4)

From further analysis of the multiplicity of responses to questions of social justice in phase 1, it was clear that many of the participants felt that the community energy sector was socially divided and that this was certainly a problem that needed to be addressed in order to ensure both wider diffusion of community energy schemes and a broader appeal, moving beyond the 'usual suspects'. In addition, DECC felt that part of the solution to widening access lied in a much stronger role for local government in the community energy sector, picking up on the importance of low levels of social capital in communities being a hindrance to engaging in local energy schemes:

'In the instances where you don't have community champions or you don't have the pre-existing social capital […] I think increasingly there will need to be more of a leadership role with other local authorities, otherwise you will just have little pockets of activity where you have motivated people who have the capacity to do that and have other areas […] where perhaps there isn't the same capacity for people there to take this on. So I think there is a big role for local authorities' (P1-8)

In contrast to the above statements, however, one interviewee from Community Energy England felt that striking a balance between the interests of affluent communities and the needs of low-income communities was important to the continuation and success of local energy schemes:

'Clearly you have to give benefits back to the richer people for their money – you have to give them interest on their investment. But the surplus profits you put into community funds can benefit far wider fields […] I've heard some people say that 'we shouldn't be focusing on the wealthy, just focus on the poor!' you are biting off your nose to spite your face by doing that – we have to do both! But think through these things in a way that enables us to meet multiple objectives' (P1-5)

In addition, a participant from Respublica critically questioned the extent to which a shareholder model, even with a low threshold of minimum investment within public share offers, could appeal to low-income communities without the right levels of interest and engagement:

'I guess it depends on how open they are to membership. Let's just say that the community share offer is quite low and everyone is able to access it but people choose not to. That seems rather different to if it is very expensive and people are restricted from doing so. If they could, but they chose not to, that changes things somewhat I think […] I guess it depends on how much the share offer is' (P1-7)

These above extracts from the interviews demonstrate the complexity of widening access to the community energy sector and indeed, 'opening up' the sector to a greater variety of communities, investors, members and participants in order to aspire to greater levels of social justice.

The findings of phase 1 also point to the inherent necessity of local government action, and as revealed in the subsequent remaining chapters of this thesis drawing upon phases 2-4, other organisations within the civic energy sector such as intermediaries, for assisting efforts to make local energy schemes more just, inclusive and equitable. With many community energy schemes choosing to hold a minimum share offer of £500 for the vast majority of investors, low-income communities are effectively cast out from engagement in the CBS, CIC or Co-op structures, posing vital questions for distributional justice. Indeed, there is also no guarantee of wider engagement if the share offer is lowered to a minimum of £50, as seen in a case study of the energy co-operative 'Repowering' based in London (Bouzarovksi et al 2017).

In addition, the democratisation of local low-carbon transitions will also be preserved for those who can afford to invest in these structures, as share ownership often translates to membership which in turn guarantees voting rights. Therefore, the opportunities for democratic governance by civil society actors, that are indeed opened up by the structures reviewed above, pose the risk of remaining exclusive and stifling any opportunities for procedural justice. There is also the issue of awareness and capacity; even in rare cases where decision-making and voting is opened up to non-members, perhaps through informal consultations or via planning groups, there is no guarantee low-income communities will be aware of the existence of such schemes/processes or able to purchase lower minimum share offers in the rare cases this is offered. Understanding this fundamental inequality between social groups is key to addressing the concerns of recognition justice more broadly, in which some social groups may be overlooked altogether (non-recognition) if recognition justice is not factored into these core considerations. Such considerations also bring forth largely unexplored questions around the geography of community energy models, particularly if social enterprise models are important for *'raising the profile of community businesses as important forms to address market failures in disadvantaged communities'* (Spear et al 2017 p.50). Indeed, such questions connect to reviewed literatures on the inherently geographical nature of low-carbon transitions (Bridge et al 2013) and the integration of spatial justice concerns into energy justice frameworks going forward (Bouzarovksi & Simcock 2017). The *'Proximities of energy justice'* case study in chapter 5 explores these geographical questions more closely, while the application of distributional justice to civic energy models touches upon some new geographical concerns around local low-carbon infrastructures. New mechanisms for addressing the above issues, alongside an exploration of the municipal energy structure, are investigated further in the next section through applying the three tenets of energy justice to emerging civic energy structures, alongside further examination of these pressing issues within two core case studies in the chapter 5 of the thesis.

4.3 Exploring civic energy structures using the three tenets

'Energy justice provides the opportunity to explore where injustices occur, to recognize new sections of society and to develop new processes of avoidance and remediation. It is therefore an agenda that inspires both evaluative accounts and normative solutions' (Jenkins et al 2016 p.180)

While the above section focused more explicitly on the shifting landscape and social justice implications of *community* energy models, this section also features analysis of the municipal energy structure through drawing on the in-depth interviews with Bristol Energy and Bristol City Council (BCC), as well as comments from the focus group participants. Thus, using the three tenets to shape analysis of the different elements of these four structures – the CIC, Co-op, CBS and municipal energy model – this section begins to expand out the research findings to considerations of energy justice within the civic energy sector more broadly. Furthermore, this expansion flows into the remainder of the findings within the thesis, as chapter 5 explores the critical role of networks and intermediary organisations, alongside the little explored role for energy activist organisations within the civic energy sector, as part of expanding the bottom-up contributions to the energy justice field.

First, however, it is vital to consider what insights, core themes and pressing concerns the application of the three tenets to civic energy structures generates, whilst being mindful of the core challenges and injustices the civic energy sector faces, as outlined above. Turning first to issues of distributional justice, the following subsections draw upon data throughout phases 1-3, looking at how different aspects of the four civic energy models interact with the 'triumvirate of tenets' in practice.

4.3.1 Distributional justice in civic energy models

Within the in-depth interviews and focus group conducted, distributional justice was primarily framed through the distribution of the economic benefits and burdens in local energy systems and how this relates to the proliferation of civic energy models. With regards to the CIC, CBS and Co-op models, the interviews explored the ways in which actor's models could realise distributional justice through involvement with local communities via share offers and also beyond the medium of share offers, through a Community Benefit Fund (CBF), which is analysed further here. This is an important feature of the community energy sector more widely, as it allows these new models to foster local community involvement and provide differing forms of community support *alongside* lowering the share offer and attempting to widen the investor demographic. In addition, and indeed connecting to the CBF's, another important feature of the various community models under analysis was present through the existence of an 'asset lock' within prominent legal structures.

In contrast to these *community* model features, distributional justice in relation to Bristol's municipal energy model was framed in relation to critical questions on taxpayer funding, ownership over – or

questions of *'who owns?*' - Bristol Energy, and decisions on the allocation of profits generated from the municipal energy model. Other important themes to emerge under the distributional justice lens concerned the localisation of economic activity and benefits, which the vast majority of participants felt passionately about ensuring, alongside distinguishing between *ownership* and *investment* as a means of potentially advancing and reinterpreting questions of distributional justice. In addition, this prioritising of localisation also manifests itself through the ambitions of certain organisations to create systems of local energy supply, which connect local households to decentralised low-carbon energy generation and potentially offers consumers savings in their energy costs.

All of these themes will be discussed in this subsection, supported by insightful comments from research participants in Bristol and beyond, as other participant's community energy organisations, such as Bath and West Community Energy (BWCE) and Green Fox Co-operative (GFC) in Leicester, were featured in phase 1. These organisations activities strongly relate to the distributional justice themes outlined above, operate within the English civic energy legal and policy framework, and also use the CBS and Co-op model to support their ambitions and aims. These organisations are drawn upon to enhance the breadth of focus on distributional justice issues in local and bottom-up activities in the civic energy sector. Throughout this subsection, the above themes and issues will be explored, before turning to considerations of procedural justice in civic energy models.

4.3.1.1 Asset locks – securing community energy assets

Before exploring participants remarks on CBF's, it is important to first understand the distributional justice implications of the asset lock and the links this provides to more 'generative' forms of economic organisation that are rooted in the social enterprise economy, as explored in chapter 2, section 2.6. (Co-ops UK 2017; Spear et al 2017). The asset lock is an organisational feature of the three prominent structures described earlier in this chapter; the CBS, Co-op and CIC. However, both the CBS and Co-op, as registered societies, can choose whether to have an asset lock in place, while the CIC has a compulsory asset lock in place. In essence, the asset lock is:

'Designed to ensure that the assets of the society (including any profits or other surpluses generated by its activities) are used for the benefit of the community and must be given to another asset locked organisation, usually with similar objectives. Once introduced a society cannot remove an asset lock from its rules' (Co-ops UK 2017 p.49)

Given that this is a core feature of many community energy models, namely, to 'lock assets' into the social enterprise economy, it has important distributional justice implications for the way in which different models assets relate to the wider community and the localities in which they are based. However, these are by no means geographically 'fixed' assets. It is important to note that, upon further interrogation during phases 1 and 2, the interviews revealed that the asset lock has no

decidedly geographical feature; the underlying aim is to ensure that assets created by these models remain within the social enterprise economy more broadly, rather than a specified locality. Therefore assets must sit '*within the same legal framework, not […] the same locality'* (P1-5), once they are legally bound by the terms of an asset lock. This legal obligation is further expanded upon by a Director within BWCE:

'The asset lock prevents you from distributing your reserves out to members or individuals – shareholders […] you couldn't pass those assets on to anything else other than a CBS or something with similar objectives or principles […] the asset lock gives some security that as an organisation you're not going to build all of these community assets and then sell them off to commercial interests' (P1-5)

Importantly, this feature of the prominent models described above is key to the creation of new energy economies that move beyond the dominant corporate ownership model, as outlined in chapter 2, section 2.6. While asset-locked organisations are able to distribute dividends to co-operative shareholders, the asset lock recognises the need to place the interests of communities and community wealth building alongside the needs of private shareholders, as a programme manager from Co-operatives UK illustrates:

'The assets are locked into community benefit and can't be cashed in […] so the whole idea that if there is an appreciation in value, you can't sell it and the members benefit from that – it has to benefit the whole community' ***(P1-2)***

This feature demonstrates a strong resonance with literatures on generative ownership models and highlighting the potentialities of these models to support a more localised, foundational economy. However, more critical analysis of the geographical fluidity of asset locks is required, in order to understand whether asset locks can be locked into 'place' to remain within local communities.

Building on the implications of section 2.6, this move away from the domination of profit maximisation rationales in the energy industry is key to the rationale behind the use of an asset lock in community energy models, as so vividly expressed by a Director of GFC:

'You are not doing it for private profit! So whether you are a co-op or a CBS – you should have a bloody asset lock! Because you do not want somebody to come and take it over for private profit. The whole thing about community energy is that it's not for private profit […] your asset lock […] is so important […] it's really important that other people can't come in, take it over and sell it on for private profit' ***(P1-1)***

Indeed, both of the quoted participants above shared an idea and understanding of the asset lock that was broadly sympathetic to many other participants goals; the prevention of any private purchase of

their energy assets outside of the social enterprise economy, and, the guarantee that the energy assets that community organisations both fund and deploy are secure in the long-term. This demonstrates the degree to which such an organisational feature or component resonates further with notions of generative ownership designs, in which long-term stability and sustainability are factored into model rules and legal structures going forward.

As many of the statements above demonstrate, along with the Co-ops UK (2017) description of the purpose of the asset lock, CBF's can often arise out of organisations that are keen to create more generative forms of economic organisation in practice, which localise and lock-in new forms of economic activity that are intended to benefit the wider community. However, organisations without an asset lock may also create CBF's to cater for the wider community, such as a Co-op *without* an asset lock, as made clear in the initial subsections of this chapter. The next subsection will look at how different community organisations that were interviewed approach CBF's in relation to distributional justice and the importance of developing CBF's for potentially assisting the growth of the civic energy sector more widely.

4.3.1.1.2 Community Benefit and CBF's - moving beyond investors and investment

As noted in subsection 4.2.2 of this chapter, one of the core distributional justice challenges for the community energy sector and it's most prominent models lies in moving beyond the realm of investors, who get both distributional and procedural benefits from these models via a return on their investment and voting rights in an organisations decision-making procedures. One way of attempting to address and involve local communities beyond investors is through the creation of Community Benefit Funds (CBF's) that seek to redistribute surplus revenues from energy generation sales that are supported by the FIT. These CBF's are then often used to support local organisations and other low-carbon activities, such as energy efficiency advice schemes. As made clear in the last subsection, however, the choice to form a CBF is not necessarily determined by legal structure, but rather, legal structures influence the actors overriding goals to support the wider community. For example, despite a director of GFC's impassioned comments on the need to ensure that asset locks prevent the purchase of community assets for private gain, the director states that for *'Green Fox - the model we chose didn't have an asset lock'* (P1-1). However, as pointed out earlier by an independent community energy researcher in phase 1 (P1-6), many Co-ops choose to create CBF's, as demonstrated in practice by GFC:

'What we have done with Green Fox […] we've blended in the model rules about community benefit and in contracts. You've got a co-operative saying well actually we are doing a project for community benefit here […] we'll also bring in a community benefit fund – in that case it's around £250,000 in the 20 year lifetime of the project' (P1-1)

This CBF created by GFC was set up with the intention to support local organisations close to its location in Leicestershire. Indeed, the funds overriding focus was on '*giving money back to the local community'* (P1-1**).** In addition, a director of BWCE was forthright about their projects successes and about how that enabled the organisation to support the local community through a CBF, whilst generating a healthy return for their investors:

'In terms of BWCE, in the time that we've been operating we've raised over 10 million pounds […] We've developed 3MW of solar PV for BWCE […] We've paid our investors 7% return on their investment for the last four years and we've paid into a community fund our surplus profits which over the last few years has amounted to about £70,000 pounds. That's been recirculated back into local community projects' (P1-5)

This passion for localising community benefits also extended to the organisations with Bristol-based low-carbon energy initiatives, with community energy schemes led by Low-Carbon Gordano (LCG) and Bristol Energy Co-operative (BEC) seeking to prioritise offering support to local communities from any surplus they were able to generate. However, due to rapid changes in the FIT rate, LCG have struggled to ensure that they generate enough income to make a noticeable difference to local communities via CBF's:

'We're going to have limited funds for a long time I think […] 4 years ago our vision was to ramp up the projects year on year on year. Then we'd end up with a big pretty pot, a grand old pot of £100,000 […] as it happens it looks more like £10,000 or perhaps £15,000 a year out of the existing projects, for the foreseeable future. The new projects won't be delivering anything much into that pot' (P2-3)

This led the directors of LCG to place added emphasis on forms of community benefit that extend not just beyond the investors, but also the CBF's as well. Indeed, these were seen as key to broadening an understanding of distributional justice in the civic energy sector. For example, one director from LCG noted that solar installations on public buildings can provide savings to energy expenditures, and suggested this type of distribution of benefits may replace the function of CBF's:

'With community benefit we can put solar on a school or community hall. So the benefit comes directly from the solar […] to make their bills cheaper – that will be the community benefit of the future, rather than actual grant payments or funds' (P2-3)

This type of activity and the concomitant broadening of aspects of distributional justice in the civic energy sector is also seen in some of BEC's activities, who have installed solar PV for free on multiple public buildings across Bristol City. One of the directors of BEC asserted that this activity moves community benefit beyond the realm of investment:

'People are certainly benefitting from what we do even though they haven't invested – so when we say we have installed on community buildings, that building is getting subsidised green energy, saving on their energy bills and lowering their carbon footprint […] they can use those funds that are saved on other things, so there's actually benefit coming into the community that way' (P2-14)

In addition, notions of community benefit shifted focus on to supporting other parts of the local energy economy and the civic energy sector more widely, with BEC particularly active in seeking to use the scale of their successes, as detailed in chapter 3, to support the growth of Bristol's low-carbon economy through their CBS models commitment to the wider community:

'The models goal was always to […] cross-subsidise other energy projects. By that I mean [...] projects like energy efficiency or insulation or draught proofing […] cross-subsidization was the word that came up a lot in conversations. By that we mean using profit essentially, to direct into community benefit […] we're trying to make it much more central to our model and to maximize the community benefit' (P2-13)

In addition, contributions from CBF's are also used to support other civic energy organisations as well, demonstrating supportive mechanisms for the sustenance of a broader civic energy network. This is captured well in BEC's support for one of the core organisations and intermediaries at the heart of Bristol's energy community, the Bristol Energy Network (BEN):

'With our community benefit - part of our community benefit [...] is actually going to the network. One of our first projects […] the payments we've produced so far have gone to BEN. So BEN is benefitting from what we do. So that gives them a good reason to promote what we're doing via the community groups' (P2-14)

The interview data drawn upon above has advanced analysis of distributional justice in relation to civic energy activities by refocusing questions of community benefit on to activities that are external to CBF's, such as the deployment of solar on community buildings and the direct support of other civic energy organisations that underpin mutually supportive relations, as seen between BEC and BEN. However, a more critical perspective cast's doubt on the long-term viability of CBF's to create lasting support for local economies, particularly if they are seen by some communities as nothing more than charitable models that revolve around small handouts and one-off grants.

Indeed, problems arise around framing CBF's as the primary means for achieving some form of distributional justice beyond investors, as some ambiguity still exists around where the money goes and how transformative such small amounts of money can be in a time of austerity. Critical questions around *who decides* where money is allocated to are addressed briefly in the procedural justice

subsection, while geographical questions around *which* localities get support and *what* the definition of 'local community' is are still contentious issues, as explored more thoroughly in chapter 5. However, there is certainly a crucial temporal aspect to the impact of CBF's that many of the research participants in phases 1-2 acknowledged; it will take some years before community energy schemes can generate enough money for CBF's to make a noticeable difference to local economies, particularly if the projects are small-scale and few and far between. This topic arose during the focus group discussion, and a heated exchange between a community energy investor (FG5) and founder of a local youth charity (FG1) in Bristol captured both the temporal and social tensions at play around CBF's:

'FG5: I have introduced between £1 million to £1.5 million pounds into community energy investment. Most of those are significantly community shareholder-owned. Over 20 years all . . .
FG1: . . . But how many of those shareholders are on benefits?
FG5: No - can you just let me finish […] over the 20 years all of that asset will transfer totally into the assets of the community […] that money goes from the rich people to the wider community, which I think is the way to go.
FG1: […] the majority of our tenants in deprived areas […] have no way of even engaging […]. You're talking about 15 or 20 years until they are even seeing a benefit.
FG5: No they see a benefit over a year, they've seen benefits instantly from the investments. From year one, they are putting money into the community which never would have been there, its new money'

These bold assertions by a community energy investor suggest that this new revenue stream is something that can impact low-income communities in the short-term, however, such claims should be approached with caution, particularly given the impacts of austerity within Bristol outlined in chapter 3. Despite these challenges, it is important to acknowledge that the community models under analysis, particularly the CBS and Co-op, have wider community concerns built into their structure, as noted above in the statements of FG5. This therefore demonstrates interesting implications for the distribution of these models benefits across localities going forward. A project officer within CSE sums this up effectively, with reference to the organisations experience of managing the Urban Community Energy Fund (UCEF) for developing community energy in cities:

'What is interesting with the different models […] the key element to all of them is […] it's not just about making money, it's not about just doing more renewables projects, a lot of the time some of the key wording in it is that any excess surplus revenue generated by the organisation must be spent to further either the groups community aims or their social aims. We see that, or words to that effect, in a lot of the rules and articles of established groups' (P1-4)

One last consideration around facilitating distributional justice in a way that moves beyond investment and investors in community energy models, would be for such organisations to seek to spread the potential for *ownership* – as opposed to investment - and widen access to ownership through innovative financial means. A lawyer from the FCA noted that this would be possible with the right framework for minimum share-ownership in place, and a renewed organisational focus on fostering ownership over local energy initiatives alongside investment:

'If it's about ownership why not have the minimum share at £1? Why not say, anyone can be a member for £1 and we also need some more money, if you have got spare money please put that in. That would deliver ownership and it would deliver capital. When you say you can't become a member unless you put in £500 – how is that about ownership? It's about investment!' (P1-3)

In addition, one of the directors of LCG noted that a possible continuous investment model, through incremental payments, could spread the potential for ownership:

'Other models we have thought about are continuous investment. £10 a month or £10 a week. You then build up share ownership over time. Another way that we can address people that are not as well off as others, but still are interested and want to have a say. It might be a way of expanding membership and ownership' (P2-3)

Such innovations may enhance the prospects for ownership over local low-carbon energy infrastructures in years to come, however, many of the interviewees were sceptical of the administrative and logistical efficiencies of such processes, alongside the necessary awareness and interest in ownership for ownerships sake. Despite these perceived difficulties, BEC did manage to lower many of their various share offers to a £50 minimum. A shareholder in BEC from Easton Energy Group noted that this £50 was potentially beneficial to widening ownership:

'Bristol Energy Co-operative funded the installation of solar panels on Easton Community Centre. I bought some shares last autumn. You can spend £50, which isn't very much, and be an owner, which I think is quite cool to think that you can be part of something like that. I wouldn't invest money in the stock market or anything like that. But this does seem like something for the greater good. If you look at that place for example, it's reduced the cost of the bills and the running cost of the community centre' (FG3)

Indeed, this lower share offer was clearly not the only motivating factor, as the decision to purchase shares was also influenced by acknowledging that BEC are working to secure a range of benefits for the local community beyond the medium of investment, helping a local community centre. This points to the way in which ownership, if not resulting from a significant investment, may be motivated by

understandings of local energy projects contributing to the 'greater good' or broader understandings of distributional justice that move beyond an investment discourse that has underpinned many UK community energy models as the sector has grown (Seyfang et al 2014).

Many of these core challenges for new community models outlined above embody some of the many distributional justice challenges underpinning the future of community energy models going forward. As a direct extension of the growth of decentralised low-carbon energy systems and local low-carbon transitions, these are important areas of consideration for energy justice scholars looking at how new organisational structures in energy markets relate to localities and communities. The case studies presented in chapter 5 on intermediaries and Lawrence Weston both address some of these challenges in more detail, whilst analysing them more closely in relation to the impacts of austerity.

The next and final section on issues of distributional justice in civic energy models looks at the prioritisation of localisation using civic energy models, whilst addressing the distributional justice implications of municipal energy and the ability to achieve some form of distributional justice through establishing local energy supply systems, a desire shared by many community energy organisations.

4.3.1.3 Prioritising localisation: municipal energy and local energy supply futures

Building on the reflexive shift in the process of data collection from 'community' to 'civic' energy as outlined in chapter 3, this section draws on interviews with both Bristol Energy and BCC to explore the municipal energy model, whilst also drawing upon some comments from the focus group discussion that considered the impact of new civic energy structures, with a core focus on Bristol Energy. By looking at the some of the statements of BCC and Bristol Energy and contrasting them with those of the focus group participants, some of the core distributional justice issues are brought to the fore for this comparatively new structure within the UK's civic energy sector.

In contrast to the community models outlined above, Bristol Energy has sought to use a limited company structure to support the delivery of a council owned Energy Company, whilst seeking to use revenues to prioritise economic benefits for both the council and the city as a whole, as acknowledged in chapter 3. A BCC energy manager noted that in order for the municipal energy company to function within the energy market, they had to establish a structure outside of the council's remit, stating that *'Bristol Energy at the moment is a separate energy supply company. We sit in the energy service within the council. So it is quite separate at the moment'* (P2-20). A manager at Bristol Energy further reiterated the purpose of this structure:

'In order to be successful, we needed to be a separate limited company, but we also needed to retain some sort of public accountability […] the profits that we make do need to make a difference to the city […] looking at local economies is one of the main things that is really important' (P2-1)

Given that the vast majority of the funding for Bristol Energy was supported by BCC, the shift in focus under a distributional justice lens turns more closely to the use of public money, rather than private investment, as seen in the majority of community energy models outlined above. Indeed, rather than ownership and fundraising being spread across a diversity of private shareholders, it is concentrated within the council:

'So the council is our shareholder - so they are basically our bank. So the money that we borrow from them is at a commercial rate […] we are financed by them, but through a commercial payback system […] we pay for everything as any other commercial business would. Our business modelling and our profit timescale is based on that as well' (P2-1)

Interestingly, this brings forth questions around *who* funds the council itself. If, as made clear by the statements of a manager within Bristol Energy, the organisation seeks to prioritise localisation and the needs of the citizens within the city, one way of reorienting the distributional justice implications of municipal energy structures would be to include local taxpayers in the ownership structures themselves. Thus, connecting strongly to the conclusion of the above subsections theme on moving questions of distributional justice beyond investment and investors, one of the focus groups participants felt the burden of risk carried by Bristol's taxpayers in supporting Bristol Energy meant that share ownership should be spread throughout the city to its taxpayers:

'When it fails, however it fails, whoever is owed the money will ultimately come back to the city for that money through one means or another […] No matter what structure you put in place. So it will end up being the council tax payer who will pay it off […] It will be Bristol's council tax payers that pay it off – so why can't the council tax payers be the shareholders? If you pay council tax you are a shareholder' (FG4)

While such an idea would indeed create a more democratic structure within a municipal energy company, it would perhaps cause tensions with the limited company model in which the council themselves are the majority shareholder. Indeed, in contrast to the community models discussed, whilst they are seemingly exclusive, they are arguably closer to *bottom-up* forms of civil society participation in energy systems, with the municipal energy structure controlled by local elites. This difference in governance structures and decision-making procedures is explored further in the procedural justice section, however, with regards to advancing distributional justice, it is important to

note that Bristol Energy felt the need to support other organisations that address inequalities within the city and also issues of energy justice:

'We're doing a marketing code scheme where if you sign up to us through a particular marketing code we then give money to a particular charity that is local to Bristol and supports local schemes mainly around debt advice or similar charities for people that are in fuel poverty' (P2-1)

Whilst in addition, Bristol Energy made clear their underlying intentions to support low-carbon transitions, local generation initiatives and the localisation of the economic benefits within the city:

'It's always from the outset been a kind of strong part of the proposition to have and support local renewables, so it's about keeping the money within Bristol but it's also about supporting local generation, so that that can be supplied to the local people within Bristol and the profits retained within Bristol as well' (P2-2)

This demonstrates that the organisations social purpose does indeed influence its distributional justice impacts, beyond its public-private structure which seeks to recirculate profits back into the council Treasury. Indeed, it is important to recognise that the ability for Bristol Energy to generate a lasting impact on the city ultimately lies in its ability to become a successful energy supply company, with one manager noting that the overriding goal for the company was *'to make sure that we crack our supply business […] being able to provide electricity and gas and bill people properly'* (P2-1). This was seen as the most effective way to ensure any economic benefits, or energy savings, could be offered to local citizens, as a way of addressing issues of distributional justice. This localisation of benefits led one manager of Bristol Energy to voice aspirations for achieving cheaper, more cost effective energy supply in the future, stating that *'we're definitely exploring how we can have particular tariffs […] local tariffs for instance, that would benefit as many people as possible'* (P2-2). Indeed, a senior energy investment employee within BCC spoke optimistically about the potential for Bristol Energy to address the needs of local areas in Bristol that are needlessly paying for high energy prices:

'If you can only afford to put a tenner in your meter every week for energy -- There's no justice in that […] Bristol Energy are really determined to change that landscape for the type of meter you're on, which is just penalising people' (P2-19)

However, as noted in chapter 3 on the growth of Bristol's low-carbon economy, Bristol Energy is not forecast to generate profits for the city until 2021, making it difficult - in a similar fashion to understanding the impact of CBF's – to understand or measure the scale of their current impact. Importantly, one of the fundamental areas in which distributional justice was considered realisable by

many of the research participants throughout data collection, was through creating more local and decentralised systems of energy supply. As Forman (2017) has pointed out in his contribution towards advancing local perspectives on energy justice, many community energy schemes seek to create systems of local, low-carbon energy supply that reduce the embodied costs of energy transmission and generation in comparison to centralised, fossil fuel based energy sources. Indeed, one of the directors of BWCE remarked upon the potential distributional justice benefits of creating a local supply system.

'If we can open up the market more, so that we can actually sell electricity to the local people and we can monetize the value of the benefits of local generation, we can then start selling electricity to low-income households at a cheaper rate' (P1-5)

In addition, one of the directors of LCG stated future ambitions to transition their organisational model to a local supply company in the future, noting the current barriers that exist within contemporary regulatory frameworks for community energy schemes:

'We can't sell our energy directly to our customers. We can only sell it to energy companies who can then sell it on to customers […] hopefully we will be able to […] set up an energy supply company. That would, hopefully, allow us to sell our electricity to those customers. We could select those customers on the basis of fuel poverty […] so there would be a way of distributing our benefits and our assets, so people would get a direct benefit' (P2-3)

Such a vision, if drastically up-scaled, would begin to create a civic energy sector that would be more attuned to the vision of the *Thousand Flowers* transition pathway, whilst offering the possibility of cheaper energy rates to local communities. Indeed, one of the directors and founders of LCG notes that *'setting up companies which are determined to be more locally based in terms of linking customers with immediate supply, takes the thing another stage further'* (P2-4), and certainly goes someway to achieving the type of reconfiguration of the energy market that would transform the system of generation and supply in coming decades, should we continue to see a '*Thousand Flowers blooming'* (Seyfang et al 2013) in the UK. Finally, using the language of energy justice scholars, a director of BWCE made bold claims as to the future possibilities of local supply from decentralised energy schemes to realise the three tenets of energy justice in practice:

'If you are selling electricity more widely you have two forms of membership; you have the consumer members who can be everybody from the community, including the less well off, and the investor members who are likely to be the better off. That for me is a way that we can move towards more procedural justice, to match the distributional and recognition justice, which I think is fairly strong' (P1-5)

However, the extent to which both community models and the municipal energy model are capable of moving towards greater procedural justice is yet to be explored, alongside understanding how such

models can factor in recognition justice concerns. The next subsection looks at how the structures under discussion relate to issues of procedural justice in practice, before turning to considerations of recognition justice in civic energy models.

4.3.2 Procedural justice in civic energy models

This section explores the procedural justice implications of both community energy models and the municipal energy model, particularly through exploring some of the critical comments and questions posed by the research participants throughout phases 1-3. It will critically consider the extent to which voting rights in community models, which very often stem from ownership, lead to active involvement in decision-making procedures within the governance structures of community energy schemes. In addition, it will also look at how co-operative governance structures seem to be present across all community models outlined above, with some of the models core features - as expressed through their legislative guidelines - posing challenges for the realisation of procedural justice. Similarly, this subsection will explore questions of accountability and governance within the municipal energy structure, through drawing further on the focus group participant's efforts to probe the governance framework of a publically funded municipal energy structure they feel paradoxically represents little opportunity for public or citizen involvement in decision making. Building on the insights of the previous subsection, these governance issues demonstrate the deep connections between questions of ownership over new energy schemes - as found in the distributional justice subsection - and procedural justice. These continuing insights expand energy justice scholar's understandings of core procedural justice challenges in the context of exploring local energy justice in the civic energy sector.

4.3.2.1 Comparative analysis of community models: the democratic deficit of CIC's

This procedural justice subsection begins with a critical comparison between the CBS, Co-op and CIC models. Many of the participants expressed concerns about the nature of CIC's being less democratic than the Co-op and CBS models, which they felt would facilitate greater levels of procedural justice in new community schemes. Linking to some of the concluding points on organisational crossover; when it comes to *governance* structures more specifically, the vast majority of community energy models seek to use a co-operative governance structure to democratise local engagement in energy projects. However, as noted by a director of BEC, the underlying principles within the different prominent organisational structures impacts this possibility:

'A co-operative has more of an opportunity for people to be involved as members and play a role in the decision making. With a CIC you can have a board – I don't think it needs to meet on a regular

basis legally, the people that make the decisions are on the board. Whereas in a co-op, it's a much more democratic process and you have to have an AGM every year […] it's also one member one vote – regardless of how much someone has invested into the co-op. So it just seems a much more democratic organisation than a CIC' (P2-14)

Interestingly, similar concerns to the BEC director were voiced within the focus group discussion, once the issue of new organisational structures for owning low-carbon energy assets and infrastructures was brought up. A member of Easton Energy Group warned against the regulatory structure around CIC's:

'One of the problems with CIC's is that […] unlike Co-ops […] they have a very weak regulator. It is yet to experience a major problem […] if you take co-ops and you take other existing structures, they have very well established regulators with very clear rules and they know they have systems in place that mean you don't get the problems you are going to get. A CIC is going to get into major problems' (FG4)

This critical analysis of the CIC was further backed up by the directors of LCG and BEC, who felt that the regulatory framework was insufficient with regards to monitoring the aims and ambitions of those setting up a structure that is intended to cater to the interests of the 'community'. Thus, directors from LCG noted that the complexities attached to setting up a CIC were an important factor in choosing other models:

'The choice against a CIC was more based on simply the complexities of running it - the legal issues around it – it's much more demanding of you as a board of directors - basically volunteers - to meet the conditions of a CIC. We didn't feel there were any significant advantages for that – as opposed to a BenCom' (P2-4)

Indeed, many of the research participants felt that a system of checks and balances, and more stringent and tested regulations, were provided by the history of co-operative and community benefit society legislation in the UK, as made clear in the opening subsections of this chapter. However, as will be made clear in the concluding subsection of this chapter, two of the models located in Bristol used CIC structures as associated models, to take on financial risk, while a CBS or Co-operative model was the core model for managing safe assets and also, the principle model for governance arrangements. Thus, the research findings demonstrate the CIC structure, is rarely used - if ever – as the core organisational structure for both the governance of and public investment in community energy schemes. Given that the Co-op and CBS structure were felt to be more democratic arrangements, alongside a director of LCG noting that there '*were procedural simplicities about it rather than going*

say, the CIC way' (P2-3), it is important to look more closely at levels of involvement and representation within the co-operative governance structure, given the democratic deficit of CICs.

This complex organisational crossover is explored in more detail in the concluding subsection of this chapter, while also connecting strongly to the next subsection, which looks at how other models associated with community energy models, such as charities, are connected to the distributional *and* procedural justice implications of surplus generation and distribution.

4.3.2.2 – Governance issues and tensions: the role of charities, AGM's and CBF's

Different approaches to the allocation of surplus revenues were found during the data collection period, in which a variety of different decision-making procedures were used to delegate tasks to associated organisations that would manage or oversee CBF's. This certainly brings forth questions of procedural justice that follow from the distributional justice concerns above, such as; who decides where the funds from CBF's go and how? This involvement in certain decisions differed among the varying models and organisations featured within this thesis, impacting upon both distributional and procedural justice concerns in a growing civic energy sector. For example, both BWCE and LCG set up charities to govern their surplus distribution to the local community, with a director of BWCE noting that their all of their surplus:

'Goes into a separate charity that we've set up. The charitable trustees have the final decision, but the criteria that have been set are around carbon reduction and fuel poverty. So projects bid into grant funding and the trustees decide which projects get the money' (P1-5)

In a similar fashion, LCG set up their own committee to oversee the decision-making procedures for the allocation of their community benefit, which also sat within a local charity:

'We have now got a community benefit committee […] LCG will hand over 90% of the community benefit, which is going locally, to a registered charity […] with aims agreed with the charity commissions which are around energy reduction, carbon reduction and so on' (P2-4)

This approach seemed to be common amongst the various models featured in the research findings. LCG, BWCE and BEC in particular delegated the decision-making out to external organisations, groups or committees they felt were better suited to managing the surplus revenues they could use to support local initiatives – or initiatives in close proximity to their energy generation schemes. This geographical proximity question is explored in more depth in the Lawrence Weston case study in chapter 5.

In addition, the shareholder members of these organisations also had the opportunity to influence the amount of surplus allocation through the Annual General Meeting (AGM) that is legally required of co-operatives. BEC noted that decisions around their CBF are influenced by member's involvement at

the co-operatives AGM, while also seeing some potential tensions with this type of democratic governance and the core aims of a CBS model:

'Every AGM, there will be motions on how much community benefit and how it will be allocated at a gross level. The tiny detail will […] be devolved. But we need to retain confidence that the process that we're part of is meeting our needs, it fits in with our intentions with community benefit' (P2-13)

In addition, a director of LCG noted that wider involvement in the general governance and decision-making procedures of the organisations are mainly members that are from the local community, whilst also noting some tensions between democratic governance and CBF commitments:

'That's an opportunity for an ongoing discussion mainly through email and AGM's […] we get a decent turnout […] it's mainly the more local members, which are the majority. It was quite impressive at the last one […] there was no hint of any opposition to us putting money into the community energy fund. They could've voted it down if they'd wanted to […] they could've voted the amount down' (P2-4)

This tension is one that arguably arises from greater levels of procedural justice in community energy models, seen here as the ability for local people to be involved in the democratisation of local energy schemes. However, and critically, despite the glaring tensions between allowing shareholders the possibility of voting down the proportion of community benefit in a democratic CBS model, the core social equity and justice issues around community models retain similar problems; share ownership is still the preserve of affluent communities. This is, in part, due to some of the scepticism of different directors towards the effectiveness of widening the pool of ownership in practice:

'What would be the motivation for buying a £10 share? Why would you do that? […] Just to have your say – why would you want to? There is a concern that you open it up to malicious share ownership. 20 people or 30 people can buy their £10 share and come to shareholders meetings and start to manipulate us. You are less likely to get that with a £500 minimum' (P2-3)

While another director noted that in practice, they could experiment with non-investor member structures, with BEC stating that *'we've known for some time there is some bit of work to do about our membership structure and maybe formally having a non-investor member'* (P2-13). One area of particular difficulty and concern for energy justice and indeed energy democracy scholar is how much a co-operatives AGM's provides opportunities for members to clash with an organisations model rules, rather than ensuring its smooth functioning. If, for example, members overwhelmingly vote in favour of removing community benefit altogether to increase their rate of return, then this may impact

upon the distributional issues expanded upon in section 4.3.1. Indeed, as noted by a director of LCG, this scenario is far from hypothetical:

'I suppose in principle, if there was a lot of money sloshing around members could vote for a higher rate of interest. I don't know. We may well ask them to accept a lower level in a year or two. Again I think they probably will. I think the choice would be – stop paying community benefit or accept lower interest' (P2-4)

These procedural justice issues and tensions outlined above demonstrate some of the many complexities associated with greater democratic governance of community energy models going forward. It also appears to be evident that when thinking about local energy justice in relation to the proliferation of more community models with co-operative governance structures, there appear to be some trade-offs and tensions between both distributional and procedural justice. If, for example, an energy co-operative opens up membership to non-investor members, they then have equal voting rights in decisions around the interest rates and CBF's to those who may have invested large amounts of personal wealth. In this instance, striving to achieve greater procedural justice for those who are not investors may create a situation in which investors feel a sense of distributional injustice, potentially undermining the wider goals, principles and overarching aims of community energy schemes.

Linking up with the distributional justice section above concerning moving beyond investors and investment, one of the participants from phase one noted that some of the activities that are external to CBF's that some community models engage in, may facilitate a form of procedural justice:

'I actually think procedural justice is an area in which the social enterprise model does relatively well. There's quite a few solar co-ops that have done work on schools, then you have different levels of engagement, in one way you can engage as an investor, another way you can engage is as a teacher or parent at the school. That's a form of procedural justice as you're involved in your schools electricity system and you learn about it and take a stake in it' (P1-6)

Indeed, this involvement in energy schemes from external organisations outside of the community models themselves was seen as part of a broader conception of procedural justice, as *'lots of community energy projects are involved in community institutions, in schools or social housing […] giving you the level of engagement that you wouldn't otherwise have'* (P1-6) compared to, for example, many commercial developers large-scale low-carbon energy schemes. This reiterates the extent to which distributional justice and procedural justice are so deeply intertwined in low-carbon energy transitions, pointed out in the both the tensions *and* supportive dynamics between the two tenets as outlined above. This interconnection is also particularly apparent in the exploration of

procedural justice issues within the municipal energy structure, the final subsection on issues of procedural justice in the civic energy sector.

4.3.2.3 Municipal energy governance: public funding, no public involvement?

This section addresses some of the core procedural justice concerns around the development of a new municipal energy structure in Bristol. It focuses on the extent to which a new public-private hybrid structure, intended to create a new local energy supply company that redirects profits back into the city, is democratically governed. Providing links to the relatively exclusive nature of some co-operatively governed community models, this section also demonstrates the degree to which questions of ownership via shareholding under considerations of distributional justice feed into procedural justice questions more widely. They key difference in this subsection, however, is the focus on a 'taxpayer-shareholder' model as discussed by the focus group participants. Firstly, however it is important to understand how the managers of Bristol Energy understood their governance structure.

During phase 2 in-depth interviews, when questioned on the extent to which Bristol Energy felt they were including the wider public in their processes of decision-making, one manager responded by stating that *'on a citizen by citizen basis, it's generally through the local election of their councillor'* (P2-1). Given that the council is the main authority for governance decisions within Bristol Energy via elected representatives, this also meant that key decisions around the distribution of company profits were therefore extended to councillors and the mayor:

'When we're due to make a profit […] the money will go back to the council and it will go through the democratic process of […] the councillors and the mayor at the time will decide how that money is spent […] we're here as a vehicle to create that profit' (P2-1)

However, in addition to this democratic process around profit distribution and allocation, Bristol Energy also recruited non-executive directors to their board, to create a system of external and independent checks over the functioning of the organisation:

'So our board – we've recently recruited some non-executive directors. One of them is a finance specialist and one of them is an energy specialist […] by having these independent specialists that are on the board and making sure that the decisions that are made are justified, that's also how we get some independence through the actual governance structure and how we make sure we have that accountability' (P2-1)

However, despite these attempts to apportion accountability to independent specialists, some of the focus group participants felt that Bristol Energy's governance structure was an elite system of

governance over a new structure that had been funded by local taxpayer's money. One participant in particular, felt concerned about control by local elites:

'The elected mayor of Bristol is the principal shareholder of the Bristol Energy company. For me, we're getting back to […] who else should be sitting on that shareholder thing […] where is democracy? You know, who else gets to sit on the shareholder group and make those decisions about what they do […] so there is an issue of governance' (FG2)

This led to widespread agreement amongst the participants that some element of control, involvement or input should be extended to the wider public within Bristol to establish some form of procedural justice. Interestingly, a mutual exchange between two focus group participants captures the extent to which a default shareholder model for publically owned companies, or a taxpayer-shareholder model, could widen potential involvement:

'FG4: There is no reason why every council tax payer could not be a shareholder in these companies.
FG2: And they effectively become a 'co-operative' […] then we're getting into the new forms of governance which are much more challenging to the civic elites and the political elites.
FG4: Because it means everybody would have a stake in it regardless. You pay your council tax you're automatically a shareholder in these companies'

From an energy justice and energy democracy perspective, this is certainly an interesting proposition, particularly with regards to connecting taxpayers to distributional justice issues as the core funders of the Bristol Energy model. It also connects to some of the problems found within opening up engagement in community models, as some shareholders may seek to undermine the overall purpose and ethos of the organisation and advance their self-interest or the interests of their locality in the city, at the expense of other areas. Indeed, you may have shareholders from areas high in social capital, that are more used to AGM's and board meetings within other organisations, dominating such an open governance structure. This begs the question, would greater public involvement in a municipal energy structure be an inherently good thing for procedural justice? It may have negative social equity implications, as those with the capacity to act could dominate involvement in such an initiative, in a similar fashion to community models. However, this is certainly an area for further research and inquiry.

Despite these potential issues, you would not have the same problems around interest rates and community benefit, as the surplus profits would sit within the council and support council initiatives. Indeed, one of the managers of Bristol Energy reiterated that *'profits will go through a proper council process'* (P2-1), in sharp contrast to both community and commercial energy models and

organisational structures. This means the extent of the logistical impact of opening up decision-making to the public at large could be minimised, whilst ensuring that the citizens of Bristol feel a greater sense of both procedural and distributional justice under a taxpayer shareholder model. For example, taxpayer shareholders could vote on preferences for areas or schemes within Bristol that could be funded, rather than deciding on specific funding targets or amounts. These are certainly interesting questions and lines of inquiry for understanding how greater procedural justice may be realised in emerging municipal energy structures in years to come.

The penultimate subsection of this chapter looks briefly at issues of recognition justice in the civic energy sector, the third core tenet of energy justice, before going on to look at the importance of model overlaps and hybridity in the conclusion of this chapter.

4.3.3 Recognition justice in civic energy models

In this exploration of recognition justice issues, and connecting to the review of energy justice theory in chapter 2, it is important to note that many of the issues and concerns addressed above would not be possible without some degree of recognition justice. Indeed, ideas of moving the distributional benefits of local energy schemes beyond investors and investment, alongside opening up decision-making procedures to a much wider and more diverse pool of actors, are not possible without some sense of recognising local inequalities and disparities between and amongst local communities. Many of these issues associated with exploring strategies for achieving recognition justice are attested to and addressed above, while Chapter 5 teases out recognition justice and injustice issues (via considerations of misrecognition & non-recognition) more intimately through the in-depth analysis of different case studies within Bristol.

4.3.3.1 Contextual limitations of recognition justice

In this vein, it is important to distinguish between different social and political contexts for recognition justice and understand the multi-scalar nature of variations between different contexts of recognition *and* non-recognition. For example, the extent to which a regional, devolved or local government organisation, alongside a national or community-scale energy organisation, *chooses* to recognise social inequalities and issues of fuel poverty or energy vulnerability more widely, greatly impacts the degree to which recognition justice is acknowledged.

As touched upon in chapter 3, this sheds light on the inherent methodological limitations associated with the interpretive paradigm through applied research and subsequent data collection and analysis. That is to say, through applying the three principles of energy justice to different civic energy

structures, the particularities of Bristol based schemes could not be ignored. While many community energy models share similar legal and organisational features across a variety of contexts, as is demonstrated in the above subsections, the contexts in which they arise also influence the extent to which they may incorporate energy justice concerns. For example, when thinking about the relevance of this issue to this thesis, one manager from Bristol Energy noted that Bristol's interest in low-carbon transitions and issues of local inequalities and social justice could be observed from both council officials and the wider community, or from both top-down governance of the city and bottom-up, self-organising communities:

'It's just part of Bristol, it's part of who Bristol is as a city and as a community – as a wider community. It's a very green city in a sense that a lot of people are very interested in green issues and they are also interested in social and political issues as well, so it's a fairly unique city in that sense, but it's also a genuine commitment from the council as well. They're representative of that, as elected members of the community, they kind of take that ethos with them' (P2-2)

These contextual limitations and constraints make it harder to assess the degree to which different civic energy structures themselves can be understood to incorporate or address recognition justice concerns. However, from the data collected throughout phases 1-3, the different sources of funding underpinning community models and the municipal energy structure demonstrates different potentials for realising recognition justice in practice.

4.3.3.1 Structures of recognition: community investment vs public funding

As the variety of qualitative data has outlined above, the recognition of vulnerable and marginalised groups is common amongst community models, however, larger degrees of distributional and procedural justice are still sought by many of the actors involved in the day to day running of these organisations, to open up and include a wider variety of actors and groups. This new attention toward issues of recognition justice may be due, in part, to the relatively new landscape of local low-carbon transitions, as noted by a director within BEC:

'It's only really in the last few years there has been more recognition that communities should benefit more from projects. Before that a developer could put in a big scheme and if it got through planning it was job done – they didn't have to be providing any financial benefits to the community' (P2-14)

In addition, other directors of community energy schemes felt that addressing climate change was the more important issue when questioned on how their model addresses recognition justice:

'Obviously we will try very hard to increase the distribution of assets and the community fund gives us the chance to do that. Again – the priority is climate change and energy savings rather than community poverty relief if you like […] we didn't set ourselves up to be a relief of poverty charity. […] That's not our primary motivation' (P2-3)

While other directors were more hard-line about the realities of striving for recognition justice whilst building and financing new local energy schemes and infrastructures:

'At the core of community energy, in terms of renewables, is a need to finance generating plants […] Whilst we are trying to develop a model to encourage buy-in from low-income households, the reality is […] we are going to need to raise billions of pounds! You are not going to do that from low-income households. The only way of really making sure community energy becomes a major player, is to take the money from the richer people and make sure that the benefits go to the poorer' (P1-5)

Interestingly, the points made above by the directors of community energy schemes mark out some of the core differences between the community models and municipal energy models capacity to address issues pertinent to recognition justice. Indeed, one core finding from the majority of the research data obtained was that recognition justice in civic energy models could potentially be realised in organisational structures which did not require investor funding, such as the Co-op and CBS, but leaned more towards a public-private hybrid model as seen in the municipal energy structure. Indeed, this builds upon Bulkeley & Fuller's (2012) analysis of social justice in low-carbon communities and also various research participants' comments on the need for local government to target fuel poor areas and communities with low levels of social capital and energy awareness. However, where these recommendations were lacking were in the exact strategies, vehicles or *structures* for doing so.

As other municipal energy companies begin to enrich the UK's civic energy landscape, such as 'The Leccy' in Liverpool (http://theleccy.co.uk/), alongside Norwich City Council's plans to launch a municipal energy company in 2019, they also seem to share very similar goals to Bristol Energy; all of them prioritise sourcing the majority of their energy from low-carbon sources and addressing fuel poverty in their localities. Indeed, Bristol Energy were clear on the many pitfalls of community energy schemes noted above, and saw embedded within their own structure a need to reach out to marginalised and vulnerable communities:

'There's a certain group of people that are involved in that and there is a huge amount of Bristol that aren't involved in that, who are ultimately the people who are in fuel poverty. So it's – how do we get into those communities? On every level of it, community energy is quite privileged. It's not just about saying to people, we've put solar panels on your community hall, it's about saying 'how can we get everybody involved?' (P2-1)

In addition, building on the context of geographical and racial inequalities in Bristol, another manager within Bristol Energy noted the need for the organisation to reach out to typically excluded areas of the city:

'In certain areas of the city, there are certain green initiatives, they're not in the Somali community. There is none in there. It's not because they don't care, it's because they are potentially separate communities where people don't launch those green initiatives in those communities basically. They are the other people we need to start dialogue's with in order to make it a whole community thing and not just Clifton or areas like that' (P2-2)

The differences above point out that certain structures are indeed more conducive to aspects of recognition justice, such as recognising a need to include marginalised communities. This points to an important fundamental difference in the core principles of different structures, evidencing different abilities to address issues of recognition justice on the basis of different funding models. While the majority of community models need to generate a return for their investors, the municipal energy structure, as seen in Bristol Energy, must generate profits for the council. As many of the community organisations touched upon above are reliant on community investment and ownership to make their projects a reality, this chapter has shown that this organisational dynamic means that community models are more likely to achieve greater levels of distributional and procedural justice at the expense of recognition justice, as those communities without the capacity for investment are excluded from ownership.

If a municipal energy structures core ethos embeds concerns for addressing local inequalities within its organisational design, through for example, developing a local tariff for low-income households, it does not have to answer to community investors, but rather public funder's demands for profits to be redirected to the council, rather than private investor's bank accounts. This also demonstrates the degree to which distributional and procedural justice cannot be separated from recognition, and indeed points towards their consistent overlap when applied to civic energy structures throughout this chapter.

This key finding around different structures of recognition also provides particularly strong connections to the distributional justice implications of local energy supply futures, as expressed by the desires of community energy directors, pointing to a future where, should community energy schemes transition to energy suppliers for local communities, they *may* achieve a greater degree of recognition justice by targeting those communities experiencing fuel poverty or energy vulnerability more widely. It would also be unfair to not point out the degree to which many of the community models CBF's are intended to address aspects of recognition justice, particularly the CBS structure

which has, as part of it legal mandate as an organisation, an obligation to benefit the wider community beyond members. This is point is built upon further by a director of BWCE:

'I think that's part of the reason why a lot of the CBS have a focus on fuel poverty in their community benefit funds. It's also for me why community benefit funds are really important, to create some balance and some wider benefits so it's not just the richer people that can afford to invest, that are investing and benefitting' (P1-5)

This subsection has pointed out some of the core issues associated with issues of recognition justice in civic energy models, whilst also pointing to the extent to which all of the three core tenets of energy justice overlap with another. What is also clearly apparent within this chapter, is the degree to which many of the community models featured in this thesis also overlap with each other. The importance of this overlap and its's inherent complexities, are seen as the starting point for exploring issues of local energy justice beyond a sole focus on organisational structures, as is demonstrated throughout the case studies in chapter 5. This is addressed in the final concluding section of this chapter, before turning towards the need to further analyse the role of networks and intermediary organisations to enhance a local and bottom-up perspective on energy justice.

4.4 Conclusion

This conclusion continues to expand on the findings from the data collection phase, drawing upon some of the research participant's critical reflections on the limitations of organisational structures. The conclusion will look first at the role of organisational crossover and 'hybridity' as fundamental to the future of the civic energy sector, before looking at the inherent limits and restraints associated with focusing merely on organisational structures and their relevance to the three core tenets of energy justice. While, as this chapter has demonstrated, new structures for local energy deployment and ownership are critical for questions around energy justice, chapter 5 will demonstrate that bottom-up and local analyses of energy justice need to move far beyond structures and consider the role of networks and intermediaries, connecting more thoroughly to the social movements and grassroots innovations literatures explored in chapter 2. This also allows this subsection to act as an excellent bridge to the sections on networks and intermediaries, and the importance of moving beyond an analysis of organisational structures to enhance energy justice scholar's understandings of local energy justice more broadly.

4.4.1 Model overlaps: the role of organisational hybridity and crossover

It is clear from the above research findings that many of the models discussed in this chapter are more complex than they may first appear; alongside a core legal may sit associated models and organisations, as well as variations on a co-operative governance structure that democratises the functioning of the core model. Interestingly, the findings in this chapter strongly align with recent literatures on differing social enterprise models within the UK and the embedded crossovers within the social enterprise sector:

'Looking ahead, the high degree of hybridity amongst current social enterprise—both within the sector and across the state/business boundaries—raises questions about future trajectories and convergence […] of types of social enterprise, or semi-permanent hybridisation […] institutional support could well sustain the continuation of three types: charitable social enterprise, co-operative social enterprise, and community interest companies' (Spear et al 2017 p.51)

To further demonstrate the legal complexity of the social enterprise economy as it relates to energy, it seems that with the use of charities alongside 'co-operative social enterprise' models such as the CBS and Co-op, as well as the prevalence of CIC's within the community energy sector, a combination of the three types outlined by Spear et al (2017) above will continue to define community energy models. Below is a table detailing the organisations featured within the thesis and their *core models*, *associated models* and *governance structures*, providing some clarity to a system of inherent model overlaps, hybridity and crossover:

Organisation	**Core legal model**	**Associated models & organisations**	**Governance structure**
Bristol Power Co-op	Co-op	CIC	Co-operative
Bristol Energy Co-op	CBS	CIC & Charity	Co-operative
Low-Carbon Gordano	CBS	Charity	Co-operative
Bristol Energy	Council-funded company (ltd)	Bristol City Council	Council-led & independent board
Bath and West Community Energy	CBS	Charity	Co-operative
Green Fox Co-operative	Co-op	CBS	Co-operative

Table 10 – Organisations, core & associated models and governance structures

Looking further at what the community organisations themselves had to say about the complexities of hybridity, Green Fox noted that their model will continue to adapt to a changing landscape for community energy in order to afford them the best opportunities to continue creating local energy projects and take advantage of any future tax schemes:

'We haven't' changed our co-operative to a community benefit society yet. Because there is no definitive answer at the moment from the FCA, as to where it will go. We're setting up a CBS. A Green Fox CBS as well, so therefore we can choose the different models. It's that complex' (P1-1)

Whilst it was clear Green Fox were seeking to navigate the shifting terrain of the community energy sector, Bristol Power Co-op (BPC) pointed towards the use of a CIC as an associated model to mitigate against any potential damages to their core model, a Co-op. A BPC director stated that:

'The idea of the CIC was that it would take the risks and the co-op would hold the assets. We would only transfer assets to the co-op that were viable […] it was to have two different vehicles. One of which be a stable vehicle owned by the community - owning and operating assets. Generating assets […] the idea of the CIC was that it would undertake the risk and it would carry any losses' (P2-5)

In addition, a director from BEC noted that the CIC's they used were in response to shifts in DECC's legislation, that meant they couldn't use the CBS model as an ownership vehicle for some of their planned solar farms.

'We are a BenCom, but within that we do have CIC's. We have three CIC's – one is the solar farm we […] set up as a CIC and the other two CIC's were set up purely in response to DECC having unintentionally written bad legislation […] they unintentionally wrote it so that we couldn't have applied for […] a BenCom. We just got it wrong and had some emergency CIC formations! These were then used to register the two big solar farms that we're doing at the moment. So there is an awful lot of messiness in this!' (P2-14)

When thinking about other associated models, the charities explored in this chapter operate on the periphery of community energy models to distribute money in CBF's. This shows that, alongside CIC's being used to take on financial risk to support a Co-op or CBS structure, or even replace a CBS structure to secure ownership of necessary assets, charitable models also exist alongside core models to receive the money from CBF's and decide on how to allocate that money.

Despite the commercial and legal complexities underpinning the development of these innovative and adaptive community models, statements from various directors suggest that this amount of overlap between different models points to a level of hybridity in the civic energy sector that suggests that actors goals and values go beyond the pursuit of a *Thousand Flowers* like pathway and the creation of further Grassroots Innovations in the civic energy sector. Rather, this hybridity is seen as key to the successful functioning of *core models*, and as crucial to advancing the purpose of the core models, as embedded within their organisational structure. As a director from LCG notes:

'When we set up LCG the co-operative BenCom seemed to be the right model to use, because we then had the mechanism to transfer the funds back into the community from what we were doing […] it's

sort of written into the constitution of a Bencom – that's what you have to do – because community benefit is fundamental' (P2-3)

In addition, a director of BEC also saw that contributions to the local community and economy via local energy projects were key to the adoption of the CBS as a core model:

'We see ourselves as a community benefit society and adopted the standard sets of primary rules that Co-ops UK provide us with […] The reason we chose that […] was so that community benefit was locked in to the way we operate' (P2-13)

It is clear, therefore, from the array of evidence provided within this research findings chapter, that many of the actors involved in the creation of new local energy infrastructures, under a broader low-carbon transitions trend, are guided by powerful ideas of localisation, energy decentralisation and community ownership and/or benefit. Connecting to the more top-down theories of transition, most notably the MLP, the complexity and ambiguity around the structures explored above contributes to the continuing niche status of many community energy models. In contrast, the municipal energy structure may be better placed to *lead* the growth of the civic energy sector, if its model is more replicable due to its comparative simplicity, lack of reliance on shifting tax regimes and use of familiar energy market structures via the limited company. This remains to be seen, however.

While it is clear that the goals and values of many of these actors align with the bottom-up transition theories and pathways outlined in chapter 2, they also demonstrate clear sympathies with building more generative models in which ownership over energy, a key sector within the foundational economy, moves away from the extractive models. In addition, a large majority of actors were sympathetic towards the three tenets as an analytical framework through which to simultaneously understand and critique the social dynamics and politics of civic energy sector low-carbon transitions. Above all, however, it was the visions, goals and values of the actors that informed the choice of the structures adopted, and indeed, shaped and augmented those structures, to suit those overriding aims around localisation, energy decentralisation and community ownership and/or benefit. This suggests that within the civic energy sector, there are *inherent limits* in focusing in on organisational structures. The next and final section of this conclusion and this chapter briefly addresses those limits, and then moves the thesis on to considerations of networks and intermediaries, before exploring the role of intermediaries in the first case study of chapter 5.

4.4.2 Beyond the limits of organisational structure: the role of networks and intermediaries in local energy justice

Whilst this chapter has made clear that different structures adopted by different actors within certain transition pathways, or indeed within the civic energy sector itself, are vital to understanding their justice impacts, it has also signalled their inherent limits. Indeed, many of the research participants

throughout phases 1-3 acknowledged this, with regards to both the specific models under analysis and also, the broader goals and aims of civic energy actors. For example, one participant noted the limits of focusing on organisational structures when trying to understand energy justice at the local level:

'I don't think the legal form itself is enough. You can have a CBS where nobody from the local community is a member. You can have a CBS where most of the members are local. In terms of what that delivers, in terms of justice at the local level, those two pictures work and differ greatly just by using the same legal form. It's about what they do – and yes the legal form can facilitate that' (P1-3)

In addition, another participant stressed that legal structures are most accurately understood as enablers that allow actors to get closer to realising overlying aims in low-carbon transitions:

'The whole thing with structure, legal form, governance and its ownership – it's all important and crucial, but actually, it's an enabler. That's all it is in some ways – an enabler. Mixed in with the business model, the governance, the offer documents and how it will do all these things are the overlying aims – they are intertwined – but the overlying aims are what's most important' (P1-2)

This suggests that, at the local level, other actors, forces and organisations are clearly important for understanding the dynamics of local energy justice and that it is vitally important to move energy justice analyses *beyond* a focus on organisational structure. This then demonstrates that some of the insights found within the critical literature review have particularly important implications for transitions in practice. Connecting to the insights of chapter two, section 2.4.3, the civic energy sector can be seen as harnessing grassroots innovations and also containing characteristics of a social movement towards building a new network of civic energy actors. As noted within section 2.4.3, the presence of energy justice principles amongst this network of actors is crucial for gauging its energy justice impacts, as seen in the Bristol Community Strategy for Energy (BCSfE) led by BEN.

The case studies within the following chapter also demonstrate that top-down and bottom-up dynamics are crucial for understanding local energy transitions, while also noting the importance of intermediary organisations for mediating information exchange, knowledge and awareness between both top-down and bottom-up actors in Bristol's civic energy network. Interestingly, intermediaries can occupy positions of power and engage in top-down governance, as seen with BCC, whilst also being the result of bottom-up activity and taking a more networked approach to managing relations, as seen in BEN. Indeed, intermediaries are seen as playing a vital role within broader civic energy networks, which themselves are also key for supporting the growth of local low-carbon activity. As the first case study of chapter 5 will show, when analysed via the three tenets, this process of intermediation also has particularly interesting implications for energy justice scholars. This focus on whether intermediaries are capable of *'intermediating energy justice'* forms the basis of the first case study in the penultimate chapter of this thesis, before the final chapter explores the concluding thoughts around exploring issues of local energy justice in Bristol.

5. RESEARCH FINDINGS: CORE CASE STUDIES

5.1 Introduction: analysing case studies with the three core tenets

This chapter will explore the four main case studies derived from all fieldwork and data collection phases, featuring insights sourced from the participant observation, in-depth interviews and focus group. Drawing upon the wealth of primary data gathered using these PAR methods, each case study will use the three core tenets of energy justice as thematic guides, exploring the justice implications and internal politics of different local, civic and community energy activities across Bristol. Where necessary and relevant, core themes from chapter 4 will also appear throughout the case studies. These include the importance of different organisational structures, the contextual backdrop of austerity and how organisations saw their activities, and others in the civic energy sector, relating to different aspects of the three core tenets. Furthermore, in some case studies, new ideas and literatures will be presented. Some of these literatures were not explicitly present in the literature review, for example, certain literatures on intermediaries or energy justice and energy activism, while vital concepts and concerns within the literature, such as the importance of *geography* and *spatial analyses* to energy justice, are expanded upon. As mentioned in chapters 3 and 4, the process of data collection was both a dynamic and iterative one, allowing the data to 'speak' to core themes within the literature and also contribute new themes that allow the thesis to expand its contribution to a local and bottom-up perspective on energy justice.

The first case study, entitled *'Intermediating energy justice?'* looks at the role of intermediary organisations in Bristol's civic energy sector. This case study demonstrates - through various activities - a critical role for intermediaries in contributing to the realisation of local energy justice in Bristol, and vital for helping shape a *Thousand Flowers* type transition pathway in the city. The second case study *'Proximities of energy justice'*, looks at how the spatial proximity of low-carbon initiatives, in this case community owned renewables, are vital to the understanding of justice claims in relation to the three tenets. It also critically interrogates the notion that organisational structures, and their associated model rules, can be constructed in such a way that makes them sufficiently address the tenets of energy justice, building on the critiques around the limits of organisational structures in chapter 4. The third case study *'Conflicting narratives of energy justice'* looks at the some of the potential pitfalls of community energy schemes, whilst also exploring the failed ambitions and goals of the 'Bristol Power Co-op' (BPC) in relation to internal political struggles. It also addresses the concerns of other civic energy actors and using data from phase 4, captures the thoughts and perspectives of the residents of Bristol who were recipients of BPC's Lockleaze solar scheme, providing an interesting counter narrative to that of the directors. The final case study looks at the relatively new and little understood relationship between energy activism and local energy justice by

focusing on an organisation known as 'RADE' – 'Residents Against Dirty Energy' in Bristol. It also presents insights into what is termed a *'new frontier for local energy justice'* research.

Through shaping and structuring each analysis of the case studies around the three core tenets of energy justice and the core themes in chapter 4, each case study teases out the emerging politics of low-carbon energy transitions and initiatives at the local level, whilst contributing to the emerging pool of empirical data on local and bottom-up energy justice perspectives more broadly.

5.2 Intermediating energy justice? The role of intermediary organisations in Bristol in a time of austerity

5.2.1 Introduction

Intermediary organisations are understood as organisations performing core supportive functions *between* actors, helping to bring different organisations, initiatives and actors together (Hamilton et al. 2014); *mediating* priorities, activities and processes across levels (Hodson et al. 2013), supporting shared goals and outcomes and facilitating information flows (Parag et al. 2013). Connecting to the insights of bottom-up approaches to energy transitions, this makes them critical central components of a civic energy sector and vital to the pursuit of a transition pathway like the *Thousand Flowers* pathway at the local level (Seyfang et al. 2013). Energy intermediaries, more specifically, form an important part of a local energy system, through connecting local projects with each another and with the wider world, sharing learning and working towards shared infrastructural arrangements (Hargreaves et al 2013),. Research on intermediaries in Bristol has shown that they play an '*important role in representing their local groups at a policy level, developing shared projects, and increasing participation to spread the benefits of community approaches more widely across their local area'* (Bird & Barnes 2014 p.218). In the context of energy justice, Hargreaves et al (2013) and Kivimaa (2014) both suggest that intermediaries can play an important role in supporting systemic change and in supporting bottom-up transitions. These findings, and the suggestion of the centrality of energy intermediaries in local energy systems, are interesting avenues for scholars of energy justice exploring the application of the triumvirate of tenets, and indeed, prompt questions around whether intermediaries are capable of *intermediating* energy justice.

Building on Bird & Barnes (2014) work on the importance of intermediary activity for scaling-up local energy activity in Bristol, this cases study demonstrates the importance of intermediary organisations not just for scaling up local energy activity, but for local energy justice in Bristol's civic energy sector. Using methods within the Participatory Action Research (PAR) tradition, and drawing on a set of rich qualitative data including in-depth interviews, a focus group, and document analysis, the case study explores how local energy intermediaries approach issues of energy justice in Bristol. This subsection therefore contributes to local approaches to energy justice by applying the three tenets to the activities of intermediaries in Bristol's civic energy sector, analysing their critical roles and

limitations in times of austerity. It then draws out wider implications for the sector as a whole and thus implications for local and national policy to address energy injustices and support changes that will move towards greater equity in future energy systems.

5.2.2 Data sources and analysis

This case study draws mostly on the primary data derived from two of the traditional techniques of PAR - in-depth interviews (n = 12) and a focus group (n=7). As noted in chapter 3, the in-depth semi-structured interviews were conducted in a more classically 'extractive' fashion, where researchers seek to obtain knowledge and insight from key actors through a set of flexible pre-determined questions. In both the in-depth interviews and focus group, participants expressed a shared interest in energy justice and saw the applicability of the theory in practice. In the analysis of the findings, the three core tenets of energy justice act as thematic guides, providing a useful framework through which to sort, categorise and analyse the relevant qualitative data. In addition, further insight has been drawn through documentary analysis of the published works of the organisations involved. This includes websites, reports and strategies as detailed in the table below.

Organisation	Source
Bristol Energy Network (BEN)	http://bristolenergynetwork.org/
	Bristol Community Strategy for Energy (2013)
Bristol City Council (BCC)	Bristol Community Energy Fund (https://www.bristolcommunityenergy.co.uk/)
	Our resilient future: a framework for climate and energy security (2015)
	The population of Bristol (2016)
	Bristol – ambitious about fairness' (2014)
Centre for Sustainable Energy (CSE)	https://www.cse.org.uk/about-us
	Home-energy advice leaflets in Somali (https://www.cse.org.uk/news/view/1929)
	Climate change and social justice: an evidence review (2013-14) – for JRF, (Preston et al, 2014) And commentary: https://www.cse.org.uk/projects/view/1237
	CSE Blog (Banks, 2014) https://www.cse.org.uk/news/view/1812
	Supporting Bristol's Community Energy Initiatives: Projects and priorities (2011)
Bristol Energy Co-op (BEC)	www.bristolenergy.coop
Bristol Energy (BE)	https://www.bristol-energy.co.uk https://www.bristol-energy.co.uk/switch-for-bristol/my-bristol-tariff

Table 11: Document analysis data sources for section 5.1 (see references for full details)

In presenting these findings within this case study, individual respondents are anonymised to ensure personal anonymity, while the case study references all associated organisations. The following subsections of the case study will reference data according to the 'Identifiers' column in the table presented below, which includes both interviewees and focus group participants:

Type of actor	Organisation	Identifiers
Non-profit Intermediaries	Regen Southwest (RSW), Centre for Sustainable Energy (CSE), Bristol Energy Network (BEN)	NP1-6
Local government	Bristol City Council (BCC)	LG1-2
Local energy group	Bristol Energy Co-operative (BEC), Easton Energy Group (EEG), Residents against dirty energy (RADE),	LE1-4
Energy Company	Bristol Energy (BE)	BE1

Table 6 – Identifiers for section 5.2

5.2.3 Intermediary organisations in Bristol

Initial analysis of all the data sources outlined in the above section, shows that, similar to the understanding of the function of intermediaries derived from key literatures (Hargreaves et al. 2013; Bird & Barnes 2014; Seyfang et al. 2013), in practice, intermediary organisations strive to empower local low-carbon communities and energy groups to engage in energy markets and build a civic energy sector. They do this through imparting important knowledge and advice, ensuring they have access to vital energy networks and peer support and connecting them with policy initiatives and funding schemes that serve to support the creation of a 'shared institutional infrastructure' in the civic energy sector:

> *'Communities wouldn't be able to do a lot of this work if they weren't upskilled to be able to navigate it […] those things have a fundamental impact on how communities going forward can deliver projects that they want to […] If you don't have people like us explaining that, helping them network and get recognition in that space, then for a start, at the policy level, communities wouldn't even be recognised if we weren't pushing for it and […] it would be more difficult for communities to understand what's happening'* (NP6)

They also perform a facilitative role, fundamental to improving the capacity of organisations to contribute towards the civic energy sector through their own efforts:

> *'What our role is, is to provide resources and advice to organisations to help give them the tools to go and do it themselves. What we often say is that [we are] not here to tell you what to do, to groups, as we don't understand the areas that they may be operating in and the politics of what may be going on in their communities as well as they would do. So we've always tried to help them understand what the best practice is and not tell them what to do'* (NP2)

This philosophy of support, advice and guidance suggests that intermediaries are critical for understanding local efforts towards energy justice. As austerity deepens in Bristol, as outlined in chapter 3, the focus intermediaries share on enhancing the capacity and skills of groups and

communities to engage in the civic energy sector is vital to understanding their impact on the core tenets of energy justice. In the following sections, the tenets are used as thematic guides to demonstrate how initiatives and activities undertaken by intermediaries relate to energy justice, drawing on key data taken from the data sources outlined above.

5.2.4 Intermediating the triumvirate of tenets: Distributional justice

Many of the activities intermediaries engage in relate to aspects of distributional justice, as they seek to 'open up' low-carbon transitions to new terrain in which local communities can access benefits derived from emerging local energy systems. Continuing a similar approach to chapter 4's findings, distributional justice was largely framed as being about the *distribution of costs and assets* and how local energy systems are financed; who pays for them, who benefits and who can reap returns and rewards. As made apparent in chapter 4, local energy actors across the UK are conscious of these distributional justice aspects. However, actors are also seeing the potential for revenue sources generated by local energy projects to take on a vital role in the context of austerity and widening inequality (see Adams & Bell 2015 p.1474; Forman 2017). The intermediaries interviewed were highly conscious of the social dimensions of distributing economic resources, such as investment opportunities and jobs. Within the context of Bristol, they sought to promote the *localisation* of economic benefits emerging from the civic energy sector in a way that is 'just', echoing Johnson & Hall's (2014) description of emerging civic energy schemes as 'capturing value' within a locality and connecting strongly to the civic energy models explored in chapter 4. For example, CSE noted that they are wary of how income is distributed by local energy projects and whether investment is open to a variety of community members:

> *'Something we look out for is thinking about - how is income being distributed by this group? Also, in the sense of a solar PV project for example, if they are opening that up through a share offer to that community – are they excluding certain people from investing in that?'(NP2)*

BCC were particularly interested in localising the potential employment opportunities emerging from local energy activity:

> *'It's a very powerful concept for Bristol and the Mayor, when I've seen or heard him address a group. It's almost the first thing you want to know is - what local jobs are going to flow from this project or this activity that you're proposing to me today? It's really critically important' (LG2)*

Similarly, the Bristol Community Strategy for Energy (BCSfE), developed by BEN and community energy groups, shows a recognition of the need to address the distributional aspects of energy justice through its 'broad goals' of '*local ownership of energy assets'*, '*money stays in the community'* and '*equal access across the city*'. It also proposes that local energy projects could address fuel poverty within the city, acknowledging this key component of energy justice (BEN 2013). Although there is

no explicit mention of social or energy justice in the Strategy, its principles share many similarities with calls within energy justice literature for greater affordability, empowerment, ownership, management and engagement in energy systems by civil society (Sovacool & Dworkin 2014; Jenkins et al. 2016). Evidence of these ambitions can be found in the 'five core themes' of the BCSfE, as referenced within chapter 3, figure 11.

Clearly, CSE, BCC and BEN, as key local intermediaries in Bristol's civic energy sector, are aware of issues of distributional justice and the impact of addressing climate change through various mitigation strategies at the local level. However, while there is evidence for the localisation of the economic benefits of the civic energy sector in Bristol being a key aspect of understanding how intermediaries approach distributional justice, our findings show that another important factor is the impact of austerity. When thinking about the value of local energy schemes to contribute to local economic growth, one respondent from BEN noted that austerity measures will lead to:

> *'A 75% reduction in council funding between now and 2020. And if you think what services the council provides, and what it will be out to provide in the future, that is a game changer. Communities that depend on services the council provide will be massively disproportionately affected. Anything that can cushion that […] and actually help create jobs and opportunities, that really needs to be recognised'* (NP4)

Another respondent, from CSE, saw the role of local energy projects in a time of austerity as important in sustaining the vitality of the local economy:

> *'In the times that we are in where there is more cuts and pressure from top-down reforms – government pressure on government departments to cut spending. Equally the pressure on local authorities to cut spending on services. How are those services going to be delivered? I do think that community groups are seeing community energy as income from renewable projects, as an option to make their communities more resilient and increase the local economy'* (NP2)

While economic issues were the primary part of the framing of distributional justice in the interviews and focus group, locational issues associated with distributional justice also appeared in the data. For example, when addressing the growth of projects managed by the Bristol Energy Co-operative (BEC) in Bristol, BCC were supportive of BEC's community benefit funds offered to communities close to where their solar projects are sited:

> *'It's about looking at the large-scale generation, it's about sharing the benefits with a community that's impacted, I think that's something that the co-op do really well. They have community benefit funds and they're very keen to deliver back to the community where their generation assets sit. I do think that is a way of spreading the benefits of a large-scale generation plant'* (LG1)

This shows that, alongside a key civic energy actor in Bristol (BEC), BCC is supportive of schemes that consider and redress the spatial aspects of distributional justice, in terms of how a low-carbon project relates to and supports communities within close proximity, a key emerging issue within energy justice and indeed, explored in more depth in the following case study (Yenneti et al. 2016; Bouzarovski & Simcock 2017). This finding is crucial for advancing understandings of the role of intermediaries in the spatial and economic aspects of distributional justice. Local authorities have the power to approve planning applications which are often fundamental to the success of local energy schemes; demonstrating that they will address issues of distributional justice may improve the likelihood of such permission being granted, thus assisting the growth of the civic energy sector more widely.

Building on BCC's support, BEC have stayed true to these commitments by contributing an annual lump sum to 'Ambition Lawrence Weston,' a local community regeneration organisation, as part of their Lawrence Weston solar farm project: *'one of our solar parks is right on their doorstep, so we're going to have a special relationship with them, a significant proportion of the community benefit or profit would go directly to them' (LE4).* In addition, BEC are also planning to fund '£4 million of social projects across Greater Bristol and Somerset over the 25 years of the projects' (BEC 2016), from the revenue generated by the Lawrence Weston and other solar installations. More significantly, Lawrence Weston is one of the most deprived parts of Bristol and in the most deprived 10% of areas in England (BCC 2015a), as explored further in the next case study. This reveals the extent to which civic energy actors can have an impact when they think about the connections between 'energy' and 'social justice', and shows how new sources of funding are being created by civic energy activities - and directed towards places in need - in a time of austerity.

Interestingly, the data also shows that a focus on the theme of localising economic benefits extends broadly towards a *network* of civic energy actors in Bristol. When asking RegenSouthWest (RSW) about the potential of municipal energy companies, they were keen to emphasise a new approach to local energy activity that resonated strongly with the *Thousand Flowers* transition pathway, and one in which economic benefits are kept within the locality, stating that municipal energy is:

> *'A great way for people to actually benefit rather than the Npowers and EDF's of this world making massive profits. It's really about reinvesting those profits locally […] I think the breakaway from this market dominated by the big six to a market where we have many, many small, independent suppliers is a good thing […] I'm sure Robin Hood and Bristol […] have a business model that is going to enable them to generate those benefits locally […] because they're socially driven and they are motivated by doing the right thing in their local areas and localising that economic return from all the money people are spending on bills' (NP6)*

In relation to distributional justice, all four intermediaries drawn upon in this section – RSW, CSE, BCC and BEN – are motivated by the same core themes discussed; the equitable localisation of economic activity and countering the impacts of austerity. Indeed, it seems that a more explicit focus on austerity was present amongst the intermediaries under analysis here than the organisational structures analysed in chapter 4, perhaps because of their crucial position within larger networks exposing them to the various impacts and scales of activity that austerity is affecting in the long-term.

Beyond these intermediaries, this case study has also shown that both Bristol Energy and BEC approach distributional justice in a similar way, seeking to prioritise the localisation of economic growth via energy schemes, with BEC also considering the distributional impact of siting generation technologies close to communities and how to contribute to these communities financially, as well as funding social projects in the wider local area. These findings point towards the existence of a mutually supportive network of civic energy actors in Bristol that pursue similar aspects of distributional justice in practice, attempting to make a tangible difference to the strength of the local economy. These economic concerns also feed into other tenets of energy justice, as will be shown. The following sections will look at how intermediaries and other civic energy actors approach procedural and recognition justice in Bristol's civic energy sector.

5.2.5 Intermediating the triumvirate of tenets: Procedural justice

Within Bristol, there are clear concerns over who is involved in decision making at all levels of the civic energy sector. One respondent suggested that community energy can be *'very white, very middle class, very male…tends to be a certain generation' (NP3)* and that *'who's involved in making decisions around energy and around the environment generally, …. is a massive issue'(NP3)* and not just within the groups interviewed, or for the city, but generally, with one respondent stating, *'The energy movement is the worst I've ever seen in terms of diversity' (NP5).* This concern, shared by many of the grassroots groups and reflecting similar concerns to chapter 4, led to BEN exploring how to engage different communities to widen participation in decision-making:

> *'When we say equality and inclusion, it's not very inclusive if we write the rules of the game and everyone else needs to play by them. It's about engaging people and asking 'what rules work best for you?' […] it's not about making the process more equal but giving more resources to the people that need it most'* (NP5)

However, while other respondents were also critical of the way in which inclusivity was approached by various organisations in Bristol, others were more positive:

> *'In many ways it (Bristol) is more forward thinking than other cities, the council are very aware of what's happening on the community level. It is more integrated than a lot of other councils around the country. I think the community energy groups feel like they can have more of a say and have*

> *more influence over what is being planned. Bristol is small enough to allow those sorts of connections between the council and community groups but also big enough to be a test bed for ideas that can potentially be rolled out in other cities' (NP2)*

Efforts are also being made to address these procedural justice issues through the Bristol Community Energy Fund (BCEF). The BCEF is a city council initiative to provide funding for community groups to engage with various energy issues. It takes an inclusive approach, with BEN and other groups working with the city council to develop a new model of decision-making involving a wide range of actors from across the city. One respondent from BEN detailed the fund's efforts to diversify its processes of decision-making:

> *'We did a focus group and went and met lots of groups to make sure the criteria were set right […] we also realised that […] the panel itself had to be representative […] We've now got 10 panel members […] We've got ****** who actually volunteers at Age UK. He's retired and works a lot with older people. We've got ***** from the disability equality forum who is a wheelchair user, who has been involved in equality stuff for many, many years. We've got ***** from the Black Southwest Network who's involved in a bunch of racial equality groups as well. We've got ***** and she works with younger people […] I think that's mostly the people who bring in different perspectives'* (NP3)

This shows evidence that, in light of core procedural justice concerns, BEN, working with BCC, actively sought to encourage involvement from otherwise excluded community groups, seeking community representatives to act in the interest of the communities they represent, and achieving a degree of success in securing a more diverse panel that represented a variety of voices within Bristol.

In addition, the BCSfE also recognises the need for wider involvement of community groups through its goal of '*empowered and engaged citizens*' to effect changes in the energy system. BEN has been quite explicit about its desire for greater engagement of different communities, and in 2017, was awarded £5,000 by the Bristol Green Capital Partnership as a special 'Better Bristol' grant because of 'their exceptional commitment to inclusion and equality in their aims' (BGCP 2017).

The focus group, which was supported by BEN, also discussed procedural justice. Participants spoke about the need for everyone to 'feel as though they have an equal voice' (LE3) and 'no more or less power' (LE3) than anyone else. This was discussed in the context of a controversial proposal for diesel generators to be deployed across the city, including in low-income areas, against the wishes of many local residents. However, the discussion evolved into wider issues of 'oppression' and how many people are 'contributing to society but [have] no voice' (LE1) in local decision-making procedures. Groups like RADE have been set up in Bristol to address these perceived injustices, by standing up for and helping to give voice to otherwise disenfranchised communities, arguably taking on an intermediary role themselves in bringing together 'residents, action groups and organisations'

(https://radebristol.com) concerned about the siting of energy infrastructure. Their role within Bristol's civic energy network is explored in more depth in the final case study of this chapter.

Alongside addressing issues of procedural justice, the BCEF also shows signs of appealing to aspects of recognition justice. Through attempting to involve otherwise excluded groups in decision-making procedures, some degree of recognition is afforded to diverse community groups in Bristol's civic energy sector. This connection is further explored in the application of the final tenet of energy justice to Bristol's civic energy sector; recognition justice.

5.2.6 Intermediating the triumvirate of tenets: Recognition Justice

Bristol is made up of many diverse communities and, as has been noted above, many have not traditionally been recognised or had a voice in energy issues despite, often, being disproportionately affected by for example, decisions on siting of infrastructure or fuel poverty. The Bristol Community Energy Fund (BCEF) was overtly structured to '*make the fund itself very accessible and inclusive [so that] the funding would get to groups and communities that are normally excluded, not just from environmental stuff but from funding generally' (NP3)* – its webpage further states that it is *'An inclusive approach towards supporting and enhancing the activities of the local energy scene' (*https://www.bristolcommunityenergy.co.uk*)*.

> '*There's a few things that we were trying to do to make the fund more accessible. It was about setting the criteria right, having a panel that was representative of the city, but then also [having a] community outreach worker, whose job it is to go out and meet groups and particularly groups that are often excluded'* (NP3)

BEN has achieved some successes in reaching different groups, with one council respondent stating that BEN had been able to reach out to:

> *'A group of over-50 Southeast Asian women […] they applied to the fund to basically have some energy awareness campaign amongst their community […] I don't expect that for a million years that they would have come forward had it not been for a member of BEN going out to them saying, "Guys, this could be a really good fund for you to apply to […] Going forward that's absolutely the focus that the council wants to have, is to reach all sorts of different groups and communities that haven't yet been-- I hate using the word energy conversation - but a part of the energy conversation'* (LG1).

In a further collaboration with BCC, BEN, with funding support from the city council, managed a 1 year appointment of an outreach officer to start to reach new communities and explore what their issues and potential solutions were. This outreach officer noted that:

'A huge focus of what my role was, and the BCEF, is about targeting community groups rather than energy groups to get involved. To realise that energy affects us all, and that they can make positive changes, rather than it being energy companies […] if the conversation only happens within energy groups, then we're never going to realise that common goal. The current energy problem, it's a human issue, not just an energy issue, everyone is affected by it […] it's about involving everyone in the conversation' (NP5)

However, despite its good intentions, the BCEF was still viewed as ineffective in the long-term, with funding timescales that were too short to enable new groups to develop ideas and participate in local, low-carbon transitions. This connects to some of the temporal issues surrounding the impact of CBF's in chapter 4, with the outreach officer suggesting that future outreach roles are supported to ensure long-term transformations for greater inclusiveness in the civic energy sector more widely:

'You can't do that work in a year. You need long-term funding i.e. 'we're investing a minimum 3 years to 5 years' […] it takes much longer for certain groups to trust you coming in. They are not going to trust you coming from the council […] There's a lot of work to do, Bristol is a big city […] as much as I engaged lots of groups in the process […] there's still probably loads of groups that I just don't know […] it's not just about BME outreach work […] what about the other ethnic minorities? There's lot of Chinese groups in the city and lots of Eastern European groups' (NP5)

Thus, when we consider the activities of BEN that were supported by the city council, we see efforts to address recognition justice in the context of BEN reaching out to otherwise excluded groups in the civic energy sector, while suggesting that longer-term support would be particularly transformative for achieving greater recognition justice in the city. CSE also spoke about addressing recognition justice in the civic energy sector through their activities;

> *'We've been, over the last few years, trying to be more of a kind of catalyst and just helping and supporting the sector and working with the council. I think throughout that we've been keeping the fuel poverty and social justice dimension on the table. Our advice service, which has reached 8500 people in Bristol over the last year - nearly all of that is about vulnerable households and going and doing home visits, working with Somali families and deprived communities'* (NP1)

This activity is further attested to through the wide range of 'Home energy advice leaflets in Somali' that CSE have available (https://www.cse.org.uk/news/view/1929), to help them more effectively reach out to the Somali community in Bristol to assist them in implementing a variety of energy efficiency measures. CSE carried out a review examining the relationship between climate change and social justice for the Joseph Rowntree Foundation and in reflecting on the findings, a blog makes the following observation, strongly recognising that communities need to be part of the system of change:

'Bottom-up approaches are much more likely to create trusted information and engaging material which speaks the language of the intended audience, whilst also mobilising and empowering communities to develop their own energy solutions'. (Banks, 2014)

In addition to the interconnected activities of BCC and BEN via the BCEF, alongside CSE's efforts to advance greater recognition justice, Bristol Energy also saw the utility of using BEN as a partner for aiding their own efforts towards addressing recognition justice in Bristol:

'We've already had quite a few meetings with [..] BEN […] how can they assist us in reaching out into the community, through focus groups for instance, or, you know, just spreading the word about what we're doing. For us that's very beneficial because we're tapping into a tried and tested resource - to an extent – of people that we know will be able to get into the communities that we know we wouldn't be able to get into very easily' (BE1)

'We've been in a lot of conversations with small charities and large organisations that are local to the South West – so we can work with CSE for instance, Centre for Sustainable Energy, we work quite closely with them on some of our fuel poverty ideas' (BE1)

These findings demonstrate the extent to which a network of civic energy actors, engaging in mutually supportive actions, is critical for understanding the dynamics of local energy justice.

5.2.7 Network of civic energy actors

The activities outlined in this case study demonstrate a strong connection to the findings of the Bird & Barnes (2014) research, in which intermediaries in Bristol are crucial for *increasing participation* and *spreading benefits more widely* in the local energy sector; these findings, as have been shown, relate strongly to the three core tenets of energy justice (Lacey-Barnacle & Bird 2018). In addition, when thinking about how civic energy actors work together to realise the three core tenets, a respondent from BEC sums up the critical nature of the interdependencies amongst Bristol's civic energy actors in helping them achieve success:

'I think probably the biggest asset that we have are all the relationships that have been built up over the last four years. A lot of them are local, they're very wide ranging. You can say Bristol City Council but that breaks down into lots of different contexts […] there are just so many individual buildings we've put the panels on, the prospective buildings, all the community groups associated with them and networks like BEN. With CSE, we participated in the volunteer program, we get advice from them, we do things with them. It's lots and lots and lots really' (LE4)

RSW also evidence this by pointing out strong relations between themselves and other actors in the civic energy sector, such as Bristol Energy.

'…. Our Chief Executive is on their board of directors. We have quite a strong influence there with Bristol Energy and we also run a lot of events where Bristol Energy are able to network and talk about their work. We promote and talk about their work through our member and community energy updates' (NP6)

This demonstrates that a network of mutually beneficial relations fosters collaboration and critical exposure to funding opportunities and support, while the use of events and a range of promotional activities helps to raise awareness of new local energy activities and organisations. This finding helps to advance understandings of energy justice beyond a focus on structures, to one of networks and intermediaries as fundamental to working with new community and municipal models to support activities that correspond to the three tenets of energy justice. The concluding section of this case study considers the relative merits of this network of civic energy actors, before calling for the advancement of energy justice in local level activities in low-carbon transitions.

5.2.8 – Conclusion

Through analysis of the qualitative data using the three core tenets as thematic guides, the above findings show that a mutually supportive network of civic energy actors is key for efforts to address distributional, procedural and recognition justice in the civic energy sector. While this network of civic energy actors is clearly fundamental to the realisation of a *Thousand Flowers* transition pathway in Bristol, the data also shows that the three core tenets of energy justice are valued differently by different civic energy actors in Bristol. As a result, there are differences in the way in which each tenet is approached by the different intermediaries.

- Procedural justice is visible in BCC's Community Energy Fund with community representatives appointed from diverse communities to help administer the fund. However, the BCEF seems to be part of a rare body of concrete evidence of attempts to foster greater procedural justice in Bristol. BEN actively seeks to engage new communities and to involve them in its decision-making but it is unclear how successful they are in this aim.
- In terms of fostering recognition justice, BEN clearly sees the need to seek to reach new and different communities, showing innovation in the creation of an 'Outreach officer' position, this was enabled by *temporary* funding support from BCC, suggesting that they too see the need to reach diverse communities. This type of activity needs more long-term funding to be sustained if recognition justice issues are to continue to be addressed.
- Distributional justice appears to have the strongest consensus in the data presented, with spatial justice considerations factored into civic energy activity, alongside localising economic benefits to mitigate the impacts of austerity on the local economy. Despite this cohesion amongst distributional justice considerations, the findings show that a cohesive vision for energy justice across the city is lacking when we consider procedural and recognition justice. Therefore, as will

be expanded upon within the concluding chapter of this thesis, a common framework for understanding energy justice is required amongst intermediaries and within networks in order to advance energy justice into policy and action on the ground.

The next case study focuses on Lawrence Weston and introduces considerations of space, place and geography into the thesis, before moving on to analysing *'conflicting narratives of energy justice'* in Bristol.

5.3 Proximities of energy justice: austerity and low-carbon transitions in Lawrence Weston

5.3.1 Introduction

Building further on the importance of understanding spatial inequalities as deeply embedded in the fabric of local low-carbon energy transition processes, this case study uses tenets of energy justice to critically analyse and understand the complex politics behind two low-carbon transition projects in Lawrence Weston, North West Bristol. The case study finds two main points of contention in relation to the broader themes within the thesis. The first, is related to a siting dispute in relation to the deployment of a solar PV farm close to Lawrence Weston, whereby claims for local involvement are centred on Lawrence Weston's close proximity to this solar farm. The second, relates to the distinction between a 'passive recipient' and 'active participation' approach, in which claims are made against different community energy schemes for greater training, upskilling and awareness activities to emerge from these low-carbon transition projects.

Stemming from a heated debate between a resident of Lawrence Weston and a Director of Low-Carbon Gordano (LCG), observed during the participant observation phase at the *'Social Innovation for Community Energy'* event (E4) hosted by BEN in early 2016 in Bristol, this case study draws firstly on participant observation data, then moves on to key findings drawn from in-depth interviews with a variety of civic energy actors from across Bristol. It builds on the findings outlined in chapter 4, in which the dominance of actors values coincide strongly with scepticism towards energy justice being secured within organisational structures alone; rather, the values of the actors behind organisational structures are crucially important for energy justice scholars, *alongside* considerations of the structures they choose to use to realise these values and goals in practice. The case study also draws upon the distributional impact of creating new low-carbon energy infrastructures in a time of austerity. Indeed, Lawrence Weston is shown to be significantly affected by austerity through the powerful statements of a Development Manager at Ambition Lawrence Weston (ALW) - a local regeneration charity set up in 2012 that seeks to improve the lives of residents in the local area after a decline in local services.

Building on Bouzarovski & Simcock's (2017) attempts to 'spatialize' energy justice, spatial configurations are seen to be an integral feature within this case study; the proximity of projects both

close to and within the Lawrence Weston community defines, in many ways, some of the participant's thoughts and deliberations on how to achieve local energy justice. The case study also draws upon the tenet of restorative justice (McCauley & Heffron 2017) to understand some of the more recent activities in relation to LCG's changing relationship with ALW, alongside a different approach to local community involvement and community solar deployment in Lawrence Weston, pursued by Bristol Energy Co-operative (BEC).

The conclusion builds on the wider economic and distributional implications of the case study, which supports local energy schemes that seek to advance greater 'active participation' roles for the communities in which they, or their projects, are embedded. This point also connects to the concluding chapter of the thesis, in which the development of a government-approved *'community energy specialist'* apprenticeship, supported by BEC, alongside further internship and training opportunities, are integral to the energy justice impacts of local low-carbon energy schemes going forward. These findings also offer a glimpse into the economic potentials of 'generative' ownership models for local communities, whilst also demonstrating issues of contestation around emerging models of community ownership.

5.3.2 Identifiers, data sources and a chronology of events: an overview

This case study revolves around primary data collected during in-depth interviews with five key organisations present within Bristol's civic energy network, focusing exclusively on their involvement with the Lawrence Weston community. These are; Ambition Lawrence Weston (n = 3), Low-Carbon Gordano (n = 2), Bristol Energy Co-operative (n =2), Bristol City Council (n = 1) and Bristol Energy Network (n = 2). Presented below is the identifier system for this case study, with unique identifiers assigned to each organisation and the associated participants interviewed:

Position / Occupation	**Organisation**	**Identifier**
Development Manager & Resident Member & Resident Energy project officer*	Ambition Lawrence Weston	ALW1-3
Chair & Director Director	Low-Carbon Gordano	LCG1-2
Community Energy Manager Investment Programme Manager (Energy)	Bristol City Council	BCC1-2
Director Secretary	Bristol Energy Co-operative	BEC1-2
Co-Director Community Outreach Officer Project Development Officer*	Bristol Energy Network	BEN1-2

Table 7 – Identifier system for section 5.3 *One participant occupied two part-time positions (ALW3)

As alluded to in chapter 3 and above, the case studies origins are found within the participant observation phase, during event E4. Subsequent attendance at Events E5 and E6 – the ALW Planning Group meetings - established deeper connections with Lawrence Weston residents, through forging

links with key members of ALW. During E4, one important recorded note summarised a core dispute between a director of LCG and a member of ALW:

'Low-carbon Gordano – Community fund doesn't include Lawrence Weston – community benefit fund is well intentioned but hasn't recognised Lawrence Weston, but the solar farm is very close to the community – resident of Lawrence Weston particularly vocal about this' (E4)

This recorded dispute formed the foundation of this case study, proving critical to many of the topics discussed in the follow-up in-depth interviews with actors from the five organisations outlined above. Further activities that arose on the basis of this dispute also demonstrate tremendous resonance with different aspects of the three core tenets of energy justice, alongside the more recently proposed tenet of 'restorative justice' (Heffron & McCauley 2017), expanded upon further in section 5.3.4.

During the data collection period (2015 – 2017), BCC approved and supported the installation of two different solar arrays on council-owned land in and around Lawrence Weston - the 'Moorhouse solar array' (MSA) and the 'Lawrence Weston Community Solar Farm' (LWCS). The MSA, organised by LCG, consisted of 7,200 solar panels that produce enough annual electricity for around 500 homes. With a £500 minimum share offer, just over £2 million pounds was raised through a community share offer developed by LCG in 2014, and the project has been fully operational since April 2015. The project received technical support from local renewables company Solarsense (http://www.solarsense-uk.com/), based on the outskirts of Bristol, and was praised by the then-incumbent Mayor George Ferguson, who also attended the launch of the new solar installation, pictured below:

Figure 18 – MSA launch with the Bristol Mayor George Ferguson. 2015.

Whilst the MSA was widely supported as a key part of Bristol's low-carbon future, the project exhibited very little initial involvement with Lawrence Weston, despite its close proximity to the community, as detailed in the map extract figure below:

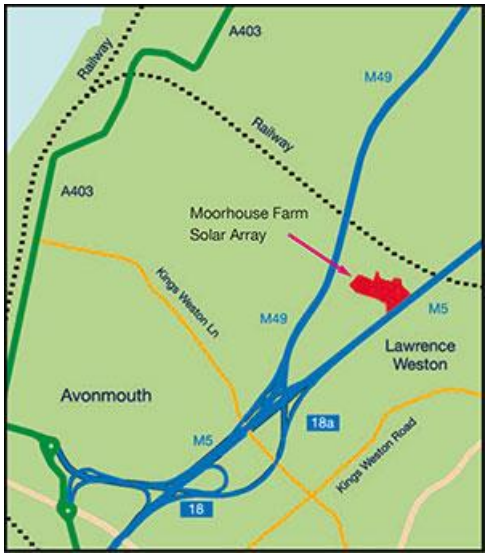

Figure 19 – Location of MSA next to Lawrence Weston

In contrast, the LWCS farm, organised by BEC, is based on Lawrence Weston road and resides more decidedly 'within' the community's territory. The LWCS farm consists of 4.2 MW of annual solar generation capacity that is enough to power 1000 homes – close to double the capacity of the MSA. The project has been fully operational since June 2016 and alongside a solar farm in Puriton, is part of two of BEC's key solar projects that raised over £9 million in total through public share offers, with the opportunity to purchase a £50 minimum share as part of this fundraising scheme. The LWCS farm received support from ALW, as seen in the image below:

Figure 20 – LWCS farm featured in ALW promotional media

The LWCS farm was developed, in part, in reaction to claims of injustice by ALW. Indeed, as will be shown, BEC partially reacted to the claims made by ALW against LCG during E4 and against the city council's granting of planning permission to LCG in such a short timeframe. Indeed, BEC sought to create a more just solution to local energy deployment, and enhance engagement through a more 'active participation' model, while - as will be explained further towards the end of the case study - LCG have attempted to involve themselves more closely with ALW in response to these claims of energy injustice against LCG's development of the MSA.

Underneath these shifting relationships and processes of remediation lie contestations over *spatial injustice* in the form of low-carbon siting dynamics (Bouzarovksi et al 2017). These siting dynamics fundamentally underpin the claims of injustice made against LCG by ALW. As this case study will demonstrate, these justice claims are intimately tied to claims surrounding the proximity of projects and their closeness to the community of Lawrence Weston; a community that has felt as though it is on the geographical, economic and social margins of the city for some time. Moreover, it is important to note that Lawrence Weston is one of the most deprived parts of Bristol and in the most deprived 10% of areas in England (BCC 2015a), acting as a critical backdrop for advancing understandings of the empirical links between local low-carbon transition initiatives and deprived communities as mentioned within the critical literature review.

Drawing on secondary sources to generate further insight into the development of current and future relations between ALW and LCG, this case study will demonstrate that it is this overtly *geographical* factor that underpins the energy justice disputes at the heart of these transition processes. In addition, wider concerns about the economic impact of austerity on the local area force into focus the

emergence of new low-carbon activity in deprived parts of Bristol, alongside the prospects of economic opportunity that this brings to new spaces and places in a time of austerity.

5.3.3 Space and place in LCG and BEC: similar models, different approaches

Both LCG and BEC are legally established as a 'Community Benefit Society' (CBS), with the CBS model acting as the 'core' model for both organisations, as outlined in chapter 4, table 10. Both organisations have 'associated' models and structures, such as charities and CBF's, however, the places in which charities or CBF's operate can often be largely influenced by the geographical location of a community energy organisations projects or initiatives. Indeed, different organisational structures activities relate strongly to geography and proximity, suggesting that while the location of an organisation's headquarters or main office may reflect a community of place, the location of associated low-carbon energy infrastructures and projects may more closely resemble a community of interest, particularly if securing a certain location facilitates investor interest, for example. However, the two are also very often interrelated in community energy schemes, as this case study demonstrates through the differing proximities of community energy infrastructures. This also suggests that much more empirical research needs to be done on the geographical complexities of ownership over distributed, decentralised and local low-carbon infrastructures, particularly from an energy justice perspective.

While community energy organisations are indeed supported by an entanglement of institutions, actors and funding sources at multiple scales (Rasch & Köhne 2017), the development of physically distributed energy infrastructures are also accompanied by an overtly multi-scalar and transboundary feature that suggests the relationship between space, place and proximities in energy justice is little understood. This case study therefore also attempts to unpack, albeit lightly, some of these energy justice issues around space and place in local low-carbon energy transitions, using core principles of energy justice. For example, LCG's community benefit fund is meant to be directed towards their local areas in North Somerset, Gordano and Portishead respectively, while BEC focus more closely on directing community benefit grants towards Bristol and target areas within the wider local authority area as defined by the city council. However, while LCG are based just outside of Bristol in North Somerset, the MSA is sited very close to Lawrence Weston in BCC's territory, as shown in figure 19 above. As will be shown via the lens of restorative justice, LCG have arranged for a portion of their CBF to be directed towards ALW, expanding the geography of the distributional justice implications of LCG's CBF beyond the geographical 'catchment area' of their core model, to the community within close proximity to one of their main solar PV sites – the MSA.

Thinking about the connections this provides to the organisational structures used by LCG and BEC, who are both constituted as CBS's, the interview data points out strong *initial* differences between the two organisations. While LCG were set up with a CBS as their core model - suggesting 'community

benefit' would be integral to their projects - it is important to note that both directors asserted, when questioned on their primary motivations, that addressing climate change was their core priority, rather than community benefit provision:

'Our motivation wasn't or hasn't been to embrace the whole community in what we do. That's not been the motivation – the motivation has been to get renewable energy installed on the ground and to help save carbon […] the primary motivation is climate change and solving that problem rather than community support if you like' (LCG1)

'We decided that a BenCom was the best way of lining up what we wanted to achieve. Which was primarily about carbon reduction but also about community sustainability, resilience and energy stability' (LCG2)

Interestingly, the directors of BEC had similar intentions, but in their responses to questions around their primary motivation for starting the co-operative, stressed an opportunity to address more equitable social arrangements and issues concerning community benefit:

'The starting point for the energy co-op was climate change […] that is the fundamental aim, but alongside that I think opportunities were seen to use that transition to create mechanisms for more equitable […] energy use really and access to the benefits of that transition to a low carbon economy' (BEC2)

'We are a CBS and that's our raison d'etre – we are there to provide society with a benefit' (BEC1)

These responses suggest that, while both organisations employed a CBS model as a core model, different approaches to community relations were present amongst the directors of the different organisations, suggesting addressing climate change may indeed have taken precedence over community outreach efforts and community relations initiatives within LCG's activities.

This case study will build on the impacts of these core foundational differences between the two organisations, while this difference in approaches also supports the conclusions of chapter 4, demonstrating that actors goals and values alter and shape the impacts of organisational structures and their associated legal, legislative and inbuilt requirements as set out in their model rules.

The next subsection will apply the three core tenets of energy justice to the activities and disputes that took place after BCC approved LCG's, then BEC's solar projects in Lawrence Weston. This subsection also introduces the application of the restorative justice tenet to primary and secondary data into the thesis, in order to make sense of the changing relationship between LCG and ALW after an intense dispute relating to the proximities of energy justice.

5.3.4 Applying tenets of energy justice

The following subsections address issues of both energy injustice and justice, detailing the extent to which participants from ALW felt that processes of non-recognition, alongside a lack of inclusion within consultation measures around the installation of the MSA, led to claims of both recognition and procedural injustice in local low-carbon transition processes. After using recognition and procedural justice tenets to explore these tensions, the following subsections explore instances of energy *justice* through the lens of distributional and restorative justice, drawing on the impacts of the LWCS farm on Lawrence Weston in a time of austerity, as well as changing relations between ALW and LCG. The following insights reveal the extent to which energy justice is capable of helping scholars to critically understand the complex nature of the politics of emerging local low-carbon transitions.

5.3.4.1 Recognition (in)justice: Focusing in on Lawrence Weston and contested geographies

As mentioned in section 5.3.2, Lawrence Weston has long been recognised as an area of high deprivation and representative of some of the stark social, economic and geographic inequalities in Bristol. As a result, the Lawrence Weston community has felt a sense of recognition injustice for some time. This sense of injustice connects quite intimately to issues of *environmental* injustice throughout Lawrence Weston's history. As figure 19 shows, Lawrence Weston is located close to Avonmouth, an area that was historically a host to various industries in the mid to late 20th century, producing vast amounts of pollution that impacted upon surrounding areas. One local resident recalls how this industry and associated pollutants were once the norm amongst the local community:

'It's all dirty industry then so you had smelt works, you got Britannia Zinc, chemical plants and it was just accepted. Back in the day that was it, you had these big funnels and they're bellowing out dirt, dust and other pollutants […] there wasn't a lot of concern given at that time because that was how people were working and getting a living. Historically, air pollution and environmental injustice has been quite bad, really' (ALW1)

Indeed, as these industries began to go into decline or move operations elsewhere, one resident noted a significant improvement in the air quality of the local area:

'In the time I've been here I think the pollution has been improved basically with the closing down of the smelting works where I had one of my first jobs when I was about 17 years old. Most important of all was the closure of the waste incinerator, the city waste incinerator. That improved things' (ALW2)

While the presence of local industry clearly brought economic benefits to the residents and families of local areas, this history of environmental injustice connects strongly to an ongoing scepticism within the community that is rooted in the lived experience of local residents and history of perceived

environmental injustices. Indeed, one resident noted that other parts of Bristol haven't inherited this sense of continuing injustice against the community, whilst also possessing a greater capacity to object to imposing and potentially damaging infrastructures:

'There is a level of upset as soon as there is a mention of a power from waste burning plant. Or any other waste. There's a level of sensitivity. There is also a sense of disempowerment, whereas in other parts of Bristol […] immediately – there's an electric response amongst the community 'we're going to oppose this!' Here there's a much more ready – a belief that nothing can be done – that 'they're doing it again!' (ALW2)

Fundamental to the recognition justice tenet is the acknowledgement of marginalised and deprived communities in energy systems and transitions, which, as alluded to in the critical literature review, applies to the distribution of both environmental ills and environmental 'goods' (Walker 2009; Park 2012). While renewable energy infrastructures, such as wind and solar installations, are often described as environmental 'goods' due to their contribution to CO2 emissions reductions, their imposition on local communities and landscapes, without some form of consultation and approval, may generate new forms of injustice. Indeed, this was expanded upon further in chapter 2 with respect to community ownership and *involvement* being significant markers of increasing the success and acceptability of new distributed energy infrastructures.

Interestingly, ALW's Energy Project Officer (EPO), who is also a member of BEN, was conscious of this history of non-recognition in Lawrence Weston, stating that*: 'not only have they not benefited, they've also been recipients of poor air quality, noise, and numerous amounts of health impacts without that being recognised and well supported'* (ALW3). He therefore sought to use community renewables as a means to counter this history of the community existing at the margins of Bristol, alongside bringing new economic opportunities to the local area. Thus, the residents and members of ALW felt that both LCG and BCC had ignored the community when seeking to deploy the MSA, which threatened to repeat some of the mistakes of the past, in which the interests and voices of the local community are consistently ignored:

'A planning application was brought forward and was well advanced for putting the solar farm in. Without any consultation with us - a neighbouring community - let alone as a neighbourhood planning forum […] it was a significant development, it was right up against the boundary of the planning area and I felt they had simply ignored the community – the planning authority had completely ignored the community' (ALW2)

In addition, another resident of Lawrence Weston felt that other new low-carbon energy infrastructures, including the MSA, were deployed close to Lawrence Weston without recognition of the local community:

'The solar farm at Moorhouse, the wind turbines, local authority solar farm and wind turbines, we didn't get to hear about any of that. Only when we realized that there is a benefit for us getting involved, then we remonstrated and got highly involved, really' (ALW1)

While the residents of Lawrence Weston and members of ALW felt that local low-carbon energy transitions were failing to recognise a community within close proximity to new infrastructures, alongside seeing the potential benefit for greater involvement in transitions, a director of LCG felt that ALW's claims of injustice were unjustified, despite setting up their core model as a CBS:

'They want as much support and a leg up for what they can get really. I feel to single out community energy for special consideration is slightly unfair […] Avonmouth is stacked full of all sorts of businesses making money – they could all be asked for a contribution to Lawrence Weston's development fund. Why are we different?' (LCG1)

In contrast, a director within BEC acknowledged that there was an issue of non-recognition in relation to new energy infrastructures around Lawrence Weston, and saw this as an opportunity to foster deeper engagement, financial support and new relations with the community via the LWCS farm:

'We have a 10 year plan to rejuvenate the community. They're surrounded by energy – they're right in the shadow of the wind turbines – there's a whole load of energy plants down there in Avonmouth – on the whole they haven't benefitted from any of it really. They are just sitting right in the shadow of it […] we're working very hard to ensure that surplus profits are going directly to them' (BEC1)

While these different approaches of LCG and BEC are clearly strongly opposed to one another, similar to the claims of injustice made by ALW, the difference in these approaches can be linked to contrasting conceptions of the geographical boundaries and indeed, contested geographies, of energy infrastructure siting. For example, when questioned on some of the claims made by ALW around the siting of the MSA, a director from LCG responded by stating that:

'It's not in Lawrence Weston. It's in Avonmouth. Lawrence Weston is the other side of the motorway. In my geographic view of it, it was separated by quite a big barrier' (LCG1)

However, this geographical separation, while recognised by ALW, was not sufficient enough to justify the non-recognition and exclusion of Lawrence Weston:

'There wasn't any recognition […] The solar farm at the moment and the wind turbines aren't really in our geographical area, or our border area, but it's so close to our border, I think we are affected by it' (ALW1)

'They should've been here and the community feel that they should've been included much more formally […] the fact that it is just there. I think there is a general principle there as well' (ALW2)

Indeed, LCG themselves admitted that they could've done more initially, and that a sense of recognition injustice pervaded ALW's claims of injustice:

'I think we could've worked harder on it […] the lack of 'recognition' of Lawrence Weston as a community, by us, was pretty key in their sense of grievance about the situation' (LCG2)

This data demonstrates the extent to which recognition justice is such a vital tenet within the energy justice framework, providing grounds upon which both the directors of community energy schemes (LCG & BEC) and residents and members of ALW are able to voice their concerns around energy injustices in low-carbon transition processes. Key to this sense of recognition injustice and non-recognition was the city councils and LCG's failure to consult the community and include them in any decision-making procedures surrounding the implementation of the MSA. This is explored further in the next subsection addressing procedural injustices in the development of the MSA.

5.3.4.2 Procedural (in)justice: hostile localities, non-recognition and exclusion from consultation

As alluded to in the critical literature review, recognition justice can provide the foundation upon which both distributional and procedural justice can be realised. Thus, it would logically follow that in the case of non-recognition, instances of procedural and distributional *injustice* can arise. However, as the restorative justice subsection will make clear, developing relations between ALW and LCG have partially addressed issues of distributional injustice around the MSA.

In the case of procedural injustice in relation to the MSA, the speed and short timeframes through which LCG had to act are instrumental to their failure to include ALW in their initial stages of decision-making and consultation. Moreover, LCG sought suitable sites for solar PV *outside* of North Somerset due to the organisations location in a hostile local authority area that proved highly sceptical and unsupportive towards new low-carbon energy projects, as made clear by both directors in the interviews:

'I don't think they believe in communities here in North Somerset. The council here are dreadful. They've got in our way more than they've helped us […] we've really struggled to get any traction. We've had no support from them' (LCG1)

'They hate the idea of community energy, they've been as obstructive as possible on every conceivable front […] I think they are antagonistic towards renewable energy and we've made no mileage with them at all. That has been one of the difficulties - it's why we ended up building the scheme in Moorhouse rather than in North Somerset' (LCG2)

In addition, a director within BEC was sympathetic to the hostility LCG faced from their local council when speaking about the development of the MSA in Bristol:

'Their remit is really to work in North Somerset. North Somerset is very conservative. They don't have a very positive attitude towards renewable energy. So the schemes that they are looking to do, in their direct patch, they were getting nowhere with […] The problem was, was the speed at which everyone had to work […] they had to just rush out as quickly as possible – so that happened and it went through in 2-3 months' (BEC1)

Furthermore, this issue around timing and non-recognition was further reiterated by the EPO at ALW:

'Low Carbon Gordano had […] an excellent team and they genuinely do believe in the social justice movement, but they just failed, catastrophically, to engage Lawrence Weston. They said they were in a rush to get it done, which is true' (ALW3)

Thus, this hostility from North Somerset council, coupled with the need to act quickly, underpinned LCG's drive to secure a project site. In the eyes of a Lawrence Weston resident, this meant that '*the response seemed to be, "well ok, we can look elsewhere, well over there is a much poorer community and not so used to objecting"* (ALW2). Compounded by this tight timeframe, LCG's failure to consult ALW before the MSA was installed was only worsened by consultation with *other* communities outside of BCC's territory, as one resident of Lawrence Weston notes:

'They had conducted consultation with the South Gloucestershire community on the other side, but not with the BCC community […] it was developed by a 'community' energy organisation – from a wealthy part of North Somerset […] We said look, you need to talk to us – we are the 'community' and we are the local planning authority […] I think – and I still think – that they felt they could ignore us really' (ALW2)

Interestingly, the directors of LCG admit to their ignorance of ALW in consultation measures:

'We didn't contact them before we got going. Not that we didn't want to – we didn't know about them. We were ignorant of their existence. I did ask questions during the share offer about local groups in the area […] They, for whatever reason, felt that they were left out of the process of consultation – over where it should be, what it should be or how big it should be or anything else. Partly because of my ignorance' (LCG1)

'I think they're being unfair here as we did try to engage with Lawrence Weston but we didn't know about ALW at this stage - and we just didn't get anyone coming forward when we built Moorhouse – I'm not exempting us from criticism over that' (LCG2)

Despite these admissions, a member of ALW and resident of Lawrence Weston was adamant that the local community were ignored and that Lawrence Weston were excluded from consultation measures:

'They hadn't made a serious attempt otherwise they would've got through […] I think they didn't try because they thought they didn't need to make any accommodation. If there would be any risk of the project being refused or running into problems, then they wouldn't have spoken to us' (ALW2)

This subsection shows that ALW's sense of procedural *and* recognition injustice was amplified by the lack of consultation with the local community and ultimately the non-recognition of Lawrence Weston by LCG when they installed the MSA. This sense of non-recognition also extended to the city council as well as LCG, who approved planning permission for the installation of the MSA in such a short timeframe. While the restorative justice subsection details the efforts made by LCG to enhance community relations with ALW, the above two subsections have detailed some of the energy injustices associated with new, emerging low-carbon energy infrastructures in Bristol.

The next subsection concerning distributional justice turns to a focus on BEC's LWCS farm, seen here as a partial reaction on behalf of both the council and BEC to some of the claims of both recognition and procedural injustice made in the above subsections. It also details the distributional impacts of the LWCS farm on ALW, exploring what this means in a time of austerity.

5.3.4.3 Distributional justice: localisation, low-carbon infrastructures and austerity

Following the tensions between ALW and LCG outlined above, it would appear that these occurrences had both a direct and indirect impact on future low-carbon energy initiatives in Lawrence Weston. Indeed, much of the interview data suggests that BEC and BCC acted, to some degree, to rectify these injustices. For example, when questioned on the relationship between BEC and BCC with regards to the development of new projects, an Investment Manager at the city council was keen to emphasise his support for the LWCS farm:

'Something that I personally drove forward, was consenting for Bristol Energy Co-op to get access to a parcel of council owned land out between the motorways. That is a 4 megawatt solar farm site […] Lawrence Weston road, right […] that one we're really, really focusing on […] that would be a very large chunk of community owned asset there, which would be very exciting for the city' (BCC2)

Furthermore, while BEC had secured a partnership with ALW during the planning of the LWCS farm, they also sought to emphasise the bottom-up nature of ALW's involvement:

'I'm very impressed with one of our partners - ALW […] they've got a very well established committee, they've got a 10 year plan and I've been along to some of their meetings and it's very impressive […] It is really the ordinary people, local people that are driving that. There's no doubt. If you go to a meeting you'd be in no doubt that that is the case' (BEC2)

While claims of injustice against LCG around the MSA influenced the council and ALW, it would be inaccurate to ignore the wider impacts of austerity on Lawrence Weston and to assume that both the city council's drive to secure a local energy project in Lawrence Weston and ALW's drive to assist the regeneration of the local area through involvement with the LWCS farm were *only* driven by this. Rather, as attested to by ALW's EPO, the origins of ALW itself lie in broader inequalities and injustices in the city, which are reflective of lower levels of social capital in Lawrence Weston:

'People there tend not to object to things, tend to be the low income, the low educated groups and so they've been disproportionately disadvantaged. That's why Ambition Lawrence Weston is being formed - because of that disparity' (ALW3)

This subsection on distributional justice therefore moves beyond criticism of the MSA and directly addresses the impact of austerity on the local community, while detailing the contribution of BEC to ALW and considering the ways in which an 'active participation' approach to local energy schemes can extend distributional gains to localities.

During the in-depth interviews, austerity was shown to be a significant concern for key members of ALW, who, when questioned on the material and financial implications of austerity in the local area, noted the severe impacts of austerity measures since the introduction of fiscal cutbacks in 2010:

'What we have seen locally since the austerity measures is increase in crime, increase in black market employment, an increase in zero-hour contracts and really poor employment conditions […] because people are being forced to work […] and the benefits can't keep up […] there's lots of financial implications which affect social justice […] because of the added pressure and stress that's put on people' (ALW2)

'I think the biggest impact it can have on us is service provision and lack of it, community cohesion, more vulnerable people being created […] especially in the housing market […] I think it will all impact on that. Crime, antisocial behaviour, drug use, more alcohol dependency simply because they are coping mechanisms to cope with all these cuts' (ALW1)

Thus, ALW sought to prioritise new forms of economic activity that would benefit the local area to counter some of these harmful occurrences within the local community as a result of austerity. Connecting to the findings of chapter 4, this localisation of new economic activity was therefore a key driver for ALW that closely aligned with BEC's desire to localise the economic benefits of low-carbon energy infrastructures. In addition, the city council were also supportive of this localisation agenda in Lawrence Weston:

'I think what is important is that any benefits that flow from the project become locally sited. I think that one of the benefits of the way that the finance on Lawrence Weston road is structured, is that

there are lenders involved who are obligating the project to pay out to Ambition Lawrence Weston because of their proximity to the project' (BCC2)

Indeed, the location of the LWCS farm more decidedly 'within' the community led to concrete distributional benefits for ALW, through direct payments to the organisation from BEC's surplus revenues as detailed by ALW's development manager:

'We'll be getting £155,000. Payment schedule is £43,000 up front for the first year […] then £23,000 for the next four years. In addition to that - so, that's the upfront payment - a minimum of £8,000 a year from the yield from the solar farm' (ALW1)

Connecting further to some of the findings in chapter 4, this demonstrates the extent to which community energy projects can move beyond solely offering benefits to investors to support local organisations that are contributing to the regeneration of their local economy, as reiterated by a director within BEC:

'People don't have to be invested in it to get some of that benefit – it will be going to ALW who are doing projects for the whole community. That's the way we get our benefit out there' (BCC1)

In addition, the creation of the LWCS farm and associated community benefits during a time of austerity proved highly valuable for ALW as an organisation going forward:

'The beauty of this […] is that it's totally unrestricted. So, we can use it for whatever is needed to deliver our community development plan. Which to me is a godsend […] in these austere times, it's an absolute luxury to have available to us £155,000 plus £8,000 a year that could be spent on core funding should we need to, but ultimately to have that money unrestricted to spend it on the needs of the local area is absolutely brilliant' (ALW1)

This data reveals the extent to which community energy models can support local organisations and local economies, particularly in regeneration and development efforts. Indeed, this is key to the distributional justice impacts of local energy infrastructures. However, while this level of community engagement and involvement certainly provides a stark contrast to LCG's non-recognition of Lawrence Weston, particularly in a time of austerity, it is not without its criticisms.

After some form of distributional justice had certainly been achieved through ensuring that ALW were supported financially as an organisation, rather than the economic benefits remaining the preserve of affluent investors, questions arose around *what exactly* this money was then going to support and how. Discussion around moving beyond a charitable 'passive recipient' approach to one which ensured the 'active participation' of local community residents and ALW's members therefore followed, alongside general questions around the apportioning of surplus revenue. While BEC's support for ALW signalled a milestone for community energy supporting the regeneration of a

deprived urban community, connecting strongly to Eadson et al's (2014) call for more empirical data on these links, further examination of these links brings forth a certain politics around the allocation of surplus revenues. A participant from the city council noted that *who* decides on this allocation is crucial:

'Where does that last tranche of funding go, once everything else has been paid? I can't comment on that because that is the job of that board of directors, and the shareholders. If they are all white, middle-class shareholders - well, you know, they would come up with a different answer than if they are all living in Lawrence Weston, which as we know, is quite a deprived area generally' (BCC2)

Indeed, this assumption was proved correct, as from the perspective of a resident of Lawrence Weston, the agreement reached between ALW and BEC around surplus allocation was unsatisfactory:

'50% of the surplus that is generated will come to Lawrence Weston and 50% will go to the BEC Community Energy Fund, there was never really any negotiation with the community about that […] because of its proximity and its impact on the community […] it should've been more heavily biased in the local communities favour […] the community needs to feel that it is front and centre for the benefit that's coming out of that. I would've argued, 'if' there had been a negotiation, that it should've been 75 / 25' (ALW2)

Furthermore, key to this idea of proximity requiring a greater level of community engagement and involvement, this resident of Lawrence Weston also sought to emphasise the need for deeper relations with the local community, moving beyond grants and awards to more active participation in the training, upskilling and empowerment of the local community:

'We're setting up a fund for you and you can apply for the fund' – that's not what we want! We want involvement so there is knowledge coming back into the community […] so […] the project is having to educate and starts to build experience into the community about how it works, people understand what is going on and they get access to training and technical employment […] we want it to work so people can see that there is a mechanism for taking control of their economy and their lives here in this community – their local community - that's what it needs to be' (ALW2)

Such a powerful statement from a resident of Lawrence Weston and member of ALW, who is so deeply engaged in the politics of local low-carbon transitions, challenges energy justice scholars to probe the concept of distributional justice and explore the ways in which this type of distributional justice can be understood. Far from merely clarifying and understanding *who* benefits, this emphasis on an 'active participation' approach raises questions around *how* local communities benefit once local energy schemes facilitate engagement with the communities within close proximity to their associated infrastructures. The next subsection explores this move 'beyond passive recipients', whilst

also addressing the changing relationship between ALW and LCG in response to claims of injustice via the lens of restorative justice.

5.3.4.4 Restorative justice: moving beyond passive recipients, rectifying past claims of injustice

As outlined in chapter 2, the concept of restorative justice in energy justice, stemming from the work of Heffron & McCauley (2017), relates quite broadly to a process of remediation in response to a perceived energy injustice within an energy system or as part of an 'unjust' energy transition process. Indeed, this process of remediation may take place through formal or informal action, or through appeal to legal processes and procedures to ensure that justice is achieved. Drawing on secondary sources in the form of information sourced from both LCG's and BEN's websites, it is clear that ALW, LCG, BEN *and* BEC have worked together to facilitate deeper forms of engagement between the Lawrence Weston community and local low-carbon energy projects. Thus, this restorative justice tenet is relevant to this case study in two senses. Firstly, LCG have now incorporated ALW into their community benefit activities. Secondly, both BEC and LCG are wary of the need to move beyond a passive recipient approach to community energy that has indeed become the norm within the sector, whereby few community energy organisations offer training and upskilling opportunities in relation to the development of new energy infrastructures and deployment of low-carbon generation technologies. The development of an active participation approach therefore still stands as the exception, rather than the rule, as attested to by a Co-Director within BEN when speaking about BEC:

'I think the energy co-op - although arguably you can say that as a bunch of, sort of white middle aged, middle-class techie types - they are very conscious of what they are doing, and so working with organisations like Ambition Lawrence Weston, they are trying to create something that does deliver in a more inclusive way' (BEN1)

Indeed, LCG have recognised this and started to think of new ways to engage the Lawrence Weston community in some of their CBF activities, as well involving ALW more closely in their activities, as attested to by the EPO at ALW: *'we've had a meeting with Low Carbon Gordano, and I'm now on the panel as an Ambition Lawrence Weston representative and as the new energy officer'* (ALW3). This closer involvement is further demonstrated by the community benefit section of LCG's website, which builds on a more active participation approach:

'Ambition Lawrence Weston, representing the community close to our Moorhouse array, are going to train local, currently unemployed, people as energy advisers to help householders and businesses use energy more efficiently, and are working with local companies to ensure that there will be employment opportunities for the trainees after the project' (LCG 2016)

While LCG clearly sought to use some of their community benefit to assist local residents within Lawrence Weston, it is interesting to note the mention of the proximity of Lawrence Weston as a

contributing factor to changing their relationship with and acknowledgement of ALW. This shifting relationship also connects to assistance from other actors within the civic energy network, with BEN, who help manage the BCEF, working with LCG to deliver on this active participation approach:

'Ambition Lawrence Weston were granted £5,000 from Bristol Community Energy Fund […] which was match funded by Low Carbon Gordano Community Benefit Fund. The grant was used to fund a community internship programme, with local long-term unemployed people working on various community energy projects in the Lawrence Weston area' (BEN 2017)

As both a key member of BEN and the EPO at ALW, ALW3 responded to this need to advance forms of deeper engagement, and was instrumental to the delivery of this internship scheme:

'We basically recognised, talking to marginalised groups […] that people didn't access green volunteering in energy, because they basically felt they couldn't afford to do so. By creating an internship, which creates job opportunities, linking them to potential employers and giving them life skills, that would actually open a door to other opportunities' (ALW3)

In addition to this, BEC wanted to encourage ALW to use their contributions to fund training and upskilling activities within the local community, as noted by a member of BEN when discussing the passive recipient approach to local community engagement and support, connecting more widely to networks and the BCSfE:

'The energy co-op is moving away from that a bit, for example in how it's doing the Lawrence Weston project and that's talking more about this whole upskilling thing […] if you look at the Bristol community energy strategy, the economic thing is quite important […] there's very much an economic element as well which is upskilling, providing employment […] that was very much in the front of our minds when we were writing that. That felt really important' (BEN1)

Furthering the creation of new economic opportunities in a time austerity, this aspect of restorative justice connects powerfully to distributional justice and a focused, targeted approach to delivering the benefits of the low-carbon economy to deprived areas. This thinking, with assistance from ALW's EPO, has also led to the approval of a wind turbine to be deployed in the Lawrence Weston area, set to be constructed in the coming years, with the energy generated supporting local businesses close to the turbine (Ashcroft 2017).

This subsection has shown that, due to the claims of injustice around the proximity of the MSA and also around passive recipient approaches that fail to fully engage and involve communities close to energy infrastructures, the tenet of restorative justice can be used to understand how LCG have sought to rectify these past claims of injustice and assist ALW in wider regeneration efforts. It also clear that wider civic energy networks are crucial for the realisation of more active participation approaches in

practice and indeed, as the penultimate subsection will show, were crucial to the changing relationships outlined above.

5.3.5 Forums for energy justice? The power of networks to advance local energy justice in transitions

Providing strong connections to the previous case study on intermediaries, the role of key intermediary actors within Bristol's growing civic energy network proved crucial for both the expression of energy injustice and realisation of energy justice in Lawrence Weston. Interestingly, ALW, when questioned on whether they've benefitted from intermediaries, noted support for the development of a wind turbine installation in the local area:

Interviewer: The Centre for Sustainable Energy and Regen Southwest, I don't know if there's been any involvement with them?

ALW1: There has been a little bit, yes, so we've had a bit of funding from them to do one or two things but I think the biggest involvement we have at the moment is them to encourage us to make an application to UCEF for this wind turbine […] they wanted to know how to deliver wind turbine sites with the new planning restrictions'

While LCG demonstrated strong links with familiar intermediaries that are themselves key to intermediating energy justice, with one director stating that:

'CSE were very helpful - they've helped us train people to do a lot of energy surveys of buildings and houses, partly using a thermal infra-red camera, which is a service we offer. They've been very supportive in a whole host of ways. Regen SW have equally been enormously helpful in terms of keeping us on the ball in terms of what is going on […] Bristol Energy Network – we felt pleased to be members of BEN' (LCG2)

These connections proved to be fundamental to advancing local energy justice, through helping raise ALW's awareness of the benefits of low-carbon energy transitions and providing a forum through which LCG could be openly challenged by ALW on the construction and deployment of the MSA. For example, one of the directors of LCG noted the importance of BEN's role in providing such a forum, through recollecting the importance of the dispute at event E4:

'If I hadn't of gone to those meetings and been part of that I wouldn't have picked that up. That was the first contact that we had with Lawrence Weston and from that I had meetings and so on. So it has developed from there […] those tensions certainly came to the fore there and I hadn't really experienced them before or even thought about them too hard […] networking helped us do that. BEN […] helped us to do that' (LCG1)

This demonstrates the importance of networks and forums to allow new civic energy organisations the opportunity to be exposed to claims of injustice by other civic energy actors, which as evidenced above, can facilitate processes of restorative justice and closer involvement with aggrieved communities. Key to these opportunities is the early involvement of representative organisations of deprived areas and communities within civic energy networks, as a co-director within BEN points out that ALW *'has been a member of Bristol Energy Network probably almost since it was founded […] and they've been involved in the community energy strategy'* (BEN2). Indeed, as attested by a resident of Lawrence Weston, the LWCS farm stemmed from both ALW and BEC working with the council through BEN:

'It was the energy network links with the city council. Me turning up to the energy network meetings and challenging them. The energy co-operative were also part of the network and were talking to the council at the same time' (ALW2)

Furthermore, when it came to helping raise awareness of the benefits of local renewables projects to ALW, BEN were instrumental to helping key figures within ALW understand the how low-carbon transition initiatives could aid local regeneration efforts in Lawrence Weston:

'The biggest energy injustice for our local area, is the lack of awareness that reaches us. Awareness about renewable energies […] and the benefits of that, the awareness these energy facility type things can generate an income for us […] BEN has been the only organisation to keep us informed, to make us aware of what is available, what the energy landscape is like. We've got all our learning about solar panels, about wind turbines, how that works - the community fund – FITS, ROCS - Everything else through that initial engagement […] then we've got out and pushed that even further' (ALW1)

This subsection has shown that forums provided by organisations such as BEN allow for the contestations detailed throughout this case study, over new low-carbon energy geographies (Bridge et al 2013), to be voiced. Indeed, as a core intermediary and networking organisation within Bristol, BEN have been a vital force for giving a voice to new organisations, such as ALW, that wouldn't be seen as an actor within the broader energy system in a conventional sense, but are a core part of the civic energy sector, supporting the development of new low-carbon energy infrastructures. As the Development Manager within ALW notes: *'The other thing about justice […] is having a voice. Usually you'll only get justice if you've got a voice, people are listening to you, and I don't think we've had a voice in this area for a long time'* (ALW1). Thus, underpinning many of the claims made in preceding sections on the different tenets of energy justice, networks are clearly a crucial forum for intermediating disputes and contestations over new low-carbon energy infrastructures, proving vital for advancing local energy justice by allowing aggrieved, deprived or disempowered communities the opportunity to voice their concerns and potentially engage in low-carbon transitions in way that supports the regeneration of their locality.

5.3.6 Conclusion: embedding the benefits of low-carbon transitions in deprived localities

Bringing together many of the findings as presented above through various tenets of energy justice, alongside noting the importance of networks as forums for mediating claims of energy injustice and facilitating processes of energy justice, it is clear that low-carbon transitions can be harnessed to assist deprived and marginalised communities in their regeneration efforts. Furthermore, the backdrop of austerity measures reconfiguring service provision and worsening social inequality in an area that is already high in deprivation, should encourage energy justice scholars to further explore the potential of new energy infrastructures to be embedded within community or organisational strategies for regeneration. In addition, this case study has demonstrated a salient call to move beyond a passive recipient approach to surplus revenue allocation and for the civic energy sector to develop policies and strategies that enhance the prospects of more active participation approaches with local communities. This should revolve around the offer of skills training, internship opportunities and employment help to simultaneously raise awareness of the benefits of local low-carbon initiatives and to assist a more rapid deployment of low-carbon energy technologies to decarbonise local energy systems. Furthermore, the geographical underpinnings of many of the claims made in the above sections are closely tied to contestations over the proximity of energy infrastructures. This connects to two fundamental aspects of spatial justice within a broader discussion of energy justice. The first, is that many of the grounds for claims of both injustice and more just relations by ALW are based upon the proximity of projects to the area of Lawrence Weston, which various civic energy actors should be wary of in future endeavours. The second, and connecting to chapter 4's subsection on energy supply futures, is that through the deployment of solar PV farms close to the community, LCG expressed a desire to facilitate greater distributional justice through becoming an energy supply company that would provide low-cost electricity to fuel poor houses in Lawrence Weston. This kind of new energy supply set-up *also* relates to the closer proximity of Lawrence Weston to the source of energy generation, thereby reducing potential transmission losses and the transmission distance of electricity that is common to power provision within centralised grids. Thus, further distributional gains may be achieved, should a system of decentralised provision offer the opportunity of lower energy prices and a reduction in transmission losses in power provision. Such arrangements will require the critical lens of energy justice scholars to understand how to embed social justice and equity concerns in future arrangements.

The next case study will look at conflicting narratives of local energy justice in Bristol, turning critical attention towards the ambitions of Bristol Power Co-op to deploy household-scale solar PV across Lockleaze in North Bristol, before moving on the final case study of the thesis, which turns attention to the little understood role of energy activism for understanding efforts to realise local energy justice.

5.4 Conflicting narratives of local energy justice: Bristol Power Co-op and Lockleaze residents

5.4.1 Introduction

This case study focuses on the ambitions and work of Bristol Power Co-op (BPC), a local energy co-operative in Bristol utilising two different community models, a CIC and a Co-op, to deploy free solar PV on rooftops in Lockleaze, North Bristol. As noted in chapter 3, after interviewing the directors of BPC (n=2) in Phase 2 of the data collection, Phase 4 involved interviews with residents (n=5) in Lockleaze (including an additional director of BPC) that were recipients of the BPC solar PV scheme. This case study will draw solely on primary data sources, stemming largely from in-depth interviews (n=7) with the directors of BPC and residents in Lockleaze during 2015 – 2016, alongside comments from other civic energy actors (n=3) on BPC's activities, taken from Phase 2 interviews.

The case study will look first at the organisational structure used by BPC, and present some of the insights from the directors and residents concerning the complexities and difficulties around the organisational structure, including reflections on internal governance issues, democratic organisation and the relative ambiguity around the use of an asset lock within BPC's model. Noting a series of conflicting narratives around energy justice, the case study draws upon recognition justice to understand why Lockleaze was chosen as an area of concern for the directors and an area where they sought to deploy free solar PV for residents. Providing an interesting contrast to directors ambitions, some of the residents felt that they should not have been targeted and that other areas in Lockleaze were more in need of free solar. The case study then moves on to using distributional and procedural justice to tease out some of the persistent conflicting narratives around the Lockleaze project, further contrasting the statements and views of the directors with the experiences of the residents, whilst also gaining insight from an active member and shareholder in the co-operative who was *also* a recipient of the solar PV scheme.

Connecting to sections of the literature review which address an overriding bias within community energy literatures towards successful schemes (Catney et al 2014; Seyfang et al 2013), this case study addresses this research gap via the three-tenet lens of energy justice, and notes failed ambitions, project losses and ultimately the closure of BPC. This revolves around a bold attempt to realise - in the directors eyes - a more 'just' form of community energy organisation in Bristol, in which members of a local community received new micro-generation installations to directly impact their energy costs, rather than collective investment in local energy infrastructures that generate energy purely for sale to the grid. Thus, in addition to critical comments from the Directors and recipients of the Lockleaze solar PV scheme, it also features critical insights from other civic energy actors who

briefly reflect on the efforts of BPC and offers their thoughts on why it was unable to achieve its desired goals as an organisation.

5.4.2 Overview & Data Sources

In 2012, BPC attempted to be an experimental niche innovation in the community energy market that would provide low-income households in Bristol with free solar PV to reduce household energy bills, while excess energy sold to the grid would meet FIT payment requirements and generate a surplus that would pay shareholders their annual dividends. However, despite gaining early financial support from willing investors, the co-op encountered numerous difficulties and problems; it was troubled by ongoing problems concerning internal politics and governance; the management of co-operative finances and risk investment were seen to be inefficient; and a lack of participation and take-up by local residents in Lockleaze thwarted early attempts to scale-up their model of free solar PV for households willing to lease their roof space.

Building on the insights generated from the qualitative data collected in phases 1, 2 and 4, the case study demonstrates how the three tenets can provide insight into failed attempts at realising local energy justice, in this case, through BPC's inability to reach their desired scale and have the impact they first envisioned. This case study also connects with similar themes within other case studies, as issues of spatial justice appear through the directors concerns to address inequality in deprived parts of Bristol. However, as the recognition justice subsection demonstrates, this is a contested issue; hearing the voices of the residents themselves suggests that logistical reasons around suitable roof types may have been more important than targeting hyperlocal areas that are fuel poor, or struggling with energy bills. However, this is a point with which the directors of BPC would almost certainly disagree. These conflicting narratives, amongst others, are presented throughout the remainder of the chapter, using the three tenets to shape and guide analysis of these contrasting perspectives.

Presented below is the identifier system for this case study. Where other civic energy research participants (n=3) are included in the critical analysis of BPC's activities, their identifiers are the same as those used for phase 2 participants (see chapter 3 table 5).

Position / Occupation	**Organisation**	**Identifier**
1st Director 2nd Director 3rd Director	Bristol Power Co-op	BPC1 BPC2 LRH1*
Lockleaze Resident and householder	Recipient of rooftop solar PV from Bristol Power Co-op / Co-op Member / (*LRH1 also a Director)	LRH1-5

Table 8 – Identification system for section 5.4

The next section looks at the organisational dynamics of BPC, exploring the types of community models used by the directors of the organisation, as well as unearthing some of the core tensions within and amongst key members of the organisation.

5.4.3 Organisational dynamics of BPC: CIC-Co-op hybrid and internal tensions

Building on many of the concluding points found in chapter 4, it is clear from the visionary statements derived from the interviews conducted that BPC set out with bold aims to decentralise renewable energy generation and create a co-operative that localised the benefits of new energy generation technologies. Indeed, these goals and visions were the key driving force for BPC's vision for solar PV deployment across Bristol and Lockleaze. For example, when questioned about the overlying aims behind the Co-op, one director responded by stating:

'The idea was that, as you create a renewable energy resource, it should be owned by the community […] I had the idea of […] 100% locally owned renewable energy for Bristol […] so my concept is that we should be developing this and we should have a project […] we wanted to do 300 roofs in Lockleaze […] my business plan showed that this would be a viable amount' (BPC1)

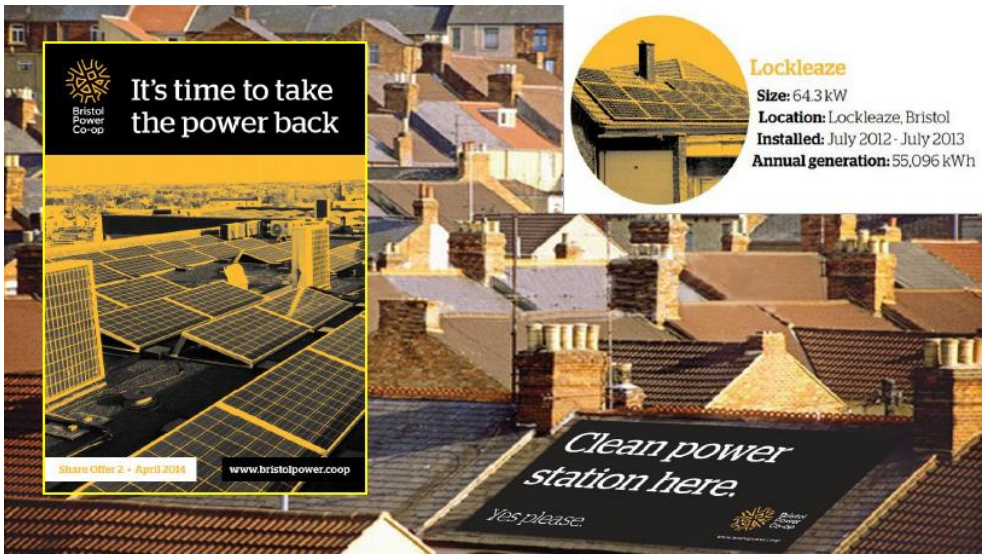

Figure 21 – BPC share offer booklet and Lockleaze scheme information

The above quote and figure supports the aims and goals of the BCSfE and broader ideas within the *Thousand Flowers* pathway, whilst demonstrating that BPC's directors were keen to support a system of co-operative ownership over solar PV technologies across the city. However, the model which the directors chose to facilitate this system of ownership ended up being fraught with difficulties due to both financial problems and internal tensions within the Co-op, which affected the Co-ops goals of deploying solar across 300 rooftops. As noted in chapter 4's conclusion, BPC used a CIC as an

associated model to mitigate against any potential damages to their *core* model, a Co-op. A BPC director stated that:

'The idea of the CIC was that it would take the risks and the co-op would hold the assets […] it was to have two different vehicles. One of which be a stable vehicle owned by the community […] the idea of the CIC was that it would undertake the risk and it would carry any losses […] we would only transfer assets to the co-op that were viable' (BPC1)

When questioned on how the co-operative structure was supposed to be balanced with the CIC, another director from BPC noted that the CIC was seen as the 'operating arm' from the outset:

'The CIC was supposed to do all the background support. Everything from surveys to price negotiation, to overseeing the project management of the install, the legals on the leases and the legals on the insurance […] the Co-op prospectus identified the CIC as the operating arm' (BPC2)

However, the directors appeared to have acted in haste to create this model, with little knowledge of the core details of the CIC model and associated features, such as the asset lock. Indeed, one director responded *'I didn't know anything about asset locks'* (BPC2) when asked about this model feature, and when asked to explain why he personally wanted to use both the CIC and Co-op models, responded *'I can't. I came in and it was done and dusted'* (BPC2). This gave the impression, from the outset, that many of the key decisions were led by one director within the Co-op (BPC1). When asked about why the CIC was formed alongside the Co-op model, this director expressed uncertainty about its effectiveness and noted the relative ease around starting a CIC:

'The reason we chose the CIC first was because it was easiest to form legally […] I think it's a flawed model and I think it's a flawed model because people who know better than I do tell me that's it's a flawed model. I just know that at least it's intending to serve the community. It may be a flawed model, but at least it's a social enterprise model and not a charity model' (BPC1)

While it was clear that a strong vision was present from the outset, it seems that BPC was fraught with both uncertainties and a potential lack of foresight around the models used. Indeed, this includes personal clashes and tensions within the organisation, with another director cautious of BPC1's tendency to overspend, whilst not connecting enough with the Lockleaze community through vital outreach work:

'He's a great innovator […] as long as you believe in spending tomorrow what you don't have today […] he was doing speaking engagements, not enough outreach, and ultimately this was the beginning of the fall of the Bristol power empire if you like' (BPC2)

In addition, both a recipient of the solar PV scheme, director and shareholder in BPC felt that the director who was solely driving the co-operative forward (BPC1) was inexperienced and overburdened, resulting in clear disapproval of the management of BPC:

'The person who was overseeing the project had very little project management or finance knowledge - just being able to do it to be honest. He was in above his neck […] for me, that was the sole factor and the other factors would have worked fine if we just had the right driver in the driving seat' (LRH1)

These internal tensions would ultimately undermine the wider success of the co-operative, and indeed, the ability to generate confidence and trust in the model used by BPC in order to reach a scale in which 300 homes in Lockleaze could receive free solar PV on their rooftops. Expanding further on internal tensions, the next section begins by looking first at issues of recognition justice around the decision to deploy solar on rooftops across Lockleaze, before turning to distributional and procedural justice issues to unearth many of the conflicting narratives around BPC's development of community solar in Lockleaze.

5.4.4 Insights from the three tenets

5.4.4.1 Recognition justice: hyperlocal disparities and logistical necessities

When thinking about the way in which both residents within Lockleaze and the Directors of BPC approached issues of recognition justice, divisions arose between the directors and the recipients of the solar PV scheme around whether Lockleaze was a place that required attention from BPC, or whether more deprived parts of Bristol were in need of free solar to help with fuel poverty. According to the BCC report on multiple indices of deprivation, Lockleaze is in the most 20% - 30% of deprived areas in England, making it a second-tier priority area in comparison to areas such a Lawrence Weston (BCC 2015a). This prompted questions from certain householders around why exactly Lockleaze was specifically chosen. One of the directors from BPC noted, when asked about their motivation to choose Lockleaze, that both logistical and geographical concerns were crucial:

'We basically sallied forth into Lockleaze, rather than Montpelier or Stokescroft; why not Stokescroft? Because there is no consistency amongst roof types. Why not Montpelier? Because it's full of greens […] they're the people that would do it anyway. Why Lockleaze? Big council roofs. Working class

people. Fuel poverty. Unemployment. Can we get these people interested in something green or cheaper energy bills?' (BPC1)

Clearly, multiple concerns needed to be factored in, in order to facilitate the successful deployment of solar across householder rooftops. However, another director, despite stating *'I know very little about Lockleaze'* (BPC2), also noted the prevalence of fuel poverty as one of the core motivating factors behind the decision to choose this area:

'We wanted to make a statement […] we could do a sample where -- a sample of helping real people in real homes with real fuel poverty and actually take them out of fuel poverty, one that helps people out of it immediately, not the wealthy people that could invest in it themselves' (BPC2)

Thus, both directors noted noble ambitions to address fuel poverty through their Lockleaze scheme, demonstrating awareness of geographical inequalities in the city and the ability for decentralised solar generation to lower energy bills for households. This view of the scheme was also shared by one of the recipients of free solar within Lockleaze, stating: '*there's a lot of poor people here in this area, a lot, and I thought it would be really a good thing to do for Lockleaze'* (LRH3). However, despite these noble intentions, another recipient felt that Lockleaze was not exactly a priority area in Bristol, and that its selection was tilted towards issues of commercial viability and logistical efficiencies rather than considerations of recognition justice:

'They're trying to find a gap in the market, plus looking at the city council homes, where are the good roofs? Where it's going to be easy […] work […] they came across Lockleaze which has always been 'middle ground deprived'. It's never been very deprived. It's never in the top 10 but it's towards the bottom. You can always come across something worse than Lockleaze' (LRH1).

Asserting a decidedly more pronounced view, one recipient of the free solar disputed that Lockleaze was deprived at all:

'I'm sorry but […] they keep saying that Lockleaze is deprived. I honestly can't see it. Perhaps I just live over this in little area, down here. I mean I've lived in Lockleaze all my life, ever since I was 10 I've lived in Lockleaze […]Everybody around here have bought their houses anyway so it's-- I've never ever thought of it as a deprived area' (LRH4)

Rather than refuting evidence that inequality is an issue within Lockleaze, this suggests that a more careful analysis of the geographical disparities within the locality suggests that *hyperlocal* inequalities are important for understanding these conflicting narratives. This emphasis on hyperlocal disparities is reiterated by another recipient of free solar in Lockleaze, who felt more cynical about why the area was originally selected. Feeling comparatively well-off as a householder living close to more deprived

families and households, he felt other areas *within* Lockleaze should have been the primary recipients of the scheme:

'I think they could get more funding because it's recognized as a deprived area, but the houses they actually put the panels on […] they would have been sort of middle to the higher end of the population in Lockleaze […] they couldn't put them on the council houses because they didn't get permission from the council […] so that would have benefited them more […] they should have been the ones that should have been targeted because they're the ones with the least amount of money' (LRH2)

Indeed, when further questioned on the hyperlocal nature of the socio-economic disparity between homeowners and less well-off families and communities within Lockleaze, this recipient clearly felt as though secure homeowners were the primary beneficiaries of BPC's scheme. This suggests that more could've been done to target council homes, to offer free solar to more deprived households in Lockleaze, connecting to Reames (2016) area-based and targeted approach to bottom-up energy transition initiatives to facilitate energy justice. However, it is clear that logistical necessities, such as suitable roof types and willing property owners, are vital for being able to target solar PV deployment to specific locations that are reflective of hyperlocal disparities.

Far from demonstrating a clear cut division between the recipients and directors of BPC's scheme, this subsection shows that conflicting narratives of energy justice are not merely restricted to divisions between the directors of BPC and the recipients, but also exist amongst the householders themselves. Some felt that choosing Lockleaze was justified, while others felt that the selection was more about roof types than targeting the poorest families and households. This suggests that in order to realise a different model of community solar that catered to individual households, the suitability of owner-occupier roof space for leasing to the co-op may have taken precedence over focusing on the more deprived households, council estates and specific areas of deprivation in Lockleaze.

The statements of the directors also suggest that this was the case. When asked about how these homes came to be recipients of the solar scheme, one director stated: ***'****They self-selected, we had open days and they came to it'* (BPC2). Indeed, while Lockleaze was preferred to other, wealthier parts of Bristol, another director clearly prioritised the need to find suitable areas for roof types, rather than households of *high* deprivation followed by viable roof types:

'We lucked into, first of all, the council publishing its solar map which showed which roofs were good for solar in Lockleaze and quantified my 'how many roofs are there? The answer was, in Bristol city alone there is 700MW worth of solar. That's a lot […] so wow – a real investment!' (BPC1)

While it appears as though logistical efficiencies take precedence over recognition justice concerns in BPC's Lockleaze solar scheme, it would be unfair to suggest that recognition justice was not a

consideration of the directors *at all*. Indeed, in order to make such a project a reality, it is important to recognise that technical viability must be matched with social goals and visions of widespread deployment to enhance social impact. However, this begs the question; what impact did these solar panels actually have on energy bills? The next subsection turns to questions of distributional justice and contrasts the experiences of the residents with the expectations, as outlined above, that the directors had around solar PV reducing energy bills and alleviating fuel poverty.

5.4.4.2 Distributional justice: targeting fuel poverty, achieving ambiguous gains?

As made clear in chapter 3, recipients of BPC's scheme were approached 3 years after the solar PV had been installed on their rooftops. This provided ample time for them to reflect on how BPC's scheme had impacted their energy bills and how the solar panels had performed. Therefore, in contrast to some of the temporal issues underpinning the CBF's and energy supply futures as outlined in chapter 4, this subsection reveals the direct impact of micro-generation technologies from the perspective of householders. After noting the directors desires to target fuel poverty in Lockleaze, the subsection details the lack of clarity and contrasting perspectives around what specific savings the recipients of the Lockleaze scheme made. It then finishes by briefly looking at issues of distributional injustice exacerbating internal tensions within BPC.

Both the directors interviewed in BPC expected that the solar panels would provide each household with a reduction in energy costs due to the onsite generation and consumption of energy from the panels, helping to alleviate fuel poverty directly. One director stated that they *'were thinking fuel poverty, what's the best way to do things – solar on people's roofs'* (BPC1) while another stated that:

'The priority was that, against the backdrop of ever-increasing prices, we knew that for every certain 1% in price rise, X number of homes in the UK was falling into fuel poverty […] the whole thing was if we could help people come out of fuel poverty then that becomes its own advert for growth' (BPC2)

Expanding further on this potential for direct impact, there was also a desire to experiment with community energy in a way that was different to other co-operatives in Bristol, such as BEC. BPC1 questioned the extent to which distributional justice could be achieved within BEC's community investment model through a hypothetical exchange with BEC's directors:

'What about fuel poverty – are you doing anything about fuel poverty? […] When we grow we want to help the community as well – more. But who are the members of your co-op? Well the people that are putting in money […] our first members were the people putting in roofs and who were benefitting from the renewable energy. Our second members […] was investor members […] isn't it time for truly sustainable business models to enter the market? Rather than wolfs in sheep's clothing, which is investment clubs disguised as community energy co-ops' (BPC1)

In essence, BPC1 saw the BPC model as a purer form of community energy that ensured a greater level of distributional justice through the direct installation of solar PV on to the properties of householder-members within the co-operative, rather than guaranteeing a return to community investors through share ownership. Indeed, when questioned on the meaning of community energy, BPC1 responded: *'What is the end game of community energy? […] communities own the energy. How much of it? All of it!'* (BPC1). However, this was not the case in BPC's solar scheme, as the *investor member's* needs for a return limited the possibilities for householder ownership; rather than owning the panels themselves, the solar panels were owned by BPC and the householders were leasing their roof space. The main benefit for householders, from a distributional justice perspective, was therefore the free energy generated by the panels, which meant that ownership was *not* in the hands of the Lockleaze community, contradicting the statements and vision for a purer, more direct from community energy, as espoused by BPC1.

When householders were questioned on the extent to which the energy generated by the panels was responsible for significant or noticeable energy savings, the responses were mixed. One recipient of the scheme noted that energy price rises complicate the extent to which she could measure any savings:

'Interviewer: Have you noticed any savings, energy savings?

Interviewee: No, but that is because energy prices have gone up in the last three years […] we haven't seen savings but we haven't seen our bills rise either' (LRH1)

Other recipients felt that they had made savings, but felt they lacked enough knowledge to talk about certain amounts:

'Interviewer: What financial gains, if any, have you made from the solar installation or even energy savings?

Interviewee: I honestly don't know, but I'm sure I have. I don't know' (LRH5)

'I am saving but obviously we don't see it because, you're not paying for it or anything. You know what I mean […] like I could see savings […] I'm waiting for technology catch up so I can use it more efficiently' (LRH2)

In contrast, when asked the same questions, other recipients in Lockleaze acknowledged a direct benefit from the panel installations:

'There is some. There is. Yes. There is some […] about £5 a month' (LRH3)

'I got no gas at all […] all electric, and I suppose from April to September you could say I had at least 50% off my bills' (LRH4)

These mixed responses suggest that most of the householders interviewed benefitted in some way from the panels being installed, achieving ambiguous and varied gains. However, these benefits change according to multiple variables, these include; annual energy consumption; the energy efficiency rating of a building; variations in solar generation according to weather fluctuations and metering arrangements, among other things.

Despite this multivariate complexity and ambiguity in sufficiently monitoring the economic benefits of the panels, it was clear from the majority of the interviews that most households couldn't afford the panels themselves and therefore, some distributional gains had been achieved. Indeed, one recipient noted that the upfront cost for self-purchase was too high: *'I haven't got the money to buy the actual solar panels. And at that time I think it was about £6000 for panels'* (LRH2), while other recipients interviewed also noted that they wouldn't have been able to access solar panels without the BPC scheme. Despite these modest distributional successes, BPC's scheme was only able to reach 23 households in Lockleaze – far from its bold vision of 300 homes.

Some of this failure to reach many more households may, in part, be due to the internal tensions seen within the co-op around issues of distributional injustice. For example, one of the recipients of the scheme, stated: **'***when I went to the meetings […] there was this in-fighting about money, which was very strong, it dominated a huge amount of time'* (LRH3). Another recipient, who was also an active member and previously a director, marked out the reason behind this in-fighting:

'The directors are all voluntary themselves, the person running it was paying themselves […] despite the funds not being there. That's what I mean - people volunteering and being paid. You want to pay someone if you see the results, but the results weren't coming through. Directors being fed lies and then finding out -- it was very a turbulent existence within it' (LRH1)

Indeed, this was also backed up by the director's own comments, as he notes that: *'I was taking a stipend of £1000 a month from the CIC […] the CIC was accumulating losses as a result of that, which at its peak amounted to about £40,000' (BPC1).* These distributional injustices are therefore seen through damaging internal tensions around the direction of resources to the director from the CIC, when many within the organisation felt this was unjustified. Ultimately, this lowered the confidence of householder members and other directors in the management of BPC, suggesting that the occurrence of distributional injustice *within* the organisation is a key part of its failure to reach a scale where it could have a significant impact on achieving distributional justice through solar deployment in Lockleaze. The next subsection briefly addresses the procedural justice issues within BPC, noting that, despite good intentions for facilitating member involvement, the small-scale rollout of solar and continuing internal tensions resulted in bad outcomes for procedural justice.

5.4.4.3 Procedural justice: good intentions, bad outcomes

Given the relatively small level of involvement that the co-operative reached due to a small rollout, it is important to note that BPC received scepticism and doubt from the local community when trying to involve residents of Lockleaze in their solar scheme, hampering the ability for widespread local community involvement. One director noted that:

'We went up into Lockleaze and they said – who are you? "We're people in Stokescroft and we want to put solar on your roof right" What's the catch? Who the hell are you and what's the catch? Very aggressive, beat up people. People come here and offer things and nothing ever happens, bloody Lockleaze, right' (BPC1)

While this connects to the types of potential challenges experienced by distributed energy schemes in reaching out to marginalised communities, as outlined by Catney et al (2014) and Walker (2008) in chapter 2, BPC were able to find a route into the Lockleaze community through help from an employee in the city council. One director noted that *'one of the early directors was a health promotion officer for the council in the Lockleaze area'* (BPC2), which greatly assisted them in drawing upon the experience of a trusted figure in the community. When asked about their level of involvement within the co-op and how they helped BPC, this director responded by stating:

'I've had a lot of involvement in the co-operative […] I was one of the first people they met in Lockleaze. I introduced them to all of the people. I'm a community worker so I knew a lot of people. I vouched for them a lot. I worked alongside them to make sure that it was in the newsletters and got to the right places and the right people' (LRH1)

Therefore, through the assistance of a Lockleaze resident and council employee, acting almost as an *individual* intermediary between BPC and the Lockleaze community, a consultation event was run in Lockleaze in a local community centre to gauge interest in BPC's scheme. Despite critical comments earlier in subsection 5.3.5.1 around a lack of ongoing outreach work, this event was a good first step into the Lockleaze community, with one director noting that *'it was very well attended, I think it was over 100 people'* (BPC2). While this initial turnout and interest garnered a decent amount of local attention from the community, resulting in 23 houses committing to the scheme, it did not guarantee future involvement in the co-op, despite adherence to co-operative principles by BPC as outlined by one of the directors:

'You're a member if you're a shareholder. You're a member if you're a director. You're a member if you've got a roof installation - so it's a proper co-operative. Everyone that is involved within it has got a vote and they've got membership' (LRH1)

Indeed, BPC wanted to create a local organisation that would facilitate a high level of procedural justice, through ensuring that all members voting rights were not restricted to purchasing a high-threshold minimum share based on personal wealth and the ability to invest:

'We gave them £1. There were instantly equal voting members from day one […] we did everything that you could in order to help people to help themselves […] they held a notional one pound bond which meant that they were equal members to the co-op. We had 35 investors, but we had 58 members' (BPC2)

Despite these efforts, the recipients that were interviewed as part of this case study demonstrated a lack of interest in being involved in the AGM's and meetings of the co-op, with many often being retired and too busy to spare the time. For example, one recipient noted, when discussing meetings and voting procedures:

'I could have gone if I wasn't busy doing something else, I could have been more involved but whenever they choose a meeting, it just happens something else is on. It's difficult […] because they're (solar panels) *on the roof, I don't really need to get involved. They'll be there for 25 years and that's it'* (LRH2)

Other recipients of the scheme, who attended meetings, felt they could not continue to engage due to the technical language used in meetings, lessening the chances of their future involvement:

'There is a lot of language which was - which I was outside of in some of those meetings, and that's not helpful' (LRH3)

'*Interviewer: Do you feel like you're part of the decision making?*

Interviewee: Not really, no, I've only ever been to one meeting […] a lot of it went over my head anyway, you know it's a bit too technical for me I suppose […] I'm not that involved with it ' (LRH4)

While one recipient was cynical about involvement with the organisation as he felt it did not represent the wider community and was more about personal gain:

Interviewer: How much do you feel you're involved in the decision making procedures?

Interviewee: None at all. Of course you're not, you never are. It's the people that's already sorted themselves out and got a wage out of it […] I don't involve myself […] government thinks that it's a community. What is community? What does it actually mean? A few people get a good idea and off they run with it. That's the truth of it' (LRH5)

Similar to the findings of the distributional justice subsection, responses on involvement within the co-op are mixed and varied. It is also important to note that this case study doesn't feature the voices of the investor members, who may have had a greater incentive to participate in decision-making

procedures due to personal investment. However, once again, the internal tensions within the co-op affected the level of procedural justice due to a lack of confidence in its management structure. Some of this may have been down the CIC-Co-op hybrid model itself, with one director noting that having the CIC take on financial risks was causing a strain on governance of the co-op:

'It was hard work being one of the directors and being a community arm of an almost CIC - sorry a co-op - which was responding to a CIC. It was hard work so I'm not very involved' (LRH1)

As a result of the mismanagement of the co-op and the losses accrued by the CIC, the directors within the co-op removed the main director and visionary behind BPC:

'It played out in our case, with me being basically – not actually voted off the board – but asked to leave last year - because we cocked up!' (BPC1)

This shows that, alongside stifling internal tensions within BPC due to project losses, a lack of involvement may have also connected to a history of scepticism towards 'community development' projects within Lockleaze, as attested to by a director of BPC when speaking about distrust in Lockleaze:

'They had the neighbourhood renewal funding taken away. Then they have had a different pot of funding - and they had that taken away […] people in the community don't trust projects that come in, […] they have only lasted as long as the funding as opposed to projects led by people – celebrating the assets of people within the community and keeping it to community resilience' (LRH1)

Connecting further to Catney et al (2014), the involvement and representation of deprived communities in decision-making procedures of projects such as BPC's may be the last priority on a list of more pressing matters for people that are retired and/or struggling to make ends meet. However, it seems as though, under the lens of both distributional and procedural justice, that internal tensions within the co-op and problems around mismanagement ultimately prevented BPC from reaching its desired scale. In addition, the penultimate subsection of this case study briefly addresses the lack of BPC's willingness to engage networks and intermediary actors within Bristol to assist them in reaching their desired scale, before moving on to the final, concluding points.

5.4.5 **Reluctant networkers: A rejection of civic energy networks?**

When questioned on the extent to which intermediaries and networks had influenced the development of BPC, one director responded by stating: *'I'd say exactly about the networks and about the council – at the present state they are still dysfunctional'* (BPC1) while another director, when asked how civic energy networks had influenced BPC, simply stated *'They haven't'* (BPC2). When thinking about this rejection of civic energy networks, BPC, in the eyes of other civic energy actors, distanced themselves from BEN, which one member of BEN felt was much to their detriment:

'Effectively, the Bristol Power Co-op didn't think it needed the network that much […] I think it was mainly because they were coming at it from a business point of view rather than from the community point of view and that was where they've sort of gone wrong and a lot of people didn't trust them as an organisation […] there was a lot of wealthy investors behind it as well, so that was the other part of it - they had all the right intentions but all the wrong approaches' (P2-8)

In addition, although the directors within BPC had the right intentions, according to BEN they also had a questionable reliance on borrowing to aid their vision and were concerned about the effectiveness of BPC's governance structure:

'When we looked at Bristol Power Co-ops model it did seem to be a little bit on the shakier side of things, it wasn't -- well - it relied a lot on finance, and it was more about the governance structure that we were concerned by, because we couldn't see how it was really community-led. Because it was really about individuals getting free solar […] we were more focused on the governance structure' (P2-8)

BEN therefore felt that BPC's experimental innovation in community energy was more reflective of a business oriented approach that sought to capitalise on viable roofspace, rather than a community-led approach that was led by the local community and owned by the local community. Indeed, another individual from BEN noted, when asked about BPC, that: *'what they were doing didn't ultimately succeed […] although I think it was an interesting idea, I wonder if it wasn't quite approached in the right way'* (P2-9), which suggests that a lack of support from BEN may have been changed by demonstrating more community involvement and leadership. In addition, when CSE were questioned on whether they influenced the decisions of BPC to address Lockleaze, they responded by simply stating '*Probably not'* (P2-7).

Perhaps the notion that BPC were more concerned with investors would have been altered if LRH1 was more involved with BEN, demonstrating a local community member's enthusiasm as both a director and recipient of the scheme. As a result, BEN and CSE may have assisted with further outreach efforts to offer help with reaching a larger scale of deployment across Lockleaze. However, it is clear that BPC exhibited a reluctance to embed themselves more deeply within wider networks and connect more strongly to local energy intermediaries. This reluctance, along with many of the issues outlined in the above section, led to the closure of BPC not long after its first free solar scheme in Lockleaze. The next and final section of this case study looks at how many of the problems outlined above impact upon scholar understanding of local energy justice going forward.

5.4.6 Conclusion: problems with ownership, scale and networks in local energy justice

This case study demonstrates that, while BPC sought to create an innovative organisational model that would facilitate the deployment of solar PV technology onto the rooftops of individual households, this vision contrasts somewhat with the notion of 'community energy' involving a more collective approach to *community ownership* over low-carbon technologies. It appears that the (second) investor members were the majority owners of the co-operative, while the (first) household members were minority owners, being granted a £1 share, who came forward to lease their roofspace to receive free solar. Indeed, the participants in the scheme that lived in the Lockleaze community can be seen here more as *passive recipients*, rather than *active participants* in BPC, due to their lack of involvement in the co-operative and the emphasis on varied distributional-economic gains above. This connects quite strongly to some of the desires for more innovative forms of deeper engagement and active participation in local energy schemes as seen in the Lawrence Weston case study. Indeed, this theme of deeper forms of community engagement and empowerment is attested to by LRH1 when critiquing *passive recipient* style schemes:

'It's always been workers coming in, showing that they've run events and they're great […] as opposed to - we've managed to get a local person to run this event. We've empowered them, showing them the skills and now it's going to continue because they know how to fundraise, and they know how to get money out of the community and then they know will work for free and who will need a bit of money' (LRH1)

While BPC's share offer document states that they aim to *'develop community ownership of renewable energy by the people for the people'*, it seems as though this 'community' of owners were indeed the investor members of BPC, not the Lockleaze community themselves. This relates strongly to Parks (2012) critical comments in the literature review on the use of 'community' in relation to energy schemes being a contingent and fluid construct that may aid the particular aims and ambitions of various projects, rather than a largely unattainable homogenous definition that remains constant across the sector. Indeed, this is supported by the fact that a key member of BEN saw the approach to this scheme as more business oriented than something that encompasses the wider community.

The view from some of the residents, as has been demonstrated, is that the co-operative could have targeted the most deprived parts of Lockleaze, instead of comparatively well off homeowners that are able to lease their roof space to the co-op. This, in their views, would have meant going directly to the council housing estates within Lockleaze and looking at how to install community solar there. This demonstrates the degree to which conflicting narratives of *hyper*local energy justice underpin this case study, as the directors felt that targeting Lockleaze alone was sufficient enough to address issues of social inequality, whereas the recipients themselves felt as though others in their community who

were comparatively less well-off would've benefitted more from the free solar. However, far from needing permission from the council to install on council buildings, other criteria, such as whether a building is south-facing, are important for the viability of microgeneration technologies such as solar PV and solar thermal. This is certainly an important consideration for bottom-up perspectives on energy justice, particularly when thinking about the politics of (hyper)local disparities and how local inequalities may be addressed by combining vital technical criteria around energy deployment with core recognition justice concerns.

The case study also raises some interesting general questions around ownership and engagement in local renewable energy schemes. As pointed out in chapter 4, many community energy schemes are struggling to achieve a future in which direct energy supply is a reality. As has been seen, the directors of BPC sought to realise a form of community energy ownership in which members were not only able to vote in the co-operatives elections and attend meetings, but which directly used the energy that was generated by the co-ops solar assets. While this is an admirable attempt to connect the people at the heart of energy systems to a decentralised, renewable form of generation, there may also have been an inherent problem with attempting to upscale this type of model from the outset. For example, many community energy models source investment from a variety of actors and base their models off of selling *all* of the energy they generate to the grid. The sale of this energy qualifies for a *export tariff* FIT rate, whereas energy used onsite qualifies for a *generation tariff* which is lower than the export tariff to encourage energy efficiency. The money from the FITs is used to pay back shareholders their dividends or returns. In the case of BPC, they were only able to sell the excess energy not used by householders - rather than all of the energy generated - from the solar PV they deployed. Rather than capitalising solely on the higher export tariff at a larger scale, BPC had to balance the generation and export tariff at a relatively small scale, in comparison to other energy co-ops.

This model is therefore vastly different to the other models featured in this thesis, namely, the models used by LCG and BEC, in which they sought to raise investment capital through community share offers, alongside loans, to deploy solar PV farms in peri-urban and rural areas. There may, therefore, be a difference in sheer scalar ambitions underpinning the different levels of success between BPC and BEC and LCG. For example, even with more widespread deployment of solar PV across the ambitiously anticipated 300 roofs, at an average of 6-8 panels per roof, that would equate to roughly 1,800 - 2,400 panels generating excess energy qualifying for FIT payments. In contrast, the MSA, run by LCG, consists of 7,176 solar panels, while the Lawrence Weston community solar farm consists of a generating capacity of 4,319 MWh, enough to power 1000 homes in Bristol, compared to the 55,096 Kwh generating capacity of the Lockleaze scheme. These scalar differences, as well as tariff arrangements, should be taken into account when thinking about the relative success, or failure, of

different community energy models, particularly if a co-op seeks to raise sufficient investment capital from multiple sources of finance.

Overall, this case study has made clear that approaching local communities as *passive recipients* of free renewable energy technologies under the guise of a 'community-owned' energy scheme backed by wealthy investors, does little to help realise local energy justice and active participation. Indeed, building on the insights of Van Der Scholtens (2013) and section 5.2.6, it is also clear that BPC failed to ensure widespread support from various local actors within Bristol's civic energy network, whilst also failing to ensure more widespread collaboration with local intermediaries to enhance their outreach efforts to help upscale their model and connect them to local actors who could assist their efforts.

However, given that BEN were sceptical of their approach, as direct community ownership, support and involvement is vital for securing the support of the wider civic energy network in Bristol, BPC's model may have been fraught with multiple difficulties from the outset. While other case studies presented in this thesis have proved that the three tenets are critical to understanding the politics of relatively successful projects, this case study has shown that they are equally valid in teasing out critical aspects of community energy schemes that have failed to realise their ambitions. The next case study addresses the relatively unexplored role of 'energy activism' in local energy justice, whilst also moving the focus away from *energy generation* and on to considerations of local activity around *energy storage*.

5.5 Residents Against Dirty Energy (RADE) and energy activism: new frontiers for local energy justice

'Activism is likely to have a continued interest over the form and consequences of low carbon technological development into the future' (Verbong & Loorbach 2012 p.181)

5.5.1 Introduction

This case study will look at the activities of a local energy activist organisation in Bristol known as 'Residents Against Dirty Energy' (RADE) during the years 2015 - 2017. Using the three tenets as thematic guides, this section will unravel RADE's efforts to work with a local low-carbon energy organisation and the city council to bring about energy justice in Bristol, in response to what was perceived as unjust project proposals for the deployment of diesel and gas generators across the city by distant companies in the West Midlands and London. The case study contributes to a community-led and bottom-up understanding of energy justice through the little explored lens of 'energy activism'.

Through analysis of the focus group conducted in 2016 with support from BEN, a discussion of the early activities of RADE shed light on an interesting form of energy activism in Bristol, which took up the first 3rd , or 30 minutes, of the lively and impassioned focus group discussion. The focus group revealed that RADE are a community-led energy activist group seeking to shape low-carbon transition pathways in Bristol city, in a way largely unforeseen by the conglomeration of civic energy actors proposed by the *Thousand Flowers* transition pathway. As a relatively new actor within the civic energy sector, most notably, an 'energy activist' organisation, they are largely informally operated. Having no formal legal structure and comprised of mostly volunteers, they have achieved notable successes in fighting for their vision of energy justice in Bristol. Seeing that this was a vital part of the local energy economy, a new node in the civic energy network and essential for understanding community-led movements for greater energy justice in Bristol, a follow up in-depth interview was arranged in early 2017 with two of the founding members of RADE.

This case study therefore draws on two primary sources of data; the focus group (n=7) with local civic energy actors in Bristol including RADE, conducted in 2016, and an in-depth interview (n=2) with RADE conducted in 2017. It also draws on multiple secondary sources to expand its data sources, including document analysis of key outputs from RADE and local media organisations, and analysis of documents and outputs associated with other core actors and organisations involved in relevant activities. Of these, the most notable are; Aura Power, UK Power Reserve (UKPR), Plutus PowerGen (Plutus) and Bristol City Council (BCC).

The data reveals the extent to which RADE effectively worked with Aura Power and secured planning permission from the city council to ensure the deployment of battery storage units in place of diesel generators in Lockleaze, north Bristol, arguing that the generators would be harmful to the local

population and in breach of EU Air Quality legislation. These proposed generators, as will be shown, were disproportionately sited in low-income areas across Bristol. Due to the efforts of RADE and Aura Power, alongside the approval of BCC, Lockleaze is now host to one of the UK's largest clean battery storage facilities, with 15MW of storage capacity able to store excess energy from the grid.

This case study uses the three tenets of energy justice to shed light on the little understood role of energy activism in shaping local energy infrastructures, identifying the efforts of RADE to act as both an energy activist organisation *and* intermediary in Bristol's civic energy sector, working with other emerging actors within Bristol's civic energy landscape. The case study also highlight's the extent to which *energy activism has not been sufficiently explored within local perspectives on energy justice.* Whilst connecting this section to broader themes in the thesis, such as its theoretical relevance to grassroots innovations and its empirical and policy relevance to generative and extractive ownership models**,** this section also demonstrates the way in which notions of spatial justice are so important to energy justice, through detailing the areas where diesel generators were proposed by Plutus. As such, this section sees the further integration of 'spatial justice' as a core tenet of energy justice as necessary to enhancing its explanatory power, drawing in particular on Bouzarovski & Simcock's (2017) critical work on 'spatializing energy justice'. The case study goes on to conclude with policy recommendations aimed at supporting activist-led local energy justice in Bristol and beyond.

5.5.2 Energy activism and local energy justice: addressing the research gap

To date, there has been very little published in the energy justice field that directly addresses the role of activism in amongst the politics of local energy infrastructures and transition pathways. This section briefly explores the relevant publications that have emerged on energy justice and activism, which were not explored in sufficient depth in the literature review. It finds that a significant research gap exists for the energy justice field more widely, with a broad swathe of conceptual 'space' left open for understanding how energy justice can be realised through activism in low-carbon transitions.

Much like the field of energy justice itself, research that initially combined both activism and justice oriented analyses in relation to energy deployment emerged out of the environmental justice field (Bullard & Johnson 2000; Cole & Foster 2001). In addition, a lot of this research focuses more heavily on case studies and empirics drawn from the United States (Bullard 1993; Cole & Foster 2001; Walker 2012). When looking at environmental justice in relation to the extraction of shale gas in the U.K, Cotton et al (2014) analyse different discourses that underpin the legitimisation of shale gas exploitation, noting the important role local oppositional activism has played in raising the profile of shale gas activities in the UK as a new energy source of interest to the UK government. Their research highlights the distributional justice impacts and geographical issues concerning the siting of shale gas extraction sites close to local communities, pointing to similar concerns to energy justice scholars more broadly (Cotton et al 2014; Jenkins et al 2016).

When thinking more specifically about energy justice and activism, Fuller & McCauley (2016) draw upon case studies from activist organisations in Philadelphia, Paris and Berlin, to frame energy justice in relation to perspectives from activism and advocacy. In their conclusion, they note an explicit *'need for further research to understand how energy justice is emerging as both an activist and advocacy frame, the claims being made and with what effects'* (Fuller & McCauley 2016 p.7). They also point to the need for researchers to pay attention to all scales of activism, with greater analysis of the *temporal* and *spatial* dimensions of energy activism in practice (Fuller & McCauley 2016). Building on the links between energy justice and activism in *'Empowering Energy Justice'*, Finley-Brook & Holloman (2016) call for greater alignment between advocacy, activism and academics when thinking about how to make energy transitions more 'just'. Of particular relevance to this case study is their call for more empirical evidence of activism:

'We need empirical and long-term research to record noteworthy energy justice successes as well as to document and publicize on-going problems and conflicts. Where toxic pollution and maldistribution persists […] research created with meaningful local engagement can help inform litigation, policy, advocacy, and activism to encourage energy justice transformations' (Finley-Brook & Holloman 2016. p.16)

As attested to by this limited research on energy justice and activism, there is a notable research gap within the field both empirically and theoretically. This gap will be addressed further in this section, using the three core tenets of energy justice as a guideline. Furthermore, the energy activism that is presented here will also be related to other core themes within this thesis, as noted in the introduction. The next section presents the system of data sources and identifiers for this case study for both the primary and secondary data, before describing the core actors involved in the case study and their primary motivations and underpinning rationales.

5.5.3 Data sources & Core actors

Both tables below detail the primary and secondary sources of data within this case study, with Table 9 providing anonymising identifiers for the focus group and in-depth interviews with RADE, whilst Table 12 identifies the organisations and associated links and sources for the document analysis of critical secondary data.

Position / Occupation	Organisation	Identifier
Director and Co-founder Director and Co-founder	Residents Against Dirty Energy (RADE)	R1 R2
Participants 1-7	Bristol Energy Network - Focus Group 'Organisations present: Easton Energy Group, Bristol Green Party, Community Energy Investor, Solon, Full Circle & BEN'	FG1-7

Table 9 – Identifiers for section 5.5

Organisation	Source
Residents Against Dirty Energy (RADE)	https://radebristol.com/
	http://bristolenergynetwork.org/membership/members/residents-against-dirty-energy-rade/
Bristol City Council (BCC)	**Accepted battery storage application:** http://planningonline.bristol.gov.uk/online-applications/applicationDetails.do?activeTab=details&keyVal=OM7629DNILF00 **Rejected diesel generator application:** http://planningonline.bristol.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=NO0ZY1DNJMK00
Aura Power	http://aurapower.co.uk/
Lockleaze Neighbourhood Trust	https://www.lockleazehub.org.uk/projects/
Plutus PowerGen	http://www.plutuspowergen.com/home/
Bristol Cable	https://thebristolcable.org/tag/rade/
	https://thebristolcable.org/2015/11/inner-city-power-plants/ https://thebristolcable.org/2017/03/plutus-energy-return-diesel-plant-plans/ https://thebristolcable.org/2017/07/plutus-energy-lose-appeal-build-lawrence-hill-power-station/
Bristol Post	https://www.bristolpost.co.uk/news/bristol-news/green-power-storage-site-built-51468
Bristol 24/7	https://www.bristol247.com/news-and-features/features/say-no-to-polluting-power-farms-in-our-city/(Emanuel 2015a) https://www.bristol247.com/news-and-features/news/fossil-fuel-power-plants-set-to-be-refused/ (Emanuel 2015b)
Totterdown Residents Environmental and Social Action (TRESA)	http://www.tresa.org.uk/48-diesel-generators-next-to-local-nursery-school/
Hazel Capital	http://hazelcapital.com/hazel-capital-commissions-the-lockleaze-15mw-battery-storage-project-in-bristol/
UK Power Reserve (UKPR)	https://ukpowerreserve.com/about

Table 12 - Secondary data sources for section 6.5

Building on the introduction and the data sources presented above, it's important to identify the core actors within this case study and their primary motivations, namely; RADE, Aura Power, UKPR and Plutus. The city council, as a key intermediary in Bristol's civic energy sector, acts as a facilitator for

planning permission and project proposals by Plutus, UKPR and Aura Power. As is evidenced below, tensions arise almost immediately between the ambitions of RADE and Aura Power and the interests of Plutus and UKPR, given the stark contrasts between the descriptions of their organisational interest and purpose. Looking first at RADE, they describe themselves as:

'A central rallying point for residents, action groups and organisations concerned about the placement of Short Term Operating Reserve 'STOR' sites in residential areas and communities without proper regard to the health of Bristol residents and the environment' (RADE website)

This description points to their origins as an organisation as one rooted in opposition to the proposed deployment of STOR sites across Bristol - or diesel and gas generators – as proposed by Plutus and UKPR. Interestingly, Plutus describe themselves in relation to framing renewable power as unreliable, and providing a needed - albeit ambiguous - source of power generation to feed into the UK's energy grid:

'Since the introduction of intermittent, renewable power to the UK's power generation mix, the National Grid is facing increasing instability and risk of brownouts and blackouts. Therefore a reliable source of power is required during periods of peak electricity demand and Plutus PowerGen's projects can be turned on rapidly and remotely to address this requirement' (Plutus PowerGen website)

UKPR, in a similar vein, also situate their organisational function as one couched within the language of 'energy security', referring to themselves as a:

'Leading provider of reliable, flexible and low carbon power services to the UK electricity market. With a portfolio of over 1GW of small-scale, local thermal power generation and battery storage assets, we help keep the country's electricity system balanced and resilient' (UKPR website)

Finally, Aura Power, a local renewable energy development company based in Bristol, simply summarise their core ambitions in relation to contributing to the further deployment of renewables:

'Our primary focus is on working with other developers to acquire sites or invest in joint ventures where we can deploy our expertise to deliver high-quality renewable energy projects' (Aura Power website)

These four descriptions of the core actors at the heart of this case study shed light on immediately apparent tensions within the context of local low-carbon transitions, particularly between RADE, Aura Power and Plutus. RADE's creation was in reaction to the ambitions of Plutus and UKPR to deploy STOR systems across Bristol, while the core aims of Aura power are to deploy more renewables - which Plutus frame as responsible for the *'increasing instability and risk of brownouts*

and blackouts' in the UK energy system. This sharp contrast in technological options and preferences cannot be resolved through technical questions alone, but rather, points to profoundly *social* questions that, as will be seen, strongly relates to the core tenets of energy justice.

5.5.3.1 - Overview of the case study: a brief chronology

In 2015, Plutus proposed the deployment of diesel generators in Bristol as STOR backup power to feed into the cities energy grid in two locations across the city, while UKPR proposed gas-turbine generators in St Werburgh's, a relatively affluent suburb of Bristol. Plutus's applications in Lockleaze consisted of siting 64 diesel generators in a residential area, while in Lawrence Hill they applied for 48 diesel generators to be sited close to both homes and to a nursery school (Emanuel 2015a). UKPR proposed the installation of 14 gas generators with 41ft chimneys in St Werburgh's, which was also close to residential areas (Air quality news 2015). Both organisations sought planning permission from BCC, however, according to local media co-operative *The Bristol Cable*, 'neither Plutus nor UKPR sought public consultation for their Bristol plans' (Stephenson 2015). According to another local media source Bristol 24/7, UKPR received 684 objections to their proposed gas-turbine generators from St Werburghs residents, while much smaller numbers of objections were registered from residents in Lockleaze (52) and Lawrence Hill (130) respectively (Emanuel 2015b). This disregard for both spatial and procedural concerns only served to negatively impact both organisations reputations, and lowered their chances of commercial success in the growing STOR market. It also alerted RADE to the relative capacity of certain communities to reject planning proposals, seeing stark differences in local communities engaging in the planning process. In addition, after the complaints from residents in St Werburgh's amidst potential pollutants from gas turbine emissions, UKPR's gas turbine generators were rejected by the city councils planning committee (Air quality news 2015).

Of specific interest to energy justice scholars are the locations which Plutus in particular proposed; both are situated in areas of high deprivation as attested to by the 'Deprivation in Bristol report' (BBC 2015). The proposed sites in Lawrence Hill and Lockleaze have been located on a multiple deprivation map below, demonstrating the extent to which the proposals are disproportionately sited in some of the most deprived parts of Bristol City Council's territory:

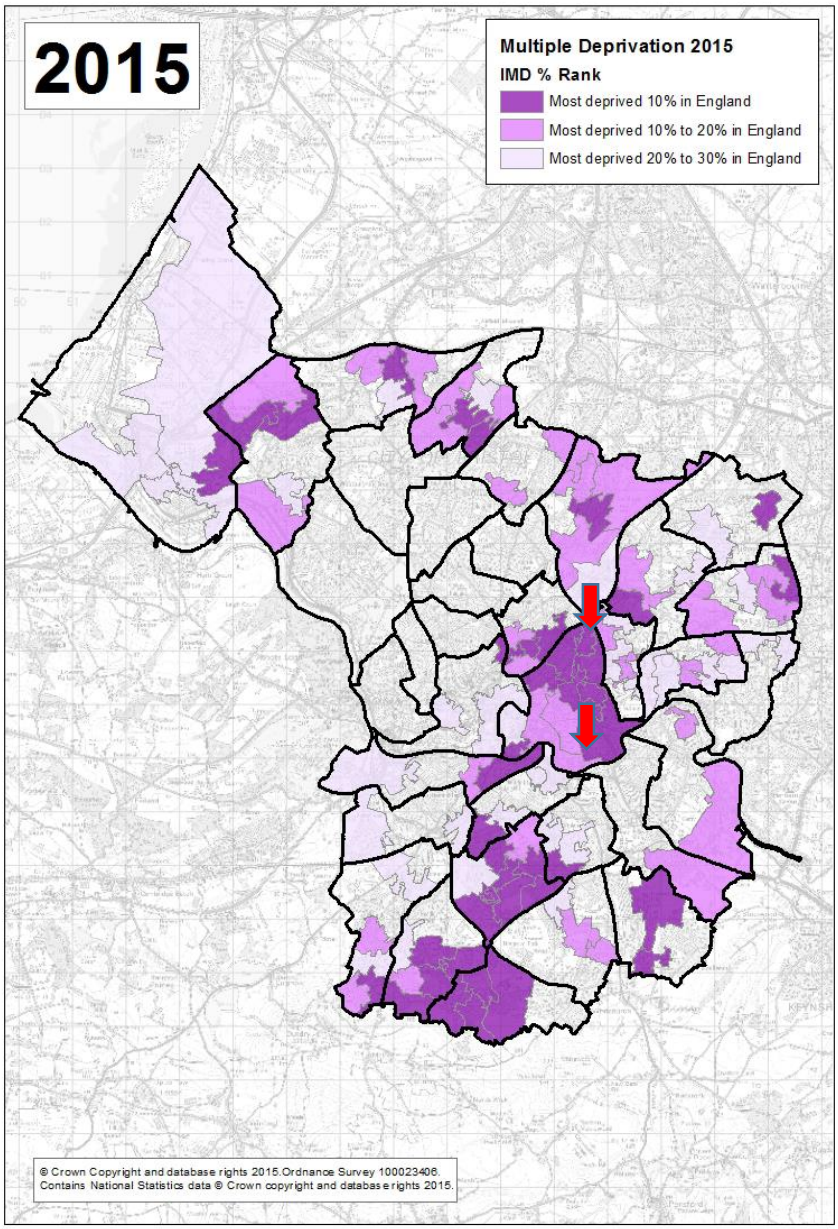

Figure 22 – Location of Plutus's proposed diesel generation plants in Bristol mapped onto the map of deprivation in the 'Bristol Deprivation Report 2015' (BCC 2015)

As the red arrows demonstrate, the proposed sites are suggested for areas in Bristol that are in the most deprived 10% in England (Lawrence Hill) and the most deprived 10-20% in England (Lockleaze). Interestingly, none of the proposals were sited in affluent areas of Bristol, pointing to a uniquely spatial aspect to Plutus's activities that provides a connection to Bouzarosvki & Simcock's (2017) ideas of energy injustices revealing 'spaces of misrecognition' in energy infrastructures. As will be shown, Plutus may have targeted these areas; possibly because of a perceived lack of both knowledge and capacity to respond to these planning proposals by local residents. This is attested to further by RADE in the primary data, and in connection to literatures on energy geography; both are explored in more depth in section 6.5.4.

As alluded to in previous sections, RADE opposed both the Lockleaze and Lawrence Hill proposals on multiple grounds. They suggested that these diesel generators would breach air quality standards and would contravene the European Union's Air Quality Directive of 2008. Through the further addition of polluting particulates via the diesel generators inevitable emissions, RADE argued the cities already poor air quality would be worsened (Air quality news 2015). In an attempt to 'greenwash' the 2015 Lawrence Hill proposal after it had been rejected by BCC's planning committee on environmental grounds (See table 12 source 'Rejected diesel generator application'), Plutus *'withdrew the application – only to return in February 2016 with a revised plan that changed the proposed fuel from diesel to biodiesel'* (Stephenson 2017a). Both the city council and RADE's reaction to Plutus's re-application was captured in a heated exchange in the 2016 focus group between a founder of RADE and a Green Party councillor:

FG1: Yesterday's planning development […] committee […] is minded to pass it because they have just said you know - biodiesel imported from Finland - clean as a whistle. Now we can all discuss the ins and outs of that, but that's a change in material application in the way they've completely moved across.

FG2: Sorry it's a reduction in emissions. They are still adding pollution to an already polluted area where the limits have already been exceeded.

FG1: Well they're going to argue – and this is part of the issue isn't it– they're going to argue that it will be minimal. I've not seen the figures I have to say and I'm not in that planning committee.

FG2: It will be interesting to see who has produced those figures!

Seeing that biodiesel would result in some form of emissions within the locality, RADE therefore sought to identify a low-carbon option that would 'do no harm' (R2) to the local community or the local environment, as one of RADE's founders summed up their overriding ethos. As will be explored further, in 2017, RADE supported Aura Power in consulting the Lockleaze community on the viability of battery storage technology instead of a proposed diesel generator, and continued to fight the biodiesel generator application in Lawrence Hill. As a result, Lockleaze is now host to one of the UK's largest clean battery storage facilities, with 15MW of storage capacity able to store excess energy from the grid, as seen in the aerial image below.

Figure 23 – An aerial shot of the 15MW lithium ion battery storage facility site in Lockleaze, North Bristol. The technology is framed as 'zero emissions' (FG1) by one of the founders of RADE in the focus group discussion.

In addition, the city council rejected Plutus's application for a biodiesel generator in Lawrence Hill on environmental grounds (see planning document in Table 12), and after an 18-month campaign fighting Plutus, the local community and associated organisations rejoiced in having fought off Plutus's continued attempts to deploy a biodiesel generator and it's following appeals to the city council planning committee (Stephenson 2017b).

The following section will addresses each of the three tenets of energy justice in relation to RADE's activities to fight both *for* a more benign low-carbon solution in Lockleaze and *against* the greenwashing of Plutus's activities in Lawrence Hill, exploring further the lack of consultation with local communities and residents. The following section demonstrates a strong connection between the tenets of energy justice and local energy activism on the ground.

5.5.4 – Applying the three core tenets of energy justice

Through analysis of the discussion that took place during the focus group, the three tenets of energy justice were introduced into the conversation as a way of establishing a framework for understanding both justice and injustice in Bristol's local energy sector. Towards the end of the discussion concerning Plutus's biodiesel and diesel generator proposals, the focus group was united in their objection to the companies' ambitions, and a sense of procedural injustice was present amongst all participants:

'Interviewer: So under the framework I've just put forward, this would be considered an energy injustice […] local people aren't benefitting from this in any way economically?

FG1: No

FG3: No

Interviewer: Procedurally, the community feel like they haven't been consulted properly on the siting of this as well?

*FG1-7: *Resounding* Yes!'*

The focus group therefore established a clear sense that RADE had the support of other low-carbon civic energy actors in Bristol, such as Easton Energy Group, a local Green Party councillor present and the members of BEN themselves, in their ongoing efforts to oppose Plutus. With early signs that RADE had the support of an emerging civic energy network within Bristol in 2016, the in-depth interview in 2017 facilitated deeper questioning of RADE's follow-up activities. In the in-depth interview, the three tenets were also introduced to RADE as thematic guides and to add structure to the discussion.

5.5.4.1 - Procedural Justice: planning for engagement

Exploring how RADE engaged in processes of procedural justice, they made clear that one of their primary motivations was to represent local residents and communities in Bristol, particularly in cases where communities lacked the necessary capacity and social capital to object to potentially harmful projects in their local area. This is expressed by one of the founders of RADE through adherence to an idea of 'justice' in their representation of local communities:

'The […] common justice angle amongst everybody that's involved in RADE is an explicit or implicit belief that, we're not here to do what we want, we're here to try and get what the people want. So if 10 people out of the 15 involved want this, that's the way we're going to go' (R2)

This point is reiterated when addressing the specific case of the battery storage project in Lockleaze. When critically questioned on whether they were simply representing the commercial interests of Aura Power, one of the founders of RADE stated:

'We acted as independent and impartial mediators. We were clearly on the side of the residents and that was our priority area […] we were working with Aura Power to make sure that they conceded to the resident's requirements' (R1)

In addition, RADE felt that they were not just representing different localities interests, but acting to enhance the capacity of local communities to engage in the planning process to object to Plutus's applications. They did this through the production of leaflets that gave advice to residents on how to engage in the planning process, alongside information on the potentially harmful effects of diesel generators in the locality:

'RADE produced a leaflet and it was basically, what web address to go to, which boxes to tick, where to put your comment and by the way, these are the things you want to comment about. A bullet point list for why this is good and an alternative would be bad' (R1)

This was accompanied by further ambitions to enhance the capacity of affected communities in Bristol to object to future planning applications local communities may see as unjust:

'Hopefully it will percolate through so the next time some sort of planning application goes out maybe 10% of the people involved this time around will remember. Then you'll start to get into the position where slowly more and more people in Lockleaze and in the Feeder road area (Lawrence Hill) *understand how to object and that means they can start to use a system which is actually freely available to everybody' (R2)*

In attempting to facilitate a bottom-up and community oriented form of procedural justice, RADE therefore established a twofold role as an intermediary *and* energy activist organisation; one positioned as a mediator between Aura power and the local community in Lockleaze during the process of applying for planning permission for the battery storage project, the other as a barrier between Plutus and BCC, whereby they sought to both object to and prevent Plutus's attainment of planning permission from BCC for areas such as Lawrence Hill. The process of enacting procedural justice in the case of Lockleaze, therefore, revolved around seeking to 'open up' decision-making procedures to the local community – something that RADE credit Aura Power for attempting to realise when they sought to push forward with the battery storage project:

'To be fair to Aura power, as soon as we explained why that was a good idea, they were all over it, they did a hell of a lot of legwork, they leafletted all the local houses, they talked to all of the key community groups, they booked the library and they basically sat there for hours with very few people there' (R1)

This is particularly revealing when contrasted with Plutus, with RADE stating *'there has been no communication from Plutus' (R2)* after attempts to reach out to them and discuss the details of their applications. RADE's mediating role between the Lockleaze community and Aura Power led to a notable success in community engagement, leading to local support in the planning process:

'We ended up with the bizarre situation where 31 people commented on that planning application through the formal process - every single one in support – not even a half and half – it was all straight total support' (R2)

Interviewer: That's fantastic.

It's unheard of! (R1)

It's unprecedented! (R2)

This points to an interesting role for energy activism pressuring companies to pursue procedural justice; opening up processes of consultation to local involvement may lead to enhanced local support for certain low-carbon technological options, particularly if the actors involved are present themselves and have a stake in the locality. As has been shown, this support was best expressed through engagement in the planning system. Indeed, as demonstrated by Forman (2017) in his analysis of community energy projects in Wales and bottom-up energy justice perspectives, wider engagement in the planning system and with local planning authorities is a fundamental aspect of procedural justice at the local level. However, where intermediaries or energy activists may be lacking, many low-income communities may also lack exposure to opportunities to engage in the planning system. This points to a larger role for grassroots innovations and localism more generally, seeing as Aura Power are located in Bristol and Plutus located in London, Aura Power had an logistical advantage when exploiting their proximity to Lockleaze and wider connections to Bristol's civic energy network and other vested interests, such as local residents. The importance of this proximity is further highlighted by a statement from the Director of Aura Power:

"We are delighted that the Lockleaze project has been delivered to market in such a short period of time. This project is of particular importance to us, being located close to our head office in Bristol, and it received strong support from the local community. We look forward to delivering many more storage projects through our UK pipeline' (Hazel Capital web)

Thus, as RADE pointed out, engaging community groups, leafletting local resident's homes and holding a consultation at a local library in Bristol displays a transparency and openness that facilitated greater procedural justice in Aura power's commercial activities. Indeed, RADE noted that rarely are planning proposals met with overwhelming statements of support – most feedback encountered is from statements of disagreement or rejection. Therefore, such an approach is something that other energy companies can learn from, particularly if they can also prove that their technologies respect legitimate social and environmental concerns that are frequently encountered in local planning procedures (Bouzarosvki et al 2017).

5.5.4.2 - Recognition justice: combating 'environmental inequalities'

A core aspect of recognition justice, as understood within the energy justice framework, is the acknowledgement of marginalised, vulnerable and deprived communities in relation to energy systems, in order to ensure against discrimination or injustice, particularly when such communities lack the capacity, knowledge or ability to act against processes of recognition *injustice*. As asserted

within the critical literature review, recognition justice arguably underpins both procedural justice and distributional justice in energy systems. RADE, therefore, prove that through recognition of injustice against residents in Lockleaze, processes of procedural justice may become realisable. In the case of Lawrence Hill, where Plutus attempted to 'greenwash' their previous diesel application and re-apply for biodiesel generators, RADE felt it was necessary to sustain further objections, preventing distributional *injustice*. Therefore, in the case of recognition (in)justice in relation to RADE, it takes on two interrelated dimensions; the first is a recognition of spatial injustice within Bristol based on Plutus's targeting of relatively deprived areas, while the second relates to the organisations primary purpose, as described by the organisation themselves.

'RADE is more about the by-product of energy rather than energy itself. We're trying to protect the environment, the air, the social circumstances in which people depend on energy. We're not so much about distributing energy […] If you actually look at the core people within RADE, our outside daytime jobs have us dealing with and looking after and working with those small sections of the community that have been left behind' (R2)

This points to RADE occupying a twofold role similar to their dual role as facilitators of procedural justice; in addition to taking on somewhat of a protective role towards marginalised communities, they also acknowledged the unequal and uneven geographies of Bristol as reflective of the inequalities within the city, whereby sharp contrasts exist between highly affluent areas and areas high in multiple levels of deprivation (BCC 2015). Building further on this divide, Bristol also has relatively high levels of racial inequality (Elahi et al. 2017), as pointed out in chapter 3 of the thesis and the case study on intermediaries. Participants in the Focus Group and the founders of RADE were sensitive to this and conscious of how this may be reflected within Bristol's local energy system. Remarking upon instances of 'environmental racism' when thinking about the consequences of Plutus's actions, one focus group participant from Easton Energy Group saw inherent links between Plutus's activities and the potential for racial discrimination:

'I think that energy and social justice are intrinsically linked […] RADE were talking about the Plutus application over on Feeder road. It does seem like a bit of environmental racism; you look at an area that is one of the most deprived in Britain and this is where they want to put a horrible diesel power plant' (FG3)

In the in-depth interview, RADE went further and contrasted the capacity of Lawrence Hill and Lockleaze residents to object to Plutus's application with the objections of St Werburgh's residents to UKPR's proposal:

'When they realised that St Werburgh's has the highest concentration of doctorates in any area in Bristol, they realised that they were on a no-win […] Lockleaze and St Phillips (Lawrence Hill), *you're getting into the realms of environmental racism. Because they're minority groups with low levels of education in most cases, next to zero surplus funds and therefore next to zero surplus time to actually get the energy to object, and that's where we come in' (R2)*

RADE therefore demonstrate actions and indeed motives that correspond strongly to preventing recognition injustice, sharing the Easton Energy Group participant's sentiment that a degree of environmental racism was at play, whereby a deprived community that is known for having a higher concentration of Somali residents than other parts of Bristol, faces the prospect of worsening air quality and pollutants. This also demonstrates the uniquely spatial aspects to injustice within energy systems, as RADE demonstrate an interesting role for energy activists to potentially combat new forms of spatial injustice. Furthermore, the views espoused by RADE in the in-depth interviews connect directly to issues of justice in energy geography literatures (Calvert 2016; Bouzarosvki et al 2017). In particular, they connect strongly to Professor Richard Cowell's chapter in Bouzarosvki et al (2017) on the numerous social complexities of *'Siting dynamics in energy transitions',* in which the 'tendency of environmentally risky activities to concentrate over time in less affluent areas, occupied by more socially marginalised groups that often have less capacity to assess or challenge projects successfully' (Bouzarosvki et al 2017 p.171) is a key justice issue that can create distributional injustice and entrench spatial inequalities further. This connection to spatial justice that RADE expose through their various activities also connects to Bouzarovski & Simcock's (2017) work on 'spatializing energy justice', where they urge energy justice researchers to explore the deeper forces producing spatial injustice and inequality:

'From a spatial justice perspective […] 'responsibility' for inequality – how it is produced, and by whom – matters when evaluating (in)justice […] there is thus a need to consider the underlying structural mechanisms that produce spatial inequality' (Bouzarovski & Simcock 2017 p.645)

Consideration of these 'underlying structural mechanisms' prompts immediate links to the extractive and profiteering nature of both Plutus and UKPR's activities, and indeed, their largely corporate organisational structures focused mostly on fiduciary responsibility to shareholders via their role as limited companies. Interestingly, Bouzarovski & Simcock (2017) devote little time to examining dominant energy-related organisational structures after prompting researchers to investigate structural mechanisms. However, many of the underpinning rationales motivating and driving Plutus's behaviour can be linked to the extractive ownership model, as detailed in the critical literature review.

Looking closely at the primary data, after the extractive-generative distinction is introduced to participants, Plutus are explicitly identified as an extractive organisation in the focus group:

'Interviewer: Do you see Plutus as maybe something more akin to the extractive model […] would that broadly fit within that framework?

FG3: It does exactly fit within that model'

While also being defined purely by their commercial interests in STOR, rather than a conventional energy company, in the in-depth interviews:

'It's wrong to consider Plutus an energy company. They are a financial institution whose only goal is to reap as many of the subsidies that have been built into the STOR system as possible. They are wholly owned by an investment company. It's just a sub-branch of an investment company. If you look at their website all they are doing is selling shares in STOR' (R1)

In addition, the underlying mechanisms creating the *perceived* injustices seen in this case study are found in the simultaneous neglect of the core tenets of energy justice and evidence for Plutus behaving in a similar way to an extractive organisation. This demonstrates the extent to which both UKPR and Plutus were incapable of successfully 'navigating the multiple social, economic and environmental relations bound up with candidate sites and the landscapes in which they are enmeshed' (Bouzarosvki et al 2017 p.170 - 171) in Bristol. Demonstrating severe procedural and recognition justice inadequacies, both companies seemingly had no interest in the local economy, local environment or the concerns of local residents. Even with Plutus's attempt to 'greenwash' their diesel generator proposal, RADE were able to facilitate a 'zero emissions' technological option with the help of Aura Power, in response to this proposal.

When thinking about the distributional justice implications of RADE's associated activities, particularly concerning the economic implications of the new battery storage project, it seems that RADE's concern for the environment and the involvement of local residents in decision-making took priority over considerations of economic ownership and economic gain; Aura Power also use a limited company structure that doesn't ensure any economic benefit is returned to the community. However, while chapter 4 - providing novel primary data on organisational structures - demonstrated that actor's values can greatly influence the justice impacts of various legal structures, this structure does not immediately lend itself to being 'rooted' in the community, as seen in certain BenCom and Co-op structures and the provisions therein. This is explored further in the final subsection of section 6.5.4 concerning distributional justice.

5.5.4.3 - Distributional justice: environmental impacts over ownership?

As evidenced above, the spatial aspects of distributional justice are addressed through RADE's appeal to the tenet of recognition justice, where they tied the proposed siting of Plutus's applications to 'environmental racism' in some of the most deprived parts of Bristol. As mentioned in the methodology and data collection sections of the thesis, distributional justice was primarily framed in economic terms, looking more explicitly at who owns local energy infrastructures, in what organisational form, and who benefits financially from the economic impacts of energy transitions. Thinking further about Fuller & McCauley's (2016) call for paying greater attention to the temporal dimensions of energy activism, over time, aspects of distributional justice, in particular the economic gains and ownership models surrounding the battery storage project in Lockleaze, shifted between different private companies. However, since RADE did not specifically engage in the purchasing of any energy technologies, this subsection relates more explicitly to Aura Power's battery storage project that was supported by RADE, than RADE itself.

Since the deployment of the 15MW battery storage unit by Aura Power in 2017, the site was purchased by a company called Hazel Capital, which was then subsequently purchased by investment management firm Gresham House (Hazel Capital web). This case study has shown, via both the collaborative and individual efforts of RADE, that some degree of procedural justice was realised in the deployment of new battery storage technology in Lockleaze, and that through the rejection of the planning proposals by Plutus in Lawrence Hill, some degree of recognition justice was achieved. However, the question of distributional justice in this case study appears to be more conflicted. For example, when addressing the economic interests behind who benefits from the battery storage technology, the focus group was critically questioned on the source of investment and notions of ownership structures around the new storage technology:

Interviewer*: Would you be happy with a hedge fund or some financiers within the City of London to be funding a different technology?*

FG1: Yes!
FG2: Yes!
FG3: Yep.
FG4: Of course.
Interviewer: So the ownership structure, and the social aspects as well, aren't particularly considered within that discussion.
FG4: We're faced with 48 diesel generators banging away at the end of our garden in effect, you're asking me do I care who funds a clean alternative? The answer has to be no!

This response from the focus group and from RADE *(FG4),* suggests that, the impact on the environment and on the local population took precedence over the economic ownership aspects of the storage technology. Despite ownership over the battery storage technology shifting between various limited company and public limited company (plc) structures, RADE were convinced that significant protections were in place against a possible change in technological infrastructure, as the planning permission granted for the Lockleaze area was for battery storage technologies only:

'The planning permission is specific to battery storage, that piece of ground, realistically has no other use […] so it just made sense to do it. It also means that we now have got, in Bristol, the exact alternative to bunging in 48 diesel generators, for when the lights fail' (R2)

In addition, RADE also felt that this technology was assisting the wider deployment of renewables and contributing a small part to the technological development of a local low-carbon energy system:

'This is neutral - it will take power from any source when there is a surplus, but in reality surpluses are far more likely to be created by renewables like solar, like wind – because you can't effectively turn those off!' (R2)

Interestingly, when questioned further on aspects of ownership in the in-depth interview, despite the overall environmental impact trumping considerations of local ownership, RADE expressed a preference for a more local company,

'To be honest, if Plutus, with the exact same infrastructure came up with an investment plan for a brand new sodium glass battery and solar power supported by vertical wind farms etc. […] on that plot – that was neutral to the environment and provided services to the local people – personally I would support it. I would rather it was done by a local company! But if they are the only ones doing it, and its right for the environment and right for the community, I don't see a reason to oppose it!' (R2)

In addition, a company such as UKPR state that they are active in the battery storage market (UKPR web), like many other new market actors in this growing sector. There is, therefore, a clearer empirical preference for a local company by RADE, given their range of potential options.

Thinking more critically about the future economic gains granted from the stored power that is sold back to the grid, it is clear that the economic gain from the storage project did not go back to the community or locality. However, the project was purchased from Aura Power, which benefits the capacity of a new actor within Bristol's civic energy sector and the employees and owners of Aura Power. Ownership therefore isn't explicitly rooted in the community or a community oriented structure, nor returns on the investment benefitting the wider locality; these issues pose complex and

timely questions for the civic energy sector and it's future relationship to battery storage technologies. This ownership issue over emerging storage technologies may fall easily into private hands because models for community-owned or council owned energy storage are very novel within energy markets (Koirala et al 2016). In addition, seeking to develop a viable model for this type of arrangement may have cost both RADE and Aura Power valuable time whilst competing for the Lockleaze site with other energy companies seeking to deploy STOR for commercial gain.

How future storage projects may sufficiently address issues of distributional justice is certainly an area for future research and concern, given the forecast for the widespread deployment of electrical storage technologies to aid the UK's low-carbon transition (Lyons et al 2015). While community renewables projects and supply-side ownership models have dominated the civic energy sector so far, more research is needed on how the civic energy sector can not only more effectively capture the value of storage technologies, but in particular, embed and root them in the communities in which they are located and force storage schemes to consider the potential distributional-economic benefits they may be able to offer in the future.

5.5.5 Conclusions and policy recommendations

This case study demonstrates that the three tenets of energy justice provide a powerful lens through which to view the activities of RADE, UKPR, Aura Power and Plutus in Bristol. Through the application of the three core tenets, the findings show that the degree to which low-carbon organisations and activity appeals to these tenets is key to their justice impacts. Thinking about how this chapter contributes towards the call for greater evidence of energy activism fostering energy justice, it is clear that RADE have themselves become a facilitator *and* intermediary in Bristol's civic energy sector, seeking to realise a more 'just' local energy system in ways that strongly correspond to the three core tenets.

Through their oppositional activity to Plutus, documented extensively by local media organisations such as the Bristol Cable and the Bristol Post, and through mediating interactions between local community members and Aura Power, they have been *proactive* – not merely *reactive* - in their activism against certain energy technologies whilst pushing for 'zero emissions' storage options. This case study therefore demonstrates that this is key to their success in energy activism and the three tenets also expands upon the nature of how energy activism can be understood to serve more 'just' outcomes in local low-carbon transitions. This case study also contributes spatial aspects of energy activism to the energy justice literature, using the three tenets to tease out both the intermediary and activist role RADE adopt to oppose spatial injustices in the emerging low-carbon civic energy sector. This explicit attention to the spatial aspects of energy activism also connects to Fuller & McCauley's (2016) call for more empirics to emerge within this area of energy justice research.

Thinking about how RADE's activities can connect to bottom-up approaches and theories of energy transitions, RADE are certainly an unanticipated and little recognised actor within the concept of the civic energy sector stemming from the *Thousand Flowers* transition pathway. Thus, understandings of the civic energy sector need to expand, where possible, to include those local energy activist organisations fighting for certain technologies, and for those proposals to be appropriately scrutinised by relevant civic energy network actors for their technical and economic viability.

Building on the understanding of *Grassroots Innovations* as a collection of 'activists and organisations generating novel bottom–up solutions […] that respond to the local situation and the interests and values of the communities involved' (Seyfang & Smith 2007 p.585), as identified in the literature review, leads to an interesting conceptualisation of RADE as both a grassroots innovation and energy activist organisation. However, as explored within the section on distributional justice, novel solutions that can facilitate local government and community ownership over storage technologies are yet to emerge, leaving the primary beneficiaries within the realm of the private sector given the reigning governance logics of the UK energy market. Indeed, without a strong economic incentive driving energy activism *for* viable low-carbon technological options such as storage, it is hard to see how such energy activist-led activities can continue to persist.

Furthermore, while RADE sought to enhance the capacity of relatively deprived local communities to engage in the planning process more thoroughly in the future, it is hard to envision this kind of sustained engagement continuing without the consistent support of an effective intermediary body. This case study therefore demonstrates strong and consistent findings with the data presented in section 5.2 on the role of intermediary organisations in facilitating energy justice. This case study also echoes some of the core findings within the 'proximities of energy justice' case study concerning Lawrence Weston, demonstrating that critical considerations around the unequal geographies of low-carbon transitions would benefit from employing an energy justice framework. Indeed, this also feeds into building stronger energy justice theory, as energy justice would also benefit from deeper and more explicit integrations of spatial justice concerns. One potential way of achieving this would be to expand the triumvirate of tenets to include 'spatial justice' as a fourth tenet, or as an integrated 'distributional-spatial' tenet.

6. CONCLUSION

6.1 Contributions to local energy justice: empirical and theoretical

Drawing on the range of research findings in chapters 4 and 5 above and using research methods derived from the PAR approach to data collection, this thesis has generated substantial empirical and theoretical contributions to a local and bottom-up perspective on energy justice in civic energy sector low-carbon transitions. Focusing first on the energy justice impacts of different organisational structures in the emerging civic energy sector, then looking at four different case studies drawn from the primary data collected, the thesis offers original insights into the dynamics of local low-carbon energy transitions using the analytical powers of the three tenets.

Therefore, this conclusion expands on considerable original contributions to knowledge in four core areas. Firstly, it offers empirical contributions, derived from chapter 4 and the four core case studies in chapter 5, which open a window into the politics of local energy transitions via primary qualitative data. Secondly, it offers theoretical contributions, calling for a shift from a systems approach to energy justice to a multi-scalar approach and the deeper integration of spatial justice into local energy justice approaches. Finally, it assesses the limitations of the research and offers up areas for future research, before calling for the expansion of innovative bottom-up approaches to energy justice research in future scholarly endeavors that further advances the use of the *Thousand Flowers*, Grassroots Innovations and Social Movements Theory in relation to energy justice.

6.1.1 Legal structures for local energy justice

When thinking about how new legal structures supporting civil society oriented transitions can facilitate energy justice, unique legal features, such as asset locks, are important for securing community assets within the social enterprise economy and align with some of the core aims of both the generative and foundational economy; to transfer long-term ownership of fundamental goods, services and assets to localities and embed them within the community. Such a key legal feature is vital for energy justice scholars and activists seeking to understand how to counter extractive ownership models and facilitate community ownership over energy. In addition, co-operative governance structures were common to many community models, offering the prospect of democratising transition processes and securing transparency and accountability in civil society led transitions. As noted in chapter 4, the municipal energy model offers significant potential in addressing issues of recognition justice; given that it is rooted in local government ownership, rather than private community ownership, it *can* target the poorest areas of cities without worrying about the impacts of this on investor returns. While the municipal energy model uses a limited company vehicle to offer competitive tariffs on the energy market, its source of investment remains publically owned.

Thus, community models operate more decidedly within the private sphere, having to adhere to market forces *more so* as often seen with co-operative and social enterprise models that are privately funded. Therefore, future local energy justice research must critically explore the growing trend towards the re-municipalisation of energy with a view to understanding what benefits these organisational structures can offer to local and regional economies and communities in a time of austerity, uncertainty and looming financial crises.

Interestingly, literatures on bottom up approaches and the findings on prominent organisational structures assist in helping transition scholars to develop visions of more bottom-up and locally-oriented energy mixes. However, while grassroots innovations and niche innovations are incredibly useful concepts for understanding local and bottom-up activity within the field of energy transitions, they do not provide concrete targets or goals in which future visions or scenarios map out their place, presence or institutional configuration and support structure within markets and amongst different sectors of the economy. The utility of the *Transition Pathway* literature is found within the detailed visions it offers of technological mixes and *potential* governance frameworks found in the 2050 scenarios according to each pathway – market, state and civil society. Thus, with a greater degree of accuracy and forecasting, researchers can assume the structures identified within this thesis as part of the civic energy sector will proliferate under the civil society, or *Thousand Flowers* transition pathway. It is therefore suggested that many of the structures analysed will continue to grow if supportive policy and governance frameworks assist the growth of the civic energy sector in coming decades. Indeed, local governments and energy networks can be advocates for the proliferation of certain structures should they feel they meet the core justice concerns of localities and communities. Therefore, the research offers insights into the energy justice implications of both current and future structures, particularly as subsidies such as the FIT's and the RHI are locked in for 20 years.

Lastly, one core finding that arose from the analysis of organisational structures, was that organisational hybridity and overlaps are key to the energy justice impacts of new structures that underpin a burgeoning civic energy sector. It is clear, therefore, that both the core and associated models must be approached in a holistic fashion, as these connections between different legal structures and vehicles that underpin civic energy organisations are crucial to understanding efforts to address the three tenets of energy justice. What's more, the actor's values that govern these grassroots energy innovations and niche enterprises must be taken into consideration, alongside the influence of wider civic energy networks and energy intermediaries that are crucial for facilitating energy justice at the local level. Indeed, this is one of the fundamental findings within the thesis; that local networks and intermediary organisations are vital for instantiating the intervention by local organisations that is required to facilitate processes of procedural, distributional and recognition justice in local energy schemes.

6.1.2 The importance of civic energy networks and intermediaries for local energy justice

While the literature review identified that local energy organisations and their connections to local energy networks were important for addressing wider issues of social justice, the research findings have found that key organisations such as local networking organisations (BEN), the city council (BCC), local charities (CSE) and not-for-profit intermediaries (RSW) are crucial for *embedding and advancing principles of justice* within civic energy networks more widely. Indeed, it also crucial to see energy activist organisations, such as RADE, and local regeneration charities, such as ALW, as part of the civic energy sector going forward.

Any local community-driven organisation that seeks to engage in low-carbon transition processes should be recognised as part of the local energy economy and network, and therefore included within the civic energy sector as actors seeking to engage in transitional change that offers them the opportunity to 'capture the value' of socio-technical change. Indeed, increasing the plurality of voices and organisations that can articulate core energy justice concerns through networking forums and via the authority and trust of local energy intermediaries will serve to facilitate procedural justice, while factoring in a *diversity* of different vulnerable and marginalised communities' opinions and perspectives will also go some way to address issues of recognition justice.

Importantly, it is clear from the research findings presented above that distributional justice offered more empirical material and insight than the other tenets, this is due, in part, to the people and communities at the heart of local energy transitions feeling a need to economically benefit from the creation of new energy infrastructures in a time of austerity and widening economic disparity. Indeed, the heavier focus on distributional justice is the result of explicitly juxtaposing the very real material impacts of austerity on local communities with the economic prospects offered by a rapidly growing low-carbon economy. As the intermediaries and Lawrence Weston case studies have shown, there are certainly opportunities for local communities to benefit from surplus revenues generated by civic energy actors. Moreover, the Lawrence Weston case study is vital in demonstrating the impact of surplus revenue payments to ALW alongside the impact of austerity on social inequality in Lawrence Weston.

In contrast to the critical perspectives on the increased use of 'community' as a means through which to justify state retrenchment, as identified within the literature review, it is vital for energy justice scholars to see 'civic' energy as an opportunity to stress the progressive potential of state intervention and involvement in local low-carbon transitions as a core facilitator, enabler and intermediary of partnerships and arrangements similar to that seen in Lawrence Weston. Therefore, given the crucial role of local government in assisting low-carbon transitions, they must also be a force for progressive change in civic energy networks, supporting the advancement of justice principles, approaches and

frameworks where possible, while supporting community-led networking organisations, such as BEN, that seek to advocate for a justice-oriented approach to energy transitions on the ground.

In addition, civic energy networks have proven to be an indispensable forum for the mediation of energy injustice claims in relation to space, place and geography, particularly in the case of Lawrence Weston. Therefore, when thinking about how to integrate spatial justice concerns into local energy justice, networks must ensure that a wide *geographical* diversity of organisations are represented alongside factoring in how these organisations correspond to areas of high deprivation identified by local government research and outputs. This calls for the integration of spatial justice as an additional tenet of energy justice into local energy justice frameworks adopted by civic energy networks, either as a tenet that is used on its own strengths or as a subset of distributional justice that is split into two; distributional-economic and distributional-spatial. This would deepen the economic and spatial analyses of energy justice concerns in low-carbon transitions going forward.

Furthermore, one case study also breaches new ground for local energy justice research, using the *restorative justice* tenet to understand shifting relationships between ALW and LCG, with the support of BEN, in order to strive for greater energy justice and develop further an active participation approach with the local community. However, there is a limiting temporal dynamic to restorative justice; only once an injustice has been recognised, then processes of remediation have been successfully undertaken, can the application of restorative justice make sense. This further distinguishes the three tenets going forward, as they are not limited by time in a similar fashion, thus, restorative justice is intended to be used to understand *responses to injustices* within energy systems and transition processes. While it was particularly useful in understanding changing relationships that moved towards greater distributional-economic justice in Lawrence Weston, its application is limited to case studies and instances where such shifts in relations have been realised. Interestingly, the use of restorative justice was predicated on a sense of *spatial injustice* alongside issues of non-recognition, therefore, future energy justice research would benefit immensely from the addition of spatial justice as a core tenet or the explicit identification of a distributional-spatial subset that analyses the ways in which power, social inequality and claims of injustice relate so intimately to energy geographies in low-carbon transitions.

Thus, the thesis has identified that the presence of energy justice principles within active and well connected civic energy networks will aid the inclusiveness, diversity and social justice implications of future disputes and claims of injustice against emerging low-carbon energy infrastructures. In addition, civic energy networks are also vital in influencing legal structures for local energy justice, as one way to influence the values that sit atop legal structures and to influence the choices around organisational structures, is to embed justice principles within local energy networks in a way that is

supported by the local community, and resonates with the needs and concerns of the people at the heart of energy systems.

6.1.3 Towards a multi-scalar energy justice framework: theoretical advances in energy justice

Understanding that top-down and bottom-up interactions are vital for the conceptual evolution of energy justice, this thesis sees the necessity of advancing a *multi-scalar* approach to energy justice, particularly when addressing its growing use in multiple global contexts. This is because advancing a fundamentally *multi-scalar* approach would mean that all scales of analysis are valid, and that neither the 'global' scale nor 'local' scale are given an inherent preference. Rather, depending on the scale of analysis, the application of core tenets will vary in their scope and complexity, and will often be contextually specific. In addition, there is also a practical element to this theoretical advancement, in that the nature of a shift towards a multi-scalar energy justice framework is reflective of the shift to a multi-scalar low-carbon energy system in which various technologies can be deployed at a variety of scales in both grid and off-grid configurations. Thus, this progression to a multi-scalar framework will not just diversify scales, but also diversify analysis of numerous contexts, technologies and energy systems.

In addition, it is important to note that prominent ideas around global energy justice and energy 'systems' justice stem from dominant transitions frameworks that view transitions as resulting from dynamic interactions between different analytical levels and multiple actors within wider systems. The field of energy justice is therefore theoretically and conceptually biased towards systems thinking, due, in part, to the deep influence of the MLP on understanding technological transitions and framing transition processes as multilevel processes within academia, as made clear in the literature review. While these perspectives are vital for critically interrogating energy justice at the global scale, other scales have received less attention thus far, both empirically and theoretically. As a result, local and bottom-up perspectives on energy justice have come into conflict with the way prominent energy justice scholars call for the application of the three tenets across global energy systems and supply chains as the 'proper' use of energy justice. Instead, this thesis demonstrates that the three tenets are not restricted or confined to this sole analytical use or purpose; they also demonstrate conceptual resilience and strong relevance to local low-carbon activities on the ground, teasing out tensions, inequities and injustices within (hyperlocal) and between (local) communities in the context of local low-carbon transitions.

Indeed, the thesis also shows that drawing upon bottom-up theories and approaches to energy transitions provides exciting and fruitful avenues for energy justice research, whereby niche and grassroots innovations within the growing civic energy sector are shown to contain their own internal

strengths and weaknesses under the critical lens of the three tenets. This is also expanded upon further through the interrogation of prominent organisational structures used within bottom-up approaches to low-carbon energy transitions, which have been absolutely vital to the realisation and instantiation of the civic energy sector.

6.1.4 The primacy of localisation: active participation approaches in a time of austerity

The primary data in chapters 4 and 5 have shown that, for the people and communities at the forefront of local change in energy systems, energy justice means something very different to the abstract notions of 'whole systems' approaches to energy systems and applying the three core tenets of energy justice to global supply chains. In a time of austerity, the thesis's findings have demonstrated that local energy justice is deeply bound up in localism and the localisation paradigm more broadly; key to this paradigm is the creation of a local economy that keeps economic growth local, prioritises contracts and services with local companies, trains and upskills the local populace and strengthens the resilience of the local economy with respect to future shocks and crises. These features can be seen as the primary focus of distributional justice when energy justice is viewed from the local level, as local ownership and the direction of revenue to local organisations is a key part of realising justice in community and civic energy activity.

The data collected also shows that civic energy activity and associated energy justice issues go beyond addressing low-carbon transitions and issues around anthropogenic climate change and resource scarcity. New forms of economic organisation and innovative organisational structures are seen as vital to challenging the dominance of the 'extractive' system of energy provision, and creating a more 'generative' local economy. Indeed, it is important to note that generative models focused on localisation are not just a reaction to the extractive economy, but are also a reaction to a neoliberal austerity agenda that deprives multiple localities of key services through stringent cutbacks of funding from central government, as evidenced within this thesis. This thesis has therefore shown that, in the case of local energy justice, distributional justice is conceived of both increasing localisation through supporting the local economy and also enhancing opportunities for local skills training and upskilling of the local populace through an active participation approach, rather than a passive recipient one that simply administers grants or surplus revenues to local charities and organisations.

The thesis therefore shows that it is absolutely vital for community energy schemes to move beyond benefit funds, as the qualitative data showed a desire amongst participants to see deeper forms of engagement with local communities. Rather than seemingly benevolent actors overseeing the redistribution of surplus funds to organisations and communities in need, participants, particularly in

Lawrence Weston and within BEN, called for more 'active participation' roles over 'passive recipient' style models of community energy engagement within the local economy.
This consists of local communities receiving training opportunities to build skills within the emerging low-carbon economy, alongside educational activities within local institutions such as schools and community hubs that spread awareness of energy efficiency measures, behaviour change schemes and the deployment and operation of new low-carbon technologies as part of the UK's energy transition.

Work towards such goals at the national level can be seen in the recent emergence of a 'community energy specialist' apprenticeship scheme launched in early 2018 by the UK government, which seeks to offer training and education in a wide variety of skills and knowledge underpinning the community energy sector more broadly. Drawing upon distributional and recognition justice here, local energy justice is thus understood as *distributional* in the sense that the equitable distribution of economic opportunities for 'upskilling' local residents accompanies local energy schemes where possible. In the case of *recognition* at the local level, it is also framed as understanding the skills and training needs of communities within areas of high deprivation. This moves conceptualisations of recognition justice *beyond* the allocation of surplus revenues to areas of high deprivation as a means of recognition, *towards* recognising skills gaps and training needs as fundamental to the inequalities and inequities within marginalised and deprived communities. This connects well to ideas of a 'just transition' ensuring that the low-carbon transition is accompanied by skills training for current and future populations, as seen within recent energy justice literatures (e.g. Healy 2017).

6.2 Limitations of the study and suggestions for future research

6.2.1 Critical reflections: aims, research questions and the three-tenets approach

Considering the various ways in which this thesis has addressed the core aims and research questions outlined in Chapter 1, the thesis has largely been successful in generating novel insights into bottom-up approaches to understanding energy justice, with an emphasis within the findings on the conceptual use and empirical application of the three tenets to civic energy structures, actors, networks and intermediaries respectively. Indeed, the research results produced on the role of and energy justice implications of organisational structures, how these fed into the case studies and indeed, the case studies themselves, provide ample evidence for original contributions to the field. However, this section offers brief appraisal and critical reflections on the extent to which each research question has been addressed and how they may have been addressed more effectively.

Taking each of the four research questions in turn, the first question sought to ask what *'critical insights, observations and knowledge'* the three tenets may contribute towards bottom-up perspectives on energy justice. A substantial body of empirical work has been gathered and evidenced in Chapter 5, demonstrating the extent to which the question has been successfully addressed. Connecting to the

collaborative and mutually beneficial use of the tenets in interviews and in the focus group, all research participants expressed the ways in which they understood and interpreted the tenets within their project, initiative, community or locality. Building these ideas into the research findings, it is clear that this constitutes the generation of original bottom-up perspectives on energy justice.

Moving on to question 2, which asked *'What organisational models dominate the community energy sector and what are the energy justice implications of these models?'*, it is clear that one area of notable change or shift was from a focus on 'community' models to 'civic' energy models more widely, given that intermediary organisations, such as BEN and CSE, were analysed within this thesis, alongside in-depth analysis of the new municipal energy structure. While the nature of this question changed, simply replacing 'community energy sector' with 'civic energy sector', the research findings demonstrate a strong level of researcher reflexivity and adaptation, given that the organisational structures findings chapter and case studies successfully demonstrate engagement with the civic energy sector more widely.

Thinking more critically about the extent to which question 3 was sufficiently addressed, which asked how civic energy networks and intermediaries shape local energy justice, it is clear that more organisations and different actors, such as those involved in bottom-up / local efforts addressing energy efficiency (e.g. CHEESE project) and fuel poverty (e.g. Bristol Fuel Poverty Partnership) in Bristol, could have been included within the research. Indeed, this is a general reflective criticism of the thesis as a whole, as more organisations could have been included more broadly. However, while this criticism relates most closely to the wider inclusion of more civic energy network actors and intermediary organisations, the primary data gathered was more than sufficient to generate both a depth *and* breadth of insight into local energy justice.

Finally, the extent to which the final and fourth question, which asked *'Which communities are engaging in civic energy transitions and which are not? Why?'*, has largely been addressed and attested to throughout the entirety of this thesis. While the critical literature review clearly marked out the social inequalities present within energy transition processes, the research findings provided clear evidence for the ways in which low-income, marginalised and deprived communities were both engaged with and ignored in relation to civic energy sector low-carbon transition processes. In addition, factoring in core spatial justice concerns provides ample room to both map out and engage with the geographies of social inequality in varying research contexts, with the ability to then relate these to critical analyses of new energy infrastructures. In many ways, the extent to which this question is addressed relates to the tenets of energy justice deployed. The final paragraphs of this subsection offer critical reflections on the use of the three tenets within this thesis and beyond.

While it is clear that the three tenets provide a powerful lens through which to facilitate critical engagement in the burgeoning civic energy sector and increasing energy decentralisation/localisation

in energy systems, the tenets themselves are not without fault. As some of the primary data on organisational structures showed, community models may seek to prioritise distributional and procedural justice over considerations of recognition justice, largely due to the underlying rules that guide such legal structures, as outlined in chapter 5. This is particularly true for investment-oriented models that lure in capital via the guarantee of tax breaks and higher annual returns. Indeed, many of the research participants noted a core trade-off between the level of interest they could pay back to investors and the amounts of revenue that could be redirected towards CBF's or wider community/local initiatives. Again, this finding reaffirms the consistency of seeing the existence of recognition justice concerns as fundamental to the other two tenets; if such a model were to prioritise lower interest rates for investors and higher revenue generation for a CBF focused on addressing fuel poverty initiatives in local communities, then one could make a case for distributional justice being reoriented towards the fuel poor within local communities under such a model.

These interrelations between the tenets therefore unearths some tensions within and between the tenets, whereby, for example, distributional-economic justice may be prioritised over broader concerns with the social impacts of new energy infrastructures and initiatives on marginalised and deprived communities, particularly with more market-oriented models. Thus, the application of the three tenets to these civic energy models (including the municipal energy model where factoring in recognition justice concerns was shown to be - in practice and in theory - more achievable) teases out wider philosophical tensions between the tenets. Does the prioritisation of some tenets lead to the exclusion of others? Does, as community investment models can show, striving for distributional (economic) justice lead to the removal or exclusion of recognition justice concerns? While this thesis has aimed to use these tenets to generate novel bottom-up insights in the field of energy justice, it also shows that careful attention must be given to the complex and often nuanced interrelations, overlap and tensions between the tenets, when both applied empirically and conceptualised and developed theoretically. Indeed, this thesis has shown that applied empirical work helps to develop and advance energy justice theory, which in a broader sense, is fundamental to the philosophical evolution and enhancement of the wider research process.

Lastly, throughout the thesis, concerns over space and place were ubiquitous and vital to understanding the nature of local low-carbon transition processes. While distributional justice claims, to some degree, to factor in considerations of spatial distributions via the lens of understanding the sharing of 'burdens and benefits' in relation to the siting of energy system technologies and infrastructures, more explicit attention is needed towards specific *spatial justice* concerns, as attested to by prominent energy justice scholars (Bouzarovski et al 2017, Bouzarovksi & Simcock 2017). Oddly, while other tenets, such as restorative justice and cosmopolitan justice, are receiving research attention from the energy justice community, spatial justice is yet to be declared a 'core tenet' in its

own right, or indeed has little use a ‘fourth tenet’. Moving beyond the now widely deployed three-tenets approach, a four-tenet approach could include the addition of a spatial justice tenet, enhancing the explanatory power of future energy justice research by relating considerations of space and place to distributional, procedural and recognition justice more concretely. Indeed, priority also needs to be given for allowing conceptual room for spatial justice to be used as an energy justice tenet in its own right. This is particularly vital for interrogating and understanding the emerging geographies of future energy infrastructures and crucial to critical engagement with largely unfamiliar and uncharted processes of energy decentralisation.

6.2.2 Energy systems justice and local energy

Whilst the conclusion of this PhD has pointed to the necessity, both conceptually and empirically, of shifting to a multi-scalar framework for understanding energy justice, this should not dismiss the analytical power and insights offered by a systems approach to understanding energy justice, particularly concerning energy justice research going forward. Indeed, looking at local, civic and community energy schemes through the lens of a systems approach has been rarely considered in the energy justice literature to date.

Whilst recent research has acknowledged the trans-scalar nature of community energy schemes and their ‘entanglements’ with different sectoral actors at multiple scales (Creamer et al 2018), little research to date has traced the impact of, for example, developed country civic energy projects, their associated energy technology supply-chains and impacts on production and extraction processes in the developing world. This could indeed be a fruitful and fascinating avenue for future research, whereby what may appear to be ‘justice’ for a set of bottom-up actors in a developed world context may both directly and indirectly contribute to processes of social injustice for people in the developing world.

This can already be evidenced, for example, by the negative health impacts solar PV cell manufacturing has on Chinese workers in an industrial setting (Hoffman 2017), or the environmental controversies brought about by lithium mining in South America for the lithium ion component of battery storage technologies (Vara 2015). Both solar PV technologies and battery storage units are a key component of the low-carbon transition and decentralised energy initiatives, including civic energy schemes, and a systems approach to understanding the energy justice implications of certain developed world schemes could point to broader, global-scale geographical inequalities in low-carbon transitions that have been relatively unexplored from a local energy perspective.

Interestingly, within the data collected for this thesis, there are connections and links to the developing world that came up in the interviews with certain local energy projects in and around

Bristol. For example, Low-Carbon Gordano noted that a small portion of their community benefit surplus is sent to a project in the developing world:

'We are very conscious of the wider world. Part of our policy on community benefit is that some of it, it's quite a small fraction I have to say – 10% will go to a developing country project. We're in the process of giving 10 percent of our first community benefit money to a project that Solar sense and Bristol zoo are involved in in Madagascar […] It's a very small deal and one has to recognise that, but its sending messages out I hope!' (P2-4)

When questioned further on this, Low-Carbon Gordano expressed sympathy with aiding a process of low-carbon technology transfer to developing country contexts, rather than simply charitable handouts, as Solar Sense are using the money to deploy solar arrays in Madagascan communities:

'You give people in a village in Madagascar some solar power and suddenly they have all sorts of possibilities opened up to them, ways of avoiding damaging their environment that weren't open to them before. It can also improve educational facilities – the kids can then work in the evening' (P2-4)

In addition, this theme of technology transfer also connects to some of RADE's ambitions. RADE reached an agreement with Aura Power to ensure that, once their batteries deployed in Lockleaze reached close to the majority of their capacity, they are shipped off for re-use in a developing world country.

'So pre-application we did a small informal consultation through RADE members, we came back with I think three major points […] Second one was ethical recycling and disposal […] They've committed that once their batteries have reached 80% of their capacity, they then go via an accredited recycling agent to be sent out as standalone power supplies in third world countries. They've committed to that' (RADE1)

There is therefore significant scope for future research to explicitly address these connections on a much wider scale. For example, taking a more systems-oriented approach to various forms of support and technology transfer offered by community energy schemes in the developed world for communities in the developing world, could unearth an interesting system or global network of exchange. However, until this is researched, the exact size and scope of such a system is unknown, alongside any understanding of the energy justice impacts of such a system. While this thesis has indeed been critical of the bias towards a systems approach within the broader energy justice field, its application to understanding to connections between local energy schemes and various supply chain locations would generate new and interesting insights. This thesis is therefore limited to its local context, and has not engaged with an energy system justice perspective of local energy schemes, which is certainly an unexplored field.

6.2.3 A new research agenda: expanding innovative bottom-up approaches

Whilst the above section has made clear that there is room for energy justice analyses to expand the systems perspective to critical analysis of the impacts of local energy schemes, there is clearly ample room for energy justice to embark on a new research agenda that expands more explicitly and completely on the insights of bottom-up approaches to transitions and energy system change. Thus, local energy justice researchers would benefit from combining analysis of energy justice frameworks with SNM theory, grassroots innovations and social movement theory more thoroughly than has been done here, alongside a deeper exploration of local economic geography and bottom-up development processes in relation to energy transitions. However, this thesis has certainly opened up some of this space conceptually, along with other young energy justice scholars seeking to advance this approach in recent years. Indeed, there is significant conceptual space for a purely *theoretical* research agenda to emerge that advances the application of energy justice frameworks and tenets to various local, civic and community oriented approaches to transitions outlined above. Such approaches would be able to continue to unearth the complex and multifaceted politics of local low-carbon energy transitions, particularly as decentralised and off-grid energy systems expand rapidly in years to come. Finally, these approaches would continue to give recognition, voice and ultimately empowerment to the people that live in, amongst and with the energy systems that power and shape their daily lives. Energy justice would do itself justice, therefore, by significantly expanding bottom-up approaches that seek to improve the lives of the people, who are, ultimately, why energy systems exist.

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