ENERGY AND EQUITY REVISITED:

Examining local approaches to energy justice through community renewables development in Wales

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Abstract

Whilst calls for energy justice have grown, fleeting attention has been paid to the role and agency of the very people at the heart of this agenda. Most understandings of energy justice embrace the 'triumvirate of tenets', encompassing distributive, recognition, and procedural justice. But, despite this promising start, energy justice research has engaged little with community-scale and participatory approaches to the enactment of energy justice on the ground.

The concepts and practices of ‘community renewable energy’ present one such arena within which energy justice might be enacted at a local level in a bottom-up approach. However, existing research on community renewables tends to assume, or provide largely anecdotal evidence for, the benefits and outcomes associated with such projects, whilst the nature of community renewables as an ongoing, temporal process is poorly understood. These are important issues to understand from the perspective of justice.

This thesis aims to examine the complex, differential ways that community renewables are implicated in negotiating greater social justice within and beyond the energy sector. In turn, it seeks to understand the relevance and consequences of these issues for dominant perspectives on energy justice. It does so by mobilising a cross-sectoral, qualitative analysis of the community renewables sector in Wales.

Findings show community renewables are highly relevant for improving access to pro-justice outcomes, such as through acting on the impacts of austerity, improving local economic opportunities, and promoting environmentalism and stewardship of natural resources. They also reveal novel insights on community renewables as an ongoing, temporal process which does not simply end after a project is developed. Moreover, it shows that key approaches to energy justice are intellectually ill-equipped to account for the relevance of issues beyond the energy system as potential drivers or outcomes of energy actions. A broader approach to energy justice is thus required.

Declaration and Statements

DECLARATION

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

Signed: ALISTER FORMAN Date: 15/06/20

STATEMENT 1

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

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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 it being submitted concurrently for any other degree or award (outside of any formal collaboration agreement between the University and a partner organisation).

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In complete openness, when I started this journey in 2013, I had no inkling whatsoever that its culmination would fall amidst the start of a new decade. That it has is a reflection of all the many things, both good and 'less-good', that have happened in the intervening period, as well as the commitment of some really fantastic people to help me reach this point.

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AT – Alternative Technology

BEIS – Department for Business, Energy and Industrial Strategy

CRE – Community Renewable Energy

ECO – Energy Company Obligation

ERDF – European Regional Development Fund

FCA – Financial Conduct Authority

FIT – Feed-in Tariff

GDP – Gross Domestic Product

GVA – Gross Value Added

GW – Gigawatt

IRENA – International Renewable Energy Agency

LIHC – Low Income, High Cost

MLP – Multi-level Perspective

MW – Megawatt

NEA – National Energy Action

OFGEM – Office for Gas and Electricity Markets

PAR – Participatory Action Research

RA – Research Agreement

RESCoop – Renewable Energy Source Co-operative

WFGA – Wellbeing of Future Generations Act

WG – Welsh Government

YF – Ynni'r Fro

1 Introduction

1.1 Energy justice at the end of the wire

Modern energy systems are changing as countries across the globe shift their reliance on fossil fuel based energy towards more sustainable, renewable, low-carbon alternatives (IRENA, 2017). Over the last decade, understandings have been sought as to the implications of this transition for the citizens, societies, communities and countries that have come to expect an almost uninterrupted flow of power on-demand in order to live from day-to-day as well as to meet essential needs. Whilst modern societies are thus arguably deeply dependent on energy systems, uneven access to energy has nonetheless become as equal a feature of modern daily life, manifest through complex energy-related issues such as fuel poverty (Walker and Day, 2012; Middlemiss, 2017). If the transition to renewable, low-carbon energy is to avoid reproducing the unequal distribution of costs and benefits associated with fossil fuel-based energy, the social and economic relations embedded in our energy systems warrant careful attention in order to understand how principles of justice, equity, and fairness might be embedded throughout (Eames and Hunt, 2013; Bridge et al, 2013).

Interest in social justice related to energy systems is not new, even if it has acquired new impetus and vigour in the context of the pressing imperatives of climate change. Ivan Illich's 'Energy & Equity' noted an imbalance between industrial development, social justice, and personal freedom as far back as 1974 through an analysis of powered mobility. Shortly after this in 1977, Amory Lovins' influential 'Soft Energy Paths' set out to examine the social ramifications associated with fossil fuel-based and renewables-based energy trajectories. Although the 'hard' and 'soft' paths framework has gained renewed prominence (Sovacool 2011; Strachan et al, 2015), the lesser-quoted subtitle of Lovins' book—'*Towards a Durable Peace*'—highlights the importance scholars have placed on the centrality of energy for wider issues of equity and social justice. To quote Lovins (1977: 147): 'It is not the technical or economic but the socio-political implications of energy paths that are paramount both in moral importance and in practical impact'.

From these early starting points, interest in justice issues related to energy and climate change have grown rapidly, culminating in the burgeoning field of 'energy justice' which has developed in the last seven years (Bickerstaff et al, 2013; McCauley et al, 2013; Sovacool and Dworkin, 2014; Sovacool et al, 2014; Jenkins et al, 2016; McCauley et al, 2019). Focusing specifically on the impacts of energy technologies, systems and infrastructures, 'energy justice' has emerged as a widely-utilised framework for understanding the complex

and differential ways that people are disadvantaged in the context of energy systems, a warning about the challenges of transitioning towards a low-carbon pathway in the future, and a call to begin practising more participatory and sustainable futures whilst addressing the needs of the vulnerable and disadvantaged.

But herein lie two problems. Firstly, existing energy justice scholarship claims to seek improved justice outcomes at a micro-level for citizens (Jenkins et al, 2016). However, as this thesis will show, the main theoretical perspectives on energy justice envisage change happening primarily as a *top-down* process enacted mainly by policy-makers, armed with checklists of energy justice principles. Whilst there is a clear and important role for policy measures, elevating this approach above all others as though a panacea potentially disenfranchises citizens at the end of the energy distribution wire. Moreover, such perspectives risk underplaying the relevance, traction or salience of justice concepts *in the wild*[1], where citizens, communities and societies are already and continuously engaged in sustainable energy transitions. Secondly, by focussing exclusively on processes in and for energy, key energy justice perspectives may underplay the role of issues *beyond* the energy system as potential drivers or outcomes of energy-related issues and actions in practice. Given that the supply of energy has become intrinsically bound up with multiple aspects of modern life (Sovacool, 2014), it is not such a great leap to suppose that issues both within and beyond the energy system may be relevant to the enactment of energy justice, or lived experience of energy *in*justice, on the ground.

This thesis challenges the assertion that energy justice is a fundamentally top-down process. In this respect, energy justice has mainly been applied as an evaluative framework through which to analyse real-world experiences. In contrast, this thesis will test the contribution that *bottom-up* approaches have for understandings of energy justice more broadly, through extensive qualitative research in the community renewable energy sector in Wales, UK. In doing so, insights for a more holistic energy justice concept are sought.

1.2 Community renewables and local approaches to energy

Community renewable energy has become a prominent theme in academic and policy discourse over the last decade as a central element within policy strategies and local movements promoting the creation of small-scale, decentralised and diversely owned models of renewable energy generation (Walker et al, 2007; Walker and Devine-Wright, 2008; Hoffman and High-Pippert, 2010; Devine-Wright and Wiersma, 2013). Community

[1] Which is adapted here from Callon's (2006) notion of 'economics in the wild'.

energy—and community *renewable* energy (CRE) as a distinct subset of activities[2]—are a prominent international debate within energy geographies, as well as a stable component of the energy mix in many European countries (Bauwens et al, 2016). However, the experience of community renewables in the UK has a somewhat chequered past, reflected by the rise (and subsequent mothballing only a few years later) of the Westminster government's 2014 Community Energy Strategy. Whilst support for community renewables across the UK, and in its devolved regions, is thus characterised by differing levels of policy commitment, community renewables has nonetheless developed into a fledgling sector comprising 275 projects in operation across England, Wales and Northern Ireland, with a total combined generation capacity of 168MW (Community Energy England, 2019).

Community-based interventions have been shown to be important agents for change for addressing energy-related issues from the perspective of energy consumption practices, including for improving justice outcomes in the context of problems such as fuel poverty (Herington et al, 2017; Martiskainen et al, 2018). This matters for research seeking to explore bottom-up approaches to issues of energy and social justice, and there is a gap in understandings of the role of energy production activities—such as community renewables—for improving social justice outcomes both within and beyond the energy system. Moreover, as this thesis will argue, studies in community renewables have often struggled to grapple with the justice implications of CRE-developments in practice. Although there is a small, emerging body of work on the subject, there remains a gap in understandings of the outcomes, benefits and associated effects of community renewables (Wyse and Hoicka, 2019). These are important issues in the sense that project outcomes effect the equity and social justice implications of community renewables in practice. Moreover, the nascent state of the community renewables sector in the UK has produced a tendency for analyses of community and renewable energy to be ahistorical, focusing overwhelmingly on their development and dynamics of 'social acceptance' at the point where projects are developed and seek consent (Berka and Creamer, 2018; Windemer, 2019), which may not wholly capture the implications for justice.

Taken together, these issues are highly relevant from the perspective of bottom-up approaches to energy and justice. This thesis aims to address these gaps through a cross-sectoral qualitative analysis of the Welsh community renewables sector which, by itself, advances understandings of the nature of community renewables in Wales relative to wider UK and international trends. Beyond this, this thesis contributes important, novel insights as to the outcomes and related distributive effects associated with CRE-developments on

[2] An overview of the terminology deployed in this thesis is given in the 'terms of reference' section.

the ground, that help better understand the role of CRE in negotiating greater social justice both within and beyond the energy sector in a just transition to renewable, low-carbon energy.

1.3 Setting the empirical scene: CRE in a sub-national context

Wales provides an interesting context for exploring the 'messy actualities of the empirical world' (McKee, 2009: 482) as they relate to the governance of energy justice. Not only does Wales have some limited control over key aspects of energy policy[3] by virtue of its sub-national government status under the devolution settlement (see Strachan et al, 2015; Cowell et al, 2017a; Cowell et al, 2017b). Politically, Wales has also placed itself squarely within a sustainable development agenda with the *Wellbeing of Future Generations Act* of 2015, which places a duty on public bodies to improve social, economic, and cultural well-being for current and future generations, including pledging ambitions for a low-carbon society and increasing renewable energy capacity. Perhaps most relevant from the standpoint of bottom-up perspectives on energy justice, Wales recently set an ambitious target for 1GW of locally-owned renewable energy capacity by 2030 (Welsh Government, 2020), at a time no less when the UK government in Westminster is prioritising 'smart' rather than 'community' energy (Rydin and Turcu, 2019).

More broadly, research has characterised Wales as an 'energy periphery' (O'Sullivan et al, 2020; Golubchikov and O'Sullivan, 2020), as well as an economic periphery within the UK (Owen et al, 2000; Henderson, 2019). This renders Wales a highly relevant context within which to explore energy issues as they relate to questions of social justice. In this respect, trends in data from the last two years show Wales significantly underperforms against all other regions of the UK by GVA, while the average disposable income per person in Wales is around 80% of the overall UK value (Welsh Government, n.d.). In addition, Wales is frequently characterised by its rurality (Roberts, 2020; O'Sullivan et al, 2020), which presents a complex challenge for its ambition for a low-carbon society to the extent that rural dwellers emit the highest amount of domestic CO_2 per head of capita in Britain (Roberts and Henwood, 2018).

Building on a policy aim with a strong read-across to bottom-up perspectives on energy justice, between 2010 and 2015 the Welsh Government sought to advance the development of the community renewables sector through the Ynni'r Fro (YF) programme. Whilst YF ended in 2015, it was the WG's flagship support policy for community renewable

[3] Since the fieldwork phase of this study, powers over energy have increased somewhat as key recommendations (related to energy) of the Silk Commission on Devolution in Wales have been implemented under the Wales Act 2017.

energy during the time the field research presented here took place. Moreover, Ynni'r Fro was the outcome of joint funding between the Welsh Government and the European Regional Development Fund (ERDF), a requirement of which was an explicit focus on the themes of enhancing equal opportunities and environmental sustainability. Such requirements ensured that, although not explicitly, from the very start Ynni'r Fro emphasised the role of community- owned and developed energy generation as a tool for achieving a broad range of social, environmental, and economic objectives; placing energy centre-stage in supporting the wider well-being of people and communities. As this thesis will show, these issues are highly relevant from a social justice perspective more broadly, highlighting the ways in which Wales is a prime candidate for exploring questions of community, energy and justice.

1.4 Working with the Welsh Government

A key feature of this research was the direct involvement of the Welsh Government in Cardiff. Indeed, the study was commissioned by the Welsh Government, and the early vision for the research shaped in light of their interests and inputs. This is an important point to understand at the outset, as this provenance as a funder-led piece of research, embedded in a live set of policy issues, is at least partly relevant for configuring the aims and scope of the study as well as how it was to be carried out in the field. While funder-led research is not uncommon, the spirit of this endeavour at the outset was clearly articulated in the vein of 'co-production' of knowledge. Retrospectively, the approach most closely aligns with the vision set out after Bovaird et al (2015: 2) as 'Professionals and citizens making better use of each other's assets, resources and contributions to achieve better outcomes'.

Thus, during the formative phase of the study in late 2013, I engaged frequently with officials at the Welsh Government's Cathays Park base in Cardiff. These early exchanges explored the policy landscape of community renewables and fuel poverty in Wales, with a particular focus on the WG's in-flight policies in these respective areas. These discussions culminated in the production of a research agreement[4] at the end of 2013, which outlined the areas of focus agreed as potential key themes for the study. The themes identified were:

- Shape greater critical engagement with the possibilities of community-led initiatives and renewable energy in specific settings through working collaboratively with specific projects;

[4] The research agreement is included in full in the appendices, with excerpts in this chapter.

- Contribute to understandings of how and in what respects community-led initiatives and renewable energy projects can be more effectively supported at a policy level and how these issues feed into other policy debates;

- Emphasise the role and significance of bottom-up approaches as they relate to the (re)negotiation of security and resilience at multiple scales both in Wales and beyond.

Another key theme which, with hindsight (and to the very great surprise of the author), is not reflected explicitly in the research agreement was the overarching context of fuel poverty in Wales. Indeed, at the outset of this study in 2013, nearly one third of households in Wales were statistically classified as being fuel poor (NEA/EAS, 2014) and the WG's vision was for this to be explicitly addressed in the research carried out. Taking these themes together, the initial hypothesis that sparked officials' interest lay at the intersection of these issues in understanding how the fledgling community renewables sector in Wales might address energy-related issues such as fuel poverty. Over the course of this research, shaping the combination of these issues into a feasible research project has been an ongoing challenge, particularly in the context of expectations about 'the field' that were not entirely met.

The early engagement with the Welsh Government also shaped the vision for how this research would be carried out, influencing the choice of data collection practices and overarching methodological approach in the field. In this respect, the RA sets an expectation of collaborative engagement in communities on the ground in an overarching case study approach. Whilst not explicitly mentioned in the RA, the broad framework for engaging the Welsh Government and research participants in the field was agreed to take inspiration from 'participatory action research' approaches (Kemmis and McTaggart, 2005; Bergold and Thomas, 2012). Indeed, in mid-2013 before the commencement of the study, my research supervisors supplied me with an assortment of 'summer reading'. Prominent near the top of this list was Catney et al's (2013a) paper on the application of action-oriented techniques based around 'community knowledge networks' as a means for examining issues of energy and justice with citizens and communities. This paper set an early expectation and, although there have been initial strides in the application of participatory approaches in the context of CRE (Hobson, et al, 2016; Lucas et al, 2017; Forman, 2017; Lacey-Barnacle and Bird, 2018) since, there is still a call seven years later for greater application of such methods particularly from the perspective of energy justice (Jenkins et al, 2020). These early influences remain highly relevant for this research, shaping the methodological approach and application of innovative participatory methods within community renewables projects in the field. In this respect, the YF scheme had been

operational for three years at the outset of this research, setting an expectation of a rich empirical field of energy-generating community renewables projects. In practice, however, YF was beset by early problems which meant that—although many projects were involved in the scheme—they were less advanced than expected at the time the fieldwork took place.

Notwithstanding the rare opportunity to work at the intersection of academia and policy, conducting research in Wales with the WG as project sponsor bestowed many advantages. These included a ready-made route to demonstrate impact, unprecedented access to data from in-flight policy schemes, access to key policy officials in WG, opportunities to attend policy workshops convening key stakeholders, and unlocking traction on the ground with community groups. There were also minor challenges: in particular, engagement with the WG diminished as time went on. Indeed, across the research as a whole the WG probably had less involvement and input on the direction of travel compared to engagement at its outset, signalling perhaps the ways in which shifting policy priorities and changing staff positions can occur more rapidly than PhD-scale research can deliver. This reflects the broader challenges of academic engagement with policy (and vice-versa) (Beswick and Geddes, 2020) and the author is ultimately grateful that WG officials were always very supportive of, enthusiastic about, and interested in the outcomes of the research at key engagement points.

On balance, this approach set the broad parameters for this research at an early stage, whilst providing unprecedented access to information and significant flexibility to allow the research to follow key issues of interest as they emerged.

1.5 Research questions

Based on the key themes of this research on energy justice, energy-related issues such as fuel poverty, and community renewable energy outlined in the foregoing sections, a series of research questions emerged and evolved as my research advanced. The questions addressed in this thesis are as follows:

1. *How can the motivations of the community renewable energy sector in Wales be understood? How do these drivers help understand the energy justice implications of community renewables?*

   Here I seek to understand and contextualise the development of the community renewable energy sector in Wales. The aim is to examine the key rationales mobilised by participants included in this research to advance an appreciation of the motivations for community renewable energy development. In doing so, it helps to

understand the extent to which community renewables may be used as a tool for enhancing justice outcomes. It also helps to relate the experience with community renewable energy in Wales to wider UK and international trends.

2. *How does participation in community renewable energy take place: who is involved, at what times, and why? How can the implications for procedural aspects of energy justice be understood?*

   Here I am interested in examining the extent to which issues of participation and inclusivity are enrolled in community renewable energy projects in Wales, including the representativeness of projects within communities on whose behalf they claim to operate. As such, this question seeks to address a gap in the literature by understanding how citizen involvement in energy production restructures participation in and facilitates more diverse engagements with the energy system, and with what wider effects. It also helps to understand community renewable energy as an ongoing, temporal process, an issue which is not well understood in current literatures.

3. *How do community renewable energy projects influence distributive fairness both within and beyond the energy sector?*

   Here I am interested in understanding the distributional implications of community renewables projects, and in developing a critical understanding of the material impacts of projects in places. In doing so, this question seeks to address a gap in the literature by developing significant new understandings of the outcomes and benefits, and thereby the equity and social justice implications, of community renewable energy in practice.

4. *How do community renewables shape the future for local communities and the energy system alike? How can community renewables research better influence understandings of energy justice?*

   With this final question, I seek to tie together key themes identified from amongst the foregoing three questions, using them to critically assess the transformative potential of community renewables, as well the implications of community renewables schemes for the development of ‘local’ and ‘multi-scalar’ perspectives on energy justice.

1.6 Terms of reference

This thesis engages with a number of concepts that are highly contested in academic literatures. For the avoidance of doubt, this section clarifies the approach to the terminology deployed throughout this thesis.

Community: The term 'community' is frequently deployed in a range of ways, taking on heterogeneous meanings across contexts. 'Community' may be of place or of interest (Dunham, 1986; Bristow et al, 2012), or it may be an ideal or a governmental technique (Taylor Aiken, 2016). Even in discussions of energy, scholars have shown the term being deployed strategically to enact particular aims (such as action *in the name of the community*), as well as to refer to an actor, a scale of activity, a spatial setting, a form of network, or a type of process (Walker, 2011). There is not the space in this thesis to engage critically with the meaning of community, nor is this strictly necessary for the aim of the thesis to examine issues of social justice in energy systems. After Walker (2011), this thesis uses 'community' to refer to an actor with agency, a (meso-level) scale, as a place, and as a process. Throughout this thesis I will endeavour to clarify how 'community' is being deployed in context.

Community renewable energy: As noted in the foregoing sections, community renewables is a keenly contested subject. Parsing the vast range of ways in which relations between communities and energy have been understood and conceptualised across the literature is therefore a challenge in itself. Indeed, multiple conceptions—often with little to distinguish between them—have been deployed, including (but not limited to): CE (community energy) (Walker and Devine-Wright, 2008), CPE (collective and politically motivated projects in renewable energy) (Becker and Kunze, 2014), CEP (community energy project) (Haf et al, 2019), and RESCoop (renewable energy source co-operative) (Hoppe et al, 2019). This thesis follows literatures published by a number of researchers in the field (Berka and Creamer, 2018; Creamer et al, 2019), who have congregated around the term 'community renewable energy' (or 'community renewables' for short). Following Van Veelen and Haggett (2016), *community renewables* are understood to denote activities which: (a) exhibit a scalar character consistent with meso-level developments (Walker and Cass, 2007; Devine-Wright and Wiersma, 2013), (b) involve local participation in the development and generation of renewable energy and in the experience and equitable allocation of benefits (Walker and Devine-Wright, 2008), and (c) represent a model of more locally appropriate development, expressing diverse sets of values, and ensuring greater sensitivity to local context alongside heightened acceptability within host communities (Walker et al, 2007; Hielscher et al, 2011; see also: Demski et al, 2015).

1.7 Thesis structure

Following this introduction, Chapter 2 seeks to examine the state of knowledge, concepts and theories across existing literatures in key areas, including energy justice, fuel poverty, community renewables and energy transitions. The approach provides the foundation for conceptualising CRE-developments as a potential mechanism for addressing justice-related challenges across the energy system. In doing so, it offers a new way for scholars of energy geography and energy justice to critically engage with understanding how community renewables might shape social justice both within and beyond the energy sector as part of a just transition to renewable, low-carbon energy.

Chapter 3 describes the methods and data collection phases of the study, which took place over a 12 month period between 2014 and 2015. Here I provide descriptions of the way that I practiced data collection, the methodological tools I utilised, and the ways in which such methods were mobilised to carry out research. I also describe the innovative ways in which I involved communities directly in this research by deploying a participatory approach based on the 'Ketso' technique (Furlong and Tippett, 2013; Tippett, 2013; Wengel et al, 2019), drawing inspiration from the Participatory Action Research tradition to do so.

Chapter 4 addresses Research Question 1, examining the key rationales underpinning the emergence of the community renewables sector in Wales. It does so through an examination of the motivations expressed by project leaders and participants included in CRE initiatives involved in this study. In this respect, the current state of knowledge of the CRE sector in Wales is relatively weak. Such issues are relevant for justice because they configure the scope and trajectory of potential outcomes. As such, here I highlight the diverse rationales community renewables projects attached to their activities, contributing to literatures which understand CRE as more than a purely environmentally-focused activity and exploring how communities use it as a tool to address local needs.

Chapter 5 addresses Research Question 2, examining how issues of participation and inclusivity unfold in community renewables projects in Wales, including the representativeness of projects within communities on whose behalf they claim to operate. Here I address gaps in the existing literatures on community renewables regarding specifically *how* participation in community renewables takes place in practice. In this respect, very little is known about the notion of community renewable energy *as an ongoing process* in the literature to date. This chapter thus highlights the temporal dynamics associated with participation in community renewables that emerged from the data, relating these to issues of social justice within and beyond the energy system.

Chapter 6 addresses Research Question 3, developing a critical understanding of the material impacts of projects in places, and the extent to which CRE-developments have sought to address energy-related issues such as fuel poverty. Here I address critical gaps in the literature on the benefits and potential energy justice implications associated with community renewables in practice. In so doing, this chapter contributes novel insights into the co-evolutionary nature of project priorities and local circumstances which, it is argued, create opportunities for local community renewables initiatives to engage communities on issues of energy and justice in new ways over time.

Chapter 7 presents the conclusions of this research and does so with two purposes. Firstly, it addresses Research Question 4 by drawing together key themes to discuss the potential transformative impacts of community renewables in practice. Such issues are important in order to understand the scope for community renewables to improve social justice within and beyond the energy system in a just transition to renewable, low carbon energy. Secondly, the findings of this research are discussed in the context of energy justice, exploring the implications of this research for broader theoretical approaches to energy justice questions. Across this chapter, I outline the original contributions this thesis has developed, including with respect to the innovative participatory methods applied. As a final reflection, key limitations of this research are discussed and a future research agenda presented.

2 Critical literature review: The role of community renewable energy in negotiating social justice

2.1 Introduction

This critical literature review establishes the conceptual and theoretical frameworks for this research. The study aims to contribute to a small but growing body of literature which examines the broad notion of social justice in energy systems. With this in mind, the following sections will situate this research within existing literatures on energy justice (as an analytical and theoretical framework), and community renewables (as a conceptual and empirical framework). In doing so, the chapter highlights social justice issues within and beyond the energy system which access to energy (or lack thereof) underpins, as well as the potential role of community renewable energy (CRE) as part of a socio-technical transition to low carbon, renewable energy. Between them, the conceptual, theoretical, analytical, and empirical underpinnings set out in this chapter will provide a foundation for building new understandings of the role of community renewables in negotiating social justice, as well as for informing theoretical perspectives on energy justice.

The critical literature review thus begins by tracing the emergence of justice concepts in relation to energy geographies (Bridge et al, 2013; Huber, 2015; Calvert, 2016; Baka and Vaishnava, 2020), an area of work which argues that space and place matter for the study of energy and energy futures. In recent years, such issues have increasingly been studied through the lens of energy justice (Baka and Vaishnava, 2020). Situating this research within this body of work, consideration is then given to different approaches to understanding energy justice, before turning to discuss emerging critiques and challenges of such perspectives, which suggest opportunities to consider better the role of local approaches within energy justice literatures. Responding to this, the present study is then located within the conceptual framework of 'community renewable energy', a nascent frame through which an increasing number of energy geographers have explored the dynamic relationships between justice, place and energy[5].

However, as the review will argue, empirical examinations of community renewables have often struggled to grapple with the justice implications of CRE-developments in practice

[5] A recent systematic review of the literatures in this area by Berka and Creamer (2018) is instructive in this regard. See also Creamer et al (2019).

(Berka and Creamer, 2018; Creamer et al, 2019), while the relevance of CRE research for informing and understanding energy justice perspectives more broadly has rarely been explored (Forman, 2017; Lacey-Barnacle and Bird, 2018). To more critically unpack the justice implications of community renewables, aspects of the 'triumvirate of tenets' of energy justice (McCauley et al, 2013; Jenkins et al, 2016) are mobilised as an analytical device to discuss the gaps in understandings of the CRE concept to consider (i) how its emergence ought to be understood, (ii) the nature of participation in community renewables, as well as (iii) its outcomes and benefits. Pursuing this approach provides a framework for an examination of the justice implications of community renewables which, at the same time, generates insights on how such local approaches might contribute to understandings of energy justice from a theoretical perspective. Such insights are important and necessary for ultimately understanding the role of CRE in negotiating greater social justice both within and beyond the energy sector in a just transition to renewable, low-carbon energy.

2.2 Unpacking Energy Justice

2.2.1 Background and emergence of energy justice concepts

Geographical engagement with issues of social justice has proliferated over the last five decades (Harvey, 1973; Laws, 1994; Smith, 1994; 2000; Milbourne, 2010; Soja, 2010; Heynen et al, 2018; Hopkins, 2020). This trend has increasingly broadened to encapsulate nature and environmental issues in the context of social justice discourses (Cutter, 1995; Low and Gleeson, 1998; Schlosberg, 2004; Walker, 2012). At the turn of a new decade rapt with anxiety about portending uncertain futures (Werner, 2019), geographical interest in justice issues related to energy and climate change have continued to grow, culminating in the burgeoning field of 'energy justice' which has developed in the last seven years (Bickerstaff et al, 2013; McCauley et al, 2013; Sovacool and Dworkin, 2014; Sovacool et al, 2014; Jenkins et al, 2016; McCauley et al, 2019).

Growing out of established environmental justice and climate justice literatures, although arguably differentiated by an explicit focus on energy policy and systems (Heffron and McCauley, 2014), energy justice foregrounds the aim to 'provide all individuals, across all areas, with safe, affordable and sustainable energy' (McCauley et al, 2013: 107). In this view, 'energy justice contemplates the possibility of a global energy system that fairly disseminates both the benefits and costs of energy services, and that has representative and impartial energy decision-making' (Sovacool et al, 2014:13). While a number of different approaches to energy justice have emerged, the most prominent seek to offer an explicit basis for guiding action with respect to energy decision-making for policy-makers and practitioners across a range of scales (Heffron et al, 2015; Jenkins et al, 2016; McCauley

et al, 2019). As such, energy justice is at once a rallying cry to recognise the complex and differential ways that people are disadvantaged in the context of energy systems, a warning about the dangers inherent in the need for transitioning towards a low carbon pathway in the future, and a call to begin practising more participatory and sustainable futures whilst addressing the needs of the vulnerable and disadvantaged.

Thus articulated, energy justice complements research on energy transitions (Geels, 2002; 2019; Meadowcroft, 2009), the ongoing nature of which remain relatively weakly understood (Späth and Rohracher, 2012). As such, energy justice research provides an aid to examining how principles of justice, equity and fairness might be negotiated throughout socio-technical transition processes whilst, at the same time, challenging negative impacts associated with already existing patterns of energy production and consumption (Eames and Hunt, 2013; Newell and Mulvaney, 2013). Indeed, it has been argued that research on socio-technical transitions to sustainability are largely blind to issues of justice in transition processes (Sareen and Haarstad, 2018; see also Geels, 2019); having very little to say about the underlying character and quality of such processes as they unfold, the outcomes they engender in practice, or the final destinations they ultimately imply. To the extent that much of the transitions literature is historical and explanatory, and therefore non-judgmental, it is relatively unsurprising that dominant strands of the transitions literature say little about justice. However, it has been argued that for a future transition to low carbon energy to avoid replicating the unequal distribution of costs and benefits associated with historical fossil fuel-based transitions, research in energy transitions must necessarily be informed by principles of justice (Eames and Hunt, 2013) and that energy justice perspectives have the potential to provide important insights in this respect (Sareen and Haarstad, 2018; Jenkins et al, 2018). In this way, energy justice thus expresses aspirations towards understanding, reshaping and resolving the so-called externalities associated with our energy systems in order to minimise the distribution of costs, maximise the distribution of benefits, and ensure that energy decision-making is at once representative and consistent with principles of due process, particularly with respect to vulnerable and marginalised groups (Bickerstaff et al, 2013; McCauley et al, 2013; Sovacool and Dworkin, 2014; Sovacool et al, 2016).

Underlying the agenda, energy justice recognises the co-constitutive nature of energy systems with wider social and institutional artefacts, the interests they engrain, together with the benefits and burdens they engender (Eames and Hunt, 2013; Sovacool et al, 2014). In this respect, energy production and consumption consist of a set of deeply entrenched processes, infrastructures and repertoires; complicit in the constitution and reproduction of modern social, political, and economic arrangements and practices, alongside concurrent

vulnerabilities at multiple scales (Shove, 2012; Hall, 2013; Hards, 2013; Shirani et al, 2013; Gillard et al, 2017; Middlemiss, 2017; Roberts and Henwood, 2019). Such considerations are similarly relevant in the context of energy transitions more broadly, which often envisage more comprehensive societal change alongside the evolution of the energy system (Grin et al, 2010; Verbong and Loorbach, 2012). Thus, as Sovacool et al (2016: 5) observe:

> *Energy system interventions are about more than technology and economic development; they are about political power, social cohesion, and even ethical and moral concerns over equity, due process and justice.*

Taking such a view, energy justice meets its environmental forebear (Walker, 2012) at the crossroads of 'confronting the fundamental underlying processes (and their associated power structures, social relations, institutional configurations, discourses, and belief systems) that generate environmental and social injustices' (Harvey, 1996: 401) as well as energy injustices.

Indeed, decades of research on environmental justice and climate justice (Bullard, 1993; Schlosberg, 2004; Goodman, 2009; Walker, 2012; Lyster, 2015) have provided a fruitful foundation for the development of the nascent energy justice tradition both in terms of underpinning intellectual frameworks and empirical applications. At the same time, research building on these foundations has sought to understand 'just sustainabilities' (Agyeman 2005; 2013) in which 'wider questions of social needs and welfare, and economic opportunity are integrally related to environmental limits imposed by supporting ecosystems' (Agyeman et al, 2002: 78). Such influences can be most clearly seen in the repurposing of Schlosberg's (2004) classic trivalent approach of environmental justice under the auspices of the so-called 'triumvirate of tenets' of energy justice (McCauley et al, 2013). In each of these framings, issues of distribution, procedure and recognition are viewed as the core components necessary for building a holistic understanding of justice. In this formulation, notions of justice, a 'well-ordered' society, and a more 'egalitarian' society, which are deeply rooted in the liberal tradition of political philosophy, can be seen to be influential on emerging energy justice perspectives. More recently, such ideas are frequently associated with the work of celebrated philosopher John Rawls. In *A Theory of Justice*, Rawls (1971) presents a utopian account of justice which conceives of the proper moral and ethical values society should have for it to be considered reasonable and just. Thus, for Rawls, equality of opportunity and the guarantee of a 'social minimum' of the primary goods that a so-called rational person would be presumed to want are fundamentally just pursuits, played out through the extension of social and economic arrangements to the benefit of the most marginalised and disadvantaged.

The pervasiveness of such concepts in real-world situations has been understood through empirical investigations based on applications of environmental and climate justice by researchers. In this respect, environmental and climate justice literatures have often focused on the allocation and impacts associated with environmental 'bads' or 'ills', including air quality (Barnett and Scott, 2007; Collins and Grineski, 2019; Shen et al, 2020), water quality and flood risk (Walker and Burningham, 2011; Moeng, 2019), conservation and biodiversity loss (Sikorska et al, 2019; Martin et al, 2015), or waste disposal (Kyne and Bolin, 2016; Weber et al, 2019). In doing so, they have frequently sought to understand how such ills impact marginalised or vulnerable communities (Bullard 1993; Walker 2012). This rich empirical tradition has provided a strong foundation for applications of energy justice on which researchers have been able to draw—mainly by applying energy justice concepts to real world experiences as an evaluative framework—albeit, it is argued, through a unique focus on (and solutions for) injustices arising within the specific context of energy systems, technologies and transitions (Jenkins et al, 2016).

Indeed, such intellectual foundations are particularly relevant in the context of energy consumption, whereby the 'depth of energy's role in constituting modern societies has turned energy into an addiction' (Miller, 2012: 53). In this view, energy falls within the range of goods necessary for ensuring effective participation in society and for meeting basic needs. As Sovacool et al (2014: 25) note: 'People who have no or limited access to energy services will generally have fewer educational opportunities, less access to fertile land and other natural resources, poorer health, negligible political representation, limited economic opportunities, and inadequate access to health services'. One influential way in which the fulfilment of such needs has been understood is through the concepts of functionings and capabilities which underpin Senn and Nussbaum's capability approach (Sen, 1992; Senn and Nussbaum, 1993; Senn, 1999; Nussbaum, 2000; Nussbaum 2011). In this respect, functionings are understood as 'the various things a person may value doing or being … such as being adequately nourished and being free from avoidable disease' (Sen, 1999: 75) and are therefore closely related to individual needs and well-being. On the other hand, capabilities are understood as freedom to choose from amongst the potential opportunities to realise given functionings in the real world (Sen, 1992). In the context of energy and justice, the achievement of desired functionings in modern daily life is inextricably bound up with access to energy. Indeed, as Day et al (2016) highlight, the capability approach more broadly is based on reconceptualising justice in the context of wider human flourishing, and on what individuals can attain and do, as a counterpoint to development approaches based on material wealth and economic rationalities.

Whilst a number of energy justice scholars have recognised the critical influence of such perspectives for the development of the nascent energy justice tradition (LaBelle, 2017; Joroff, 2017; Galvin, 2020), others have sought to distance the concept from intellectual traditions based on alleged 'activist' foundations (Jenkins et al, 2016; Heffron and McCauley, 2017; Jenkins, 2018), believing them to impede the development of energy justice as a fundamentally political pursuit enacted by policy-makers (Jenkins et al, 2016; Sovacool et al, 2017). However, by acknowledging that energy system interventions might be bound up with broader social, ethical and political struggles within socio-technical transition processes more generally, energy justice scholars inherently concede that energy justice scholarship is *necessarily* based, whether implicitly or explicitly, on critique of some aspect of the status quo ex ante within prevailing energy systems, technologies, transitions and social relations more broadly. In this way, whether explicitly acknowledged by its proponents or not, energy justice is revealed to be closely associated with critiques of contemporary social and economic arrangements and practices to the extent that it is typically concerned with 'the way that people should be treated [and] the way the world should be' (Walker, 2012: 1).

In this respect, claims as to the distinctiveness of energy justice by key proponents (Heffron and McCauley, 2017; Jenkins, 2018) have proliferated with relatively little challenge across the literature to date[6]. Indeed, given that the stated basis for the development of energy justice frameworks is the supposed negligible impact of traditional concepts beyond academia (Jenkins, 2018), it is unclear whether efforts to differentiate energy justice as distinctive from environmental and climate justice have served as helpful demarcation or arbitrary reductionism. Moreover, the rather antagonistic ways in which some scholars have sought to differentiate energy justice perspectives from earlier approaches is somewhat ironic in view of the fact that those very same discourses of environmental and climate justice were recently at the heart of social movements' across the globe pressing for greater political effort to address climate change during 2019, which coalesced under the auspices of both 'Extinction Rebellion' (Antadze, 2020; Westwell and Bunting, 2020) and the school protest movement (Holmberg and Alvinius, 2019; Marris, 2019). Such movements helped marshal public discourse around 'strategic narratives' based on climate and environmental justice (Bevan et al, 2020), ultimately gaining traction with the UK Parliament, influencing the conclusion to declare a 'climate emergency', and culminating in the UK Government's decision to implement legislation to be the first country across the globe to tighten its climate change targets to net zero emissions by 2050 (Bolton and Priestley, 2019).

[6] For an extremely recent exception to this see Wood and Roelich (2020).

Thus, as Lacey-Barnacle (2019: 21) also observes, 'the extent to which energy justice is more influential over policy … remains to be seen'. Indeed, attempts to distinguish energy justice as a fundamentally political pursuit reveal a tacit theory amongst some energy justice scholars regarding how, and by whom, actions ought to be undertaken in order to exert leverage on energy-related issues in the real world. In this world of so-called '"justice-aware" energy policy' (Sovacool et al, 2017), policy-makers are armed and guided by a set of increasingly closely specified energy justice evaluation frameworks (Sovacool and Dworkin, 2015; Jenkins et al, 2016; Sovacool et al, 2017) that arguably engage little with the traction and salience of justice concepts 'in the wild'. If anything, the remarkable resurgence of the 'traditional' concepts of environmental and climate justice within popular discourse shows that there are lessons for energy justice scholarship inherent in greater attention to the ways in which energy justice might be negotiated from the bottom-up (Forman, 2017, Lacey-Barnacle and Bird, 2018) within 'the localised, particular places where ... power and injustice are known, experienced and resisted' (Schlosberg, 2004: 534). Indeed, the limited engagement by some energy justice scholars with bottom-up, local perspectives on energy justice issues highlights a gap in understandings of the differential ways in which energy justice might be enacted in different contexts by actors beyond the political realm and yield important insights and self-reflections for understandings of energy justice more broadly.

Nonetheless, energy justice as a concept has seemed to resonate with scholars resulting in the proliferation of its application within energy geography research (Baka and Vaishnava, 2020). It has developed as a normative lens for looking at the world, which claims to shed light on the contradictions and burdens inherent in dominant, centralised modes of energy provision (Hodson and Marvin, 2013), and to more adequately take into account those disadvantaged by the present system. Putting aside such normative considerations, a central development of the field has been the offering of a range of distinct yet complementary frameworks to identify energy-related injustice and guide energy decision-making at both policy and practitioner scales. In so doing, energy justice scholarship has sought to understand and offer a perspective on the complex question of how in practice justice arguments become operationalised within the context of decision-making processes. Having set out the background and emergence of the energy justice concept, it is to these differing approaches that the following section turns.

2.2.2 Approaches to energy justice: Key frameworks and issues

Despite deep roots in environmental justice and climate justice literatures outlined in the foregoing sections, attempts have been made to demarcate energy justice as a distinct field of research underpinned by a range of energy justice frameworks relatively specific to the

field (McCauley et al, 2013; Sovacool and Dworkin, 2015; Heffron et al, 2015; Jenkins et al, 2016; Heffron and McCauley, 2017). Two particular approaches have gained traction and will be outlined in this section: (i) the repackaging of the classic trivalent approach of environmental justice (Schlosberg, 2004), to address specific energy-related concerns across the whole energy system, under the auspices of the 'triumvirate of tenets' of distributional, procedural, and recognition justice (McCauley et al, 2013; Jenkins et al, 2016), and (ii) a normative 'decision-making tool' in the form of a range of eight principles—encompassing availability, affordability, due process, transparency and accountability, sustainability, intragenerational equity, intergenerational equity, and responsibility—to be applied by decision-makers to energy-related problems (Sovacool and Dworkin, 2015; Sovacool et al, 2016). While the above approaches have come to be the most commonly utilised within energy justice scholarship (Lacey-Barnacle, 2019), further approaches have sought to explore energy justice from different perspectives, such as an 'energy justice metric' adding a quantitative component to the assessment of energy justice in an attempt to interface more effectively with an energy policy-making environment that is perceived as dominated by numerical, economic rationalities (Heffron et al, 2015).

The 'triumvirate of tenets' of energy justice (McCauley et al, 2013; Jenkins et al, 2016) is the principal lens through which most research in energy justice has been understood and carried out to date. As outlined above, the framework draws heavily on Schlosberg's (2004) trivalent approach of environmental justice whereby *distributional*, *procedural* and *recognition* justice elements are considered necessary to develop a holistic account of justice. To the extent that energy justice is explicitly focussed on issues across energy systems, technologies and transitions, the triumvirate of tenets in energy justice similarly assume narrower definitions based around these issues. As such, *distributional justice* draws attention to both locational issues concerning the geographical siting of energy infrastructures, as well as their associated economic and other benefits and burdens, and how they are disseminated across society (Heffron and McCauley 2014; Lacey-Barnacle and Bird, 2018). *Procedural justice* focusses on the ways in which citizens are (or are not) enrolled within and have access to decision-making processes in the context of energy systems, particularly on issues which affect them (Jenkins et al, 2016). Finally, *recognition justice*—drawing on the work of Fraser (1997) who sought to grow the scope of social justice research to address the ways and extents to which disparate forms of knowledges are valued and incorporated within decision-making—is concerned with whether and how the lived experiences of marginal and deprived groups are mobilised in order to deliver more equitable outcomes for all.

While the three tenets are closely inter-related, in practice, researchers have applied the different elements to a greater or lesser extent in particular cases, mostly uncritically and as an evaluative framework. In this respect, it is claimed that the triumvirate of tenets provides a framework for understanding how and where injustices in energy systems occur, and how they might be addressed (Jenkins et al, 2016). However, rigid applications of such frameworks arguably fail to acknowledge tensions between different aspects of justice that may not wholly capture experiences of energy (in)justice in empirical research settings. This issue is further complicated by arguments made by some scholars for expanding the triumvirate approach by incorporating new tenets based on *cosmopolitan justice* (Sovacool and Dworkin, 2015) and *restorative justice* (Heffron and McCauley, 2017) or *corrective justice* (Sovacool and Dworkin, 2014). While it is arguable that cosmopolitan justice—the notion that justice principles should apply universally to all human beings across the globe—already permeate energy justice perspectives (Lacey-Barnacle, 2019), it has not been formally incorporated as a new tenet in its own right. Arguments for restorative justice—the notion that rights violations should be compensated such as through the 'polluter pays' principle (de Sadeler, 2014)—appear largely to have failed to gain traction to date as applications of the three tenets remain predominant across the literature.

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 2.1: Energy justice decision-making tool (Sovacool and Dworkin, 2015)

It is arguable that the extensive application of the triumvirate approach may partly be a result of its relative simplicity when compared to the second key energy justice framework embodied by Sovacool and Dworkin's (2015) 'energy justice decision-making tool'. The tool sets out a range of eight principles (shown in Figure 1) which is intended to be used by energy decision-makers when evaluating or formulating energy policy. In this way, it is claimed that the framework serves as a normative guide for the creation of just energy systems in practice and aims to achieve a fairer equilibrium between competing targets in order for energy policy outcomes to be more equitable (Sari et al, 2017). Similarly to the triumvirate of tenets, Sovacool et al (2017) have sought to continually update the decision-making tool by incorporating additional principles, including *resistance* (the notion that energy injustices must be actively opposed) and *intersectionality* (acknowledging that other social issues and identities are relevant for achieving energy justice). However, with the addition of these new principles the decision-making tool becomes less of a normative framework and potentially diffuses any notional distinctiveness to energy justice as a practical domain. In this respect, such issues point out that while approaches based on principles may provide clarity of objectives, it remains important that those principles are also feasible when applied in real-world contexts (Kukathas, 2004).

Whilst the key frameworks outlined above offer different routes for understanding and addressing energy justice issues, together they highlight a lack of a common theoretical and conceptual approach to energy justice in ways that are not unproblematic. In this respect, some scholars have characterised the three tenets and the decision-making framework as competing for influence rather than neatly complementing one another (Pellegrini-Massini et al, 2020). Others have critiqued energy justice scholars for borrowing from environmental and climate justice whilst criticising and eschewing the objectives of those traditions (Wood and Roelich, 2020). Others have suggested that energy justice frameworks are overly complex for application by policy-makers (Sari et al, 2017). More specifically, it is unclear that the principles set out in the energy justice decision-making tool—while perhaps admirable by themselves—offer any explanatory power for understanding how actually energy justice is enacted in practice or for the traction or salience of particular justice concepts in driving change. In this respect, abstract principles potentially under-determine action in heterogeneous situations. In broad terms, as noted in the previous section, advocates for increasingly prescriptive theoretical energy justice evaluation frameworks (Sovacool and Dworkin, 2015; Heffron and McCauley, 2017; Sovacool et al, 2017) risk developing an idea of energy justice that is both unwieldy to operationalise and which arguably engages little with the relevance, traction or influence of justice concepts 'in the wild'. In this respect, as Islar et al (2017) also note, the

implementation of energy justice in practice requires greater attention to the issue of agency.

This issue is not resolved by the more prevalent three tenet framework of energy justice. Indeed, whilst the triumvirate approach may assist in identifying and analysing energy-related problems, the admirable ambition of leading scholars to 'assess the multiple sites of injustice that can occur throughout global energy systems' (Jenkins et al, 2016: 180) has arguably led to a focus on 'tailpipe' issues and fixes (Lee and Byrne, 2019; Wood and Roelich, 2020) and an overemphasis on the burdens associated with energy systems (Joroff, 2017). In this respect, Park (2012: 388) has suggested that research at the intersection of energy and justice should 'not only be reactive to environmental bads, but it should also be proactive in addressing … environmental goods'. As a corollary, the triumvirate of tenets is of uncertain value for shedding light on situations where underlying political and economic issues routinely produce energy injustice or for understanding how the 'goods' or 'benefits' associated with particular types of energy technologies, systems and infrastructures can be harnessed to engender greater social justice more broadly. Moreover, as noted earlier, the triumvirate approach seeks to appeal to policy-makers as an intentionally 'top-down' methodology for embedding justice in decision-making; as Jenkins (2018: 120) states:

> *… the 'naïve' approaches of environmental and climate justice—the presumption that society would support their ideals—[is overcome in energy justice by] focusing instead on embedding justice in policy. This 'top-down' methodology offers the potential for a refined 'practice'.*

While it is arguable that it is precisely because energy justice is not articulated as a more transformative agenda that it failed to ignite the public imagination in the way that discourses of climate and environmental justice did during the global climate protests of 2019, the need for analytical advances becomes clear taking together the combination of issues outlined above. Firstly, by disproportionately focussing on energy 'burdens', a proactive approach to the *benefits* of particular energy technologies, systems and infrastructures is eschewed. This omission potentially goes against the grain of energy justice perspectives as an enabler of a just transition to low carbon energy (Jenkins et al, 2018) and for understanding how energy benefits might influence issues of justice beyond the energy sector, as well as within it. In this respect, there is a need for analytical advances to show whether, by focussing exclusively on processes in and for energy, key energy justice perspectives underplay the role of issues *beyond the energy system* as potential drivers or outcomes of energy-related problems and actions. Secondly, at the same time, a focus on distributive burdens potentially means that the relevance of procedural justice perspectives within energy justice

may have been underplayed. One such perspective in this category are participatory approaches (Barry, 1995; Adger et al, 2006) within communities and localities, which are largely sidelined in a framework aimed at policy-makers in a top-down approach. In this respect, elite decision-makers are frequently privileged within key energy justice frameworks potentially rendering private citizens and energy-using publics as mere recipients of energy justice and undermining their perspectives and ability to negotiate energy justice on their own terms.

In light of these issues, the mainstream energy justice frameworks outlined above are thus of questionable value to actors at meso- and micro- scales, as they are not developed with them in mind. In artificially narrowing the scope of energy justice in this way, key frameworks potentially provide only partial scope for understanding and capturing the full range of ways in which energy systems—and the broader economies, societies, and lifestyles they support and underpin—might be made more just in practice. Indeed, as both Chilvers and Longhurst (2016) and Walker et al (2016) have recently shown, opening up and extending understandings of participation in relation to energy decision-making and knowledge production, beyond the consultative approaches identified in some energy justice literatures, has a crucial part to play within the broader context of envisaging a just energy transition. Whilst some more recent studies have sought to take a more expansive outlook—such as in the context of participatory budgeting for energy justice (Capaccioli et al, 2017) for process-related omissions, and fuel poverty (Waitt and Harada, 2019) and electricity planning (Nock et al, 2020) for benefit-related omissions—they have done so in the main without substantive critical reflections back to conceptual approaches to energy justice. Moreover, whilst leading energy justice scholars have recently come round to the view that more local, community-based analyses of energy justice issues are necessary[7] (McCauley et al, 2019; Jenkins et al, 2020), there has been relatively little attention paid to such perspectives within the literature to date. In this respect, a Scopus search conducted in March 2020 for ‘energy justice’ produced 250 entries on the subject. This number reduced dramatically when introducing the terms ‘local’ (47 entries) and ‘community’ (28 entries) thereby highlighting the need for analytical advances to understand the experiences and influence of justice concepts ‘in the wild’ as well as within the corridors of power. The absence of such perspectives within mainstream frameworks potentially undermines the ambition for a ‘holistic’ energy justice concept.

[7] Including as a direct response to critiques made in my own published research (c.f. Jenkins et al, 2020: 4).

While literature that engages explicitly with justice in the context of energy—and energy justice especially—is somewhat emergent, further insights for this study can be found by reviewing the state of knowledge and concepts used in three bodies of research: fuel poverty, energy transitions, and community renewable energy.

2.3 Fuel Poverty as Injustice

2.3.1 Understanding fuel poverty

The problem of fuel poverty in the context of the United Kingdom has brought the issue of justice in energy systems to the fore and served as an important lens through which the emerging energy justice agenda has been developed (Walker and Day, 2012; Bickerstaff et al, 2013). Indeed, fuel poverty is frequently referred to as a key problem for energy justice by developers of the main energy justice frameworks (McCauley et al, 2013, Sovacool and Dworkin, 2015; Jenkins et al, 2016) and has consistently been at the forefront of concerns about energy (in)justice, particularly in the UK where the language of 'fuel poverty' is predominant (Űrge-Vorsatz and Tirado Herrero, 2012). In this respect, Hiteva (2013: 490) highlights that:

> *Fuel poverty is an example of exclusion from the regime of the low-carbon transition. There always remains a portion of society which through a combination of factors is always at the tail end of the transition, living in a state of abandonment by the current administrations and regulatory frameworks, locked-in to redundant technologies and penalised by economic inefficiency.*

Thus, from an energy justice perspective, fuel poverty consists of a set of affordability (Galvin, 2019), social welfare (Rodriguez-Alvarez et al, 2019) and health dilemmas (Sharpe et al, 2019; Kahouli, 2020) in the here-and-now, as well as an ongoing future problem in the context of a just transition to renewable, low carbon energy (Eames and Hunt, 2013; Chapman and Okushima, 2019).

In this vein, literatures at the intersection of fuel poverty and energy justice continue to grow. Attention has been directed to a wide subset of considerations, including household experiences of fuel poverty (Sovacool et al, 2019; Roberts, 2020), differences in experiences of fuel poverty between demographic groups (Petrova, 2018; Willand and Horne, 2018; Forster et al, 2019) and ethnicities (Reames, 2016; Bednar et al, 2017), energy demand and use (Walker et al, 2016; Butler et al 2018; Fawcett and Darby, 2019), strategies for addressing fuel poverty (Sovacool, 2015; Gillard et al, 2017), experiences of fuel poverty in different national contexts (Reames, 2016; Bednar et al, 2017; Okushima, 2019), and in relation to new technologies and fuels (Scott and Powells, 2020a) and urban

form (Poruschi and Ambrey, 2018). In order to better understand the relevance of fuel poverty for bottom-up approaches to energy justice identified in the previous section, consideration will first be given to how fuel poverty has been understood and the key issues widely implicated in its manifestation.

Academic interest in issues of access and affordability in relation to energy in the UK have grown since the implementation of the Warm Homes and Energy Conservation Act in 2000, with a Scopus search for 'fuel poverty' conducted in March 2020 showing an average of less than 1 publication per year between 1970 and 2000, 10 publications per year between 2001 and 2010, and 42 publications per year between 2011 and 2020. Under the Act, the UK government is required to address the situation of persons living in 'fuel poverty', which is defined in general terms in the Act (section 1(1)) as 'a person [who] is a member of a household living on a lower income in a home which cannot be kept warm at reasonable cost'. The Act provides a general framework by which action to address fuel poverty can be undertaken, whilst providing flexibility to the administrations in Westminster and Cardiff[8] to determine a more detailed definition of fuel poverty, the fuel poverty 'target' that ought to apply, and the strategy for achieving it.

Whilst the proliferation of research has contributed to better understandings of the scope and scale of the problem (Robinson et al, 2018a; Baker et al, 2018; Llorca et al, 2020), how it might be addressed (Miu et al, 2018; Pollard et al, 2019; Boeri et al, 2020), its effects (Longhurst and Hargreaves, 2019; Ginestet et al, 2020), and its spatial dimensions (Murage et al, 2018; Robinson et al, 2018b; Horta et al, 2019; Roberts, 2020; Chaton and Gourad, 2020), across the literature it is arguable that there has historically been a lack of a common approach, with 'fuel poverty' amongst a range of terms mobilised to denote the combined problems of energy prices, fuel costs, and domestic energy (in)efficiency (Day and Walker, 2013; Hall, 2013; Li et al, 2014). As Day and Walker (2013: 14) note: 'different languages have been employed to characterize the problem that is at issue, including those of fuel poverty, energy poverty, energy insecurity, energy deprivation and energy precariousness'. In some regards this is perhaps unsurprising, as it is arguable that different strands of research have sought to focus on specific subsets of issues with particular spatial or geographical emphases. Thus, whilst a common feature of the literature has been to debate the substance of the terms at use, retaining some of this complexity assists in characterising and differentiating between the issues under discussion. Recognising this, it has been

[8] Fuel poverty is a devolved responsibility in Scotland and Northern Ireland. The Warm Homes and Energy Conservation Act 2000 applies in Wales whilst providing the Welsh Government autonomy to develop its own fuel poverty policy as a devolved issue largely distinct from the approach adopted by the UK government for England.

suggested that the term ‘energy vulnerability’ is one that ‘better captures the variability of circumstances and processes through which problems of access to sufficient and affordable energy are manifest, and one that has the potential to work across many different national and regional settings’ (Day and Walker, 2015: 15), including in relation to subjective experiences of energy-related problems (Longhurst and Hargreaves, 2019). The move towards emphasising energy vulnerability is thus an attempt to unify the divergent strands of research pursued thus far under one banner. Whilst this may be useful from the standpoint of scholars, academics and policy-makers trying to access and make sense of the diverse and contested literatures on the social dimensions of energy use, there nonetheless remains contestation with respect to language and terminology that the rallying cry of energy vulnerability risks complicating rather than resolving.

In this regard, the distinction between ‘fuel poverty’ and ‘energy poverty’ is one such issue. Fuel poverty is traditionally understood as coming to prominence in the context of the United Kingdom (Boardman, 1991; 2010; Űrge-Vorsatz and Tirado Herrero, 2012; Li et al, 2014) in relation to ‘concerns with access to affordable warmth’ (Bickerstaff et al, 2013: 2). As such, fuel poverty has historically been defined as a situation ‘where households are required to spend in excess of 10 per cent of their household income on heating and powering their home to a satisfactory standard’ (Stockton and Campbell, 2011: 4); where ‘satisfactory’ implies temperature thresholds of 21˚C in the living areas and 18˚C in other parts of the home (Welsh Government, 2019). Following the first appearance of the term ‘fuel poverty’ in the Warm Homes and Energy Conservation Act of 2000 and the subsequent publication of the UK Fuel Poverty Strategy in 2001, this language has continued to be ‘the favoured wording in English-speaking nations such as the UK … and Ireland’ (Űrge-Vorsatz and Tirado Herrero, 2012: 84). In contrast, the term ‘energy poverty’ has been used typically to refer to similar phenomenon in the context of Central and Eastern Europe (Buzar, 2007; Papada and Kaliampakos, 2017; Thomson et al, 2019) and traditionally amongst EU-sources (Morgan, 2008; EUFORES, 2008; Castaño-Rosa et al, 2019) more generally. To the extent that the term ‘energy poverty’ has been used to describe sets of experiences and phenomena outside of the UK context, the emphasis of the analysis here shall be more directly focussed on a discussion of ‘fuel poverty’ as a specific subset of issues of the more general energy vulnerability notion. This is not to suggest that there are not parallels between the two terms, but rather to posit the concepts as having distinct spheres of geographical relevance.

From the starting point of the 2001 Fuel Poverty Strategy, the United Kingdom government had an ambitious original target to eradicate fuel poverty by 2016. With the UK government heading towards a failure to meet the 2016 target, in 2012 the government-initiated Hills

Review of fuel poverty was published, which proposed a new target and suggested changing the UK definition of fuel poverty to be based on a measure of 'low income, high costs'. Under this new measure, a household would be in fuel poverty if it has lower than average income and higher than average fuel costs (Hills, 2012; DECC, 2013)[9]. The shift in definition marked a change in tenor by the government in Westminster, whereby fuel poverty mutated 'from a condition that should and could be eradicated … to a condition that can at best be alleviated' (Middlemiss, 2017: 426). As such, in 2014 the UK government introduced a new statutory fuel poverty target for England to ensure that as many fuel poor homes as reasonably practicable achieve a minimum energy efficiency rating of Band C by 2030. The new target was swiftly backed up with a new fuel poverty strategy for England in 2015 (DECC, 2015a), amidst criticism that the new definition was a smokescreen for reducing the number of households in fuel poverty in official statistics by more than half (CSE, 2012; Hall et al, 2013) and for narrowing the problem to one solely of energy inefficiency in the home (Middlemiss, 2017). In this respect, as will be outlined below, fuel poverty is widely understood to be a multi-faceted problem primarily of household incomes, energy prices and energy inefficiency (Middlemiss and Gillard, 2015; Longhust and Hargreaves, 2019). At time of writing, the UK government is due to respond to a consultation on updating the fuel poverty strategy, including once more revising the measure by which fuel poverty would be calculated (BEIS, 2019a). Meanwhile in Wales, the Welsh Government's Fuel Poverty Strategy of 2010 set a target to eradicate fuel poverty as far as reasonably practicable by 2018. This target was not met (Wales Audit Office, 2019) and, at time of writing, the Welsh Government plans to consult on a new 'Fuel Poverty Plan'.

In this context, fuel poverty is traditionally understood as occurring due to the coalescence of three main factors: low incomes, high energy prices, and low rates of energy efficiency in the housing stock (Boardman, 2010; Ekins and Lockwood, 2011). Whilst the definition of fuel poverty in the United Kingdom clearly tends towards an emphasis on the dimensions pertaining to energy efficiency, there is an increasing recognition that pinning the incidence of fuel poverty to a narrow set of issues potentially obscures the wider structural factors involved (Healy, 2004; Day and Walker, 2013; Longhurst and Hargreaves, 2019). Indeed, to the extent that an emphasis on energy efficiency leads to an objective analysis of fuel poverty rates based solely on measures of building fabric, there is a danger that any reading of the factors complicit in the reproduction of the problem may fail 'to capture the wider elements of fuel poverty' (Healy, 2004: 36) at play. This point is further emphasised by Day and Walker (2013: 24) who have noted, in choosing to look at the problem instead through

[9] Although this definition was rejected in Wales and Scotland where the respective administrations have determined to keep the 10% definition (Preston et al, 2014).

the lens of 'assemblage', that 'Some energy vulnerability may not even fit the definition of "fuel poverty"'. Consequently, research is increasingly adopting a broader approach to the factors, practices and processes that contribute to the issue of fuel poverty more broadly (Middlemiss and Gillard 2015; Longhurst and Hargreaves, 2019; Rodriguez-Alvarez et al, 2019; Roberts, 2020) which may assist in identifying the most productive points of intervention.

Casting outwards for a broader approach to fuel poverty is not necessarily a new direction in understanding issues of access and affordability in relation to energy in the United Kingdom. Day and Walker's (2013) concept of energy vulnerability is one such move to begin to understand these issues in a more dynamic light and quite deliberately attempts to eschew any preconceptions with regard to causes. Űrge-Vorsatz and Tirado Herrero (2012: 84) have similarly sought to examine fuel poverty through an expanded taxonomy that includes 'not only the space heating needs of a household … but also other energy service demands', building on Boardman's (2010: 48) assertion that 'everyone needs to purchase fuel to provide essential energy services, such as warmth, hot water and lighting'. For many countries in the global north where the paradox of abundant energy supply coupled with inconsistent energy access is not uncommon (Walker and Day, 2012), including the United Kingdom, such a conception may shed light on alternative approaches for addressing 'situations in which households with access to modern energy carriers cannot comfortably satisfy their energy needs' (Űrge-Vorsatz and Tirado Herrero, 2012: 84). Indeed, one of the crucial points in the context of the UK is the fact that fuel poverty has become manifest and continued to persist in spite of access to energy being theoretically prefigured through the national grid[10], prompting questions about uneven spatial access to energy (Robinson et al, 2018b). In the UK, whilst fuel poverty policies have historically shifted between a focus on different aspects of the nexus of low incomes, high energy prices, and domestic energy efficiency, whether a more contextualised approach to energy *access* may yield further scope for interventions that join up the priorities of fuel poverty alleviation with the move towards increased renewable and low-carbon energy in the energy mix is an underexplored issue across the literature to date.

For the purposes of the analysis here, consideration of the implications of fuel poverty will be set out before considering key approaches for addressing fuel poverty in practice.

[10] Although is it acknowledged that there are circumstances in which this is not universally the case, for example, in off-grid rural areas; although as NEA/EAS (2014: 16) note: 'The combination of factors [incomes, energy prices, and energy inefficiency] means that fuel poverty can affect households regardless of their geographical location or whether they are urban or rural dwellers'.

2.3.2 Tracing the Depth and Impacts of Fuel Poverty in the UK

The existence of conditions of deep general poverty are widely considered to have been more or less eradicated across the developed world, with the lowest rates of extreme poverty recorded in the last five years (World Bank, 2018). Indeed, alleviating poverty is a crucial pillar of the United Nation's Sustainable Development Goals (Fonseca et al, 2020). At the same time, however, the drive to address fuel poverty highlights the growing gulf between the rich and poor, including in the UK (Wilkinson and Pickett, 2009), still evident in distinct forms of inequality such as fuel poverty which is viewed as an unacceptable characteristic of 21st century living (Boardman, 1991; 2010). Indeed, as Sovacool et al (2014: 93) have observed: 'by merely counting the numbers, fuel poverty is in one way as egregious to society's overall health as climate change'. In this context, poverty across much of the developed world has traditionally been conceptualised in relative rather than absolute terms; whereby, as Townsend (1979: 31) notes:

> *individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities, and have the living conditions and amenities which are customary, or at least widely encouraged and approved, in the societies in which they belong.*

In this regard, fuel poverty can be considered to be a specific dimension of a wider sphere of components that combined form a multi-faceted notion of deprivation; the alleviation of which conditions constitute the requirements pertaining to the ability to lead a decent life (Űrge-Vorsatz and Tirado Herrero, 2012). Thus, as Walker and Day (2012: 70) note: 'fuel poverty is most readily framed as a distributional injustice issue, linked to wider established concerns over inequality, poverty and the interests of the least advantaged'.

Whilst the mere existence of fuel poverty in this way constitutes an injustice that ought to be addressed on its own terms, the situation is compounded by virtue of the fact that fuel poverty is widely understood as having a range of harmful impacts. These include increased health risks such as respiratory and circulatory disease, mental health illness and asthma, as well as increased rates of mortality (Rudge and Gilchrist, 2005; Shortt and Rugkåsa, 2007; Wilkinson and Pickett, 2009; Liddell and Morris, 2010). In this respect, deficient access to affordable warmth is significantly associated with deprivation of many capabilities and functionings (Bartiaux et al, 2018), which have become widely underpinned by access to energy. In addition, fuel poverty has been shown to have more pernicious consequences through its interaction with other areas of vulnerability; where, for instance, it is considered to be a contributing factor towards increased social isolation (O'Brien, 2011), underachievement in educational attainment (Roberts, 2008), and forcing households to

choose between spending income on energy bills or food bills (Frank et al, 2006; Snell et al, 2018). Beyond this, households containing single parents (Stack and Meredith, 2018), often with young children (Sunikka-Blank, 2019; Rose and McAuley, 2019), the elderly (Chard and Walker, 2018) or a member with a disability or other long-term illness (Snell et al, 2015a; 2015b) are likely to have heightened vulnerability at least partly owing to an increased physiological need for access to energy services. Thus, as Li et al (2014: 479) note: 'Fuel poverty is thought to obstruct the development of health, wellbeing and social equity' across society more broadly.

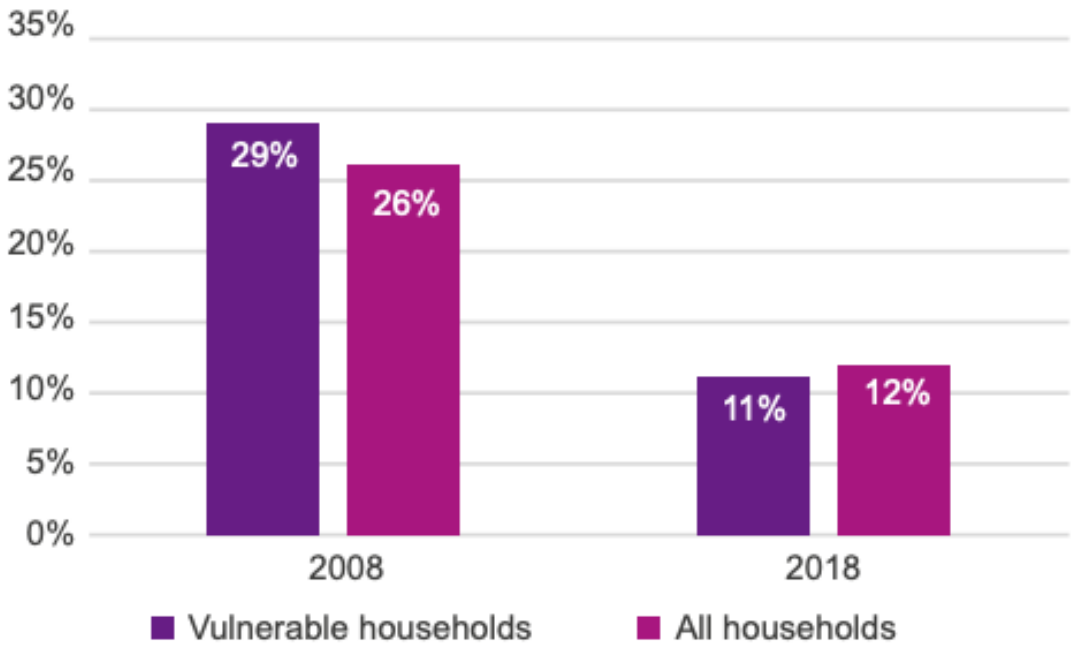

Figure 2.2: Percentage of Welsh households in fuel poverty[11] (Wales Audit Office, 2019: 26)

Despite this increasing evidence regarding the negative impacts, action to address fuel poverty in the UK and in Wales has had relatively mixed success (Welsh Government, 2019; BEIS, 2020a). In England, which uses the low income, high cost definition, fuel poverty slightly increased between 2010 and 2017 from 10.9% to 11.4% respectively, despite action being taken through a range of policies to at best eradicate it and, at least, minimise it as far as reasonably practicable (BEIS, 2020a). The latest figures from 2020, based on 2018 data[12], show a small reduction to 10.3%, or approximately 2.4 million households (BEIS, 2020a). It is questionable that this relative stasis in fuel poverty statistics is solely down to lack of policy ambition, as others have highlighted that the relative nature of the low income,

[11] A vulnerable household is defined as one with a person aged 60 years or over, a child or young person under the age of 16 years and/or a person who is disabled or has a long-term limiting condition.
[12] There is a time lag of approximately two years between collection and publication of fuel poverty figures.

high costs definition is problematic for measuring fuel poverty (Middlemiss, 2017) and leads to significant 'churn' of households *into* as well as out of fuel poverty as a result of changing income-levels (Committee on Fuel Poverty, 2018). However, in general terms, 'fuel poverty trends … show that the proportion of households living in fuel poverty has ranged between 10 and 12% over the past decade' (Committee on Fuel Poverty, 2018: 10). Figures from Wales, which uses the 10% definition, suggest more success in addressing fuel poverty. Between 2008 and 2018, the percentage of fuel poor households reduced from 26% to 12% respectively, or around 155,000 households in 2018 (Welsh Government, 2019). However, as the Wales Audit Office (2019: 25) noted in its evaluation of the Welsh Government's performance against the target to eradicate fuel poverty as far as reasonably practicable by 2018: 'the Welsh Government has not met any of the targets and the impact of its effort on reducing fuel poverty is uncertain'.

Whilst the scale of the problem of fuel poverty attracts broad consensus, the complexity of the situation is further evidenced in relation to objective and subjective data on fuel poverty (Waddams Price et al, 2012; Longhurst and Hargreaves, 2019). In this respect, research has shown that 'Many households who spend more than 10% of their income on energy do not feel fuel poor, and not everyone who feels fuel poor spends more than 10% of their income on fuel' (Waddams Price et al, 2012: 37). Thus, at least for some, the lived experience of fuel poverty is that it is possible to live 'sufficiently well' in an energy inefficient home (Roberts and Henwood, 2019). Indeed, as Walker et al (2013: 766) note: 'Fuel poor households are a diverse group in terms of their individual characteristics, energy preferences and behaviours. Many may not realize that they are fuel poor'. These observations highlight the fact that there are numerous other causal factors at play in the identification and manifestation of fuel poverty and, furthermore, the extent to which there exist significant difficulties associated with identifying the fuel poor more generally (Middlemiss, 2017; Committee on Fuel Poverty, 2018). Reinforcing this point, a range of studies have demonstrated the impact of fuel poverty on urban young adults, including students and professionals not obviously associated with vulnerability to fuel poverty (Bouzarovski et al, 2013; Butler and Sherriff, 2017; Petrova, 2018). In such situations, the existence of fuel poverty is an attribute that is passively accepted (Bouzarovski et al, 2013). Whilst this can in part be attributed to poor knowledge about thermal comfort and energy efficiency, the more worrying observation was the identification of a 'widespread cultural expectation that it is acceptable for individuals to live in poorly heated and low-quality housing at the entry point of their housing career' (Bouzarovski et al, 2013: 44).

Indeed, social norms, expectations and conventions are in a constant state of (re)negotiation and 'normal' levels of energy consumption are constantly being reshaped (Shove, 2003). In

this respect, social practices associated with energy consumption in the home, such as cooking (Herington et al, 2017; Foden et al, 2019) and heating (Hansen, 2018; Breadsell et al, 2019; Scott and Powells, 2020b), are often deeply engrained and can be challenging to alter (Fijalkow and Maresca, 2019). Moreover, common social practices around energy tend to suggest increasing levels of energy demand in the home as social expectations regarding 'minimum' energy consumption change (Walker et al, 2016), which arguably further entrenches problems of fuel poverty. More broadly, Hards (2013) draws attention to the practices of 'conspicuous energy consumption' and 'conspicuous energy conservation' as both household and interpersonal strategies to manage status and stigma in relation to energy use. This is also apparent in the way that emotions have been shown to shape energy practices based on fear, worry and care in ways that contribute to fuel poverty (Longhurst and Hargreaves, 2019). In this regard, dominant norms and expectations can be seen as complicit in the reproduction of energy injustices such as fuel poverty by exerting pressure to perform socially acceptable energy repertoires and avoid associations with deviance in relation to energy consumption more broadly (Hards, 2013; Walker et al, 2016). Indeed, as Walker (2008: 4515) observes, the emergence of an '"energy underclass" at continued or increased risk of fuel poverty' under present conditions is a genuine risk that must be factored into prospective interventions. Indeed, insights from social practice theory can be instructive in this regard where, as Herington et al (2017) suggest, community-based interventions can act as important agents for change. Such insights are also relevant from the perspective of bottom-up perspectives on energy justice, potentially emphasising a role for community-based interventions as part of a just transition to renewable, low carbon energy and for addressing energy-related issues such as fuel poverty.

2.3.3 Pathways for addressing fuel poverty

Since the early 2000s successive UK governments' have sought to address fuel poverty through a range of policy interventions. In view of the interactions between carbon mitigation and fuel poverty alleviation manifest in interventions to improve household energy efficiency, key policies have sought an integrative approach to these issues through the enactment of obligations on energy suppliers to deliver energy efficiency measures across the residential sector (Stockton and Campbell, 2011; Ekins and Lockwood, 2011; Rosenow et al, 2013; Miu et al, 2018). Indeed, supplier obligations have been widely used across Europe following the introduction of the Energy Efficiency Directive in 2012 (Rosenow and Bayer, 2017). Under this model, larger energy suppliers are required to deliver energy efficiency measures in domestic premises to help reduce carbon emissions and address fuel poverty; although, in the UK, the 'Energy Company Obligation' (ECO) scheme has become increasingly focused specifically on addressing fuel poverty since its introduction in 2013 (BEIS, 2018).

In this respect, ECO has a much more specific social focus, prioritising low income and vulnerable households and those living in hard-to-treat homes, and has thus become the UK's primary mechanism for addressing fuel poverty.

Historically, the supplier obligation has also been supplemented by publicly funded initiatives, such as the Warm Front in England, geared wholly and specifically towards the reduction of fuel poverty (Gilbertson et al, 2012; Sovacool, 2015). At the time of writing (Spring 2020), complementary policies include the Warm Home Discount scheme (Committee on Fuel Poverty, 2018), minimum energy efficiency standards in the private rental sector (Sayce and Hossain, 2020), Winter Fuel Payments (Crossley and Zilio, 2018), Cold Weather Payments (BEIS, 2019a) and the recently imposed energy price cap (Hardy et al, 2019). In addition to the above schemes, the Warm Homes initiative in Wales sets out additional measures to provide further support for household energy efficiency: (i) the 'Nest' scheme provides energy efficiency improvements to inefficient households receiving means-tested benefits on a demand-led basis (Welsh Government, 2015a), and (ii) the 'Arbed' scheme provides funding for area-based interventions to improve household energy efficiency in deprived areas (Patterson, 2016; Wales Audit Office, 2019).

Assuming that such measures are delivered unproblematically, the aim to reduce the burden of energy affordability at the point of use is likely to be a valuable component in the drive to address fuel poverty. However, locating fuel poor households is widely cited as a challenge so that many of the policies outlined above are poorly targeted in practice (Moser, 2013; Middlemiss, 2017; Committee on Fuel Poverty, 2019). In addition, in Wales, the Arbed scheme has significantly underspent against its budget since 2016 (Wales Audit Office, 2019,) despite the Committee on Fuel Poverty (2019) identifying a shortfall in funding if fuel poverty targets are to be achieved. Moreover, as Middlemiss (2017) has observed, measures aimed at alleviating fuel poverty from the standpoint of affordability and energy inefficiency alone represent only one part of the equation. Such measures lock-in interventions solely at the point of consumption rather than taking a wider view of the landscape of energy transition. Indeed, maintaining 'fuel poverty alleviation measures at the consumption end is one of the factors responsible for (re)producing conditions of fuel poverty and vulnerability' (Hiteva, 2013: 502). Coupled with the criticism that interventions to support fuel poverty reduction have failed to achieve their aims—evidenced by the relative stasis in fuel poverty rates in the United Kingdom despite over two decades of action—the foregoing insights lend support to the claim for looking beyond the confines of affordability and inefficiency in the quest for a just transition to renewable, low carbon energy.

In view of the issues associated with past and present fuel poverty interventions noted above, many commentators have remarked on the problems associated with a market approach that places obligations on suppliers to effectively alleviate fuel poverty (Boardman, 2010; Hodson and Marvin, 2013; Rosenow et al, 2013). As Rosenow et al (2013: 1199) remark: 'Are energy suppliers, whose core skills lie in energy trading, generation, marketing and customer fulfilment, best placed to tackle what is in many ways a complex, social welfare problem?'. In this respect, the potential conflict of interest arising from the standpoint of energy suppliers, whose ultimate aim is to generate profit, can be traced through to problems associated with action on the ground which is further evident in other dimensions of energy policy (Preston et al, 2014). In addition, Lorenc et al (2013) draws attention to the complexity of the energy tariff system which is identified as a barrier to greater fuel poverty alleviation, to the extent that low levels of switching tend to be associated with high energy costs (Helm, 2017). As such, 'a high level of disengagement and apathy [was noted] regarding the energy tariff system, particularly for vulnerable people with complex lives, including health and financial problems' (Lorenc et al, 2013: 900). As such, a number of scholars have claimed that a liberalised market for energy does not work for the fuel poor and that wider change needs to be at the core of fuel poverty policy in the future (Boardman, 2010; Hodson and Marvin, 2013; Seyfang et al, 2014).

In this respect, action to address fuel poverty from an energy *production* standpoint has been largely absent from a policy perspective to date. This is potentially problematic for, as Hiteva (2013: 502) notes: 'fuel poverty is as much an energy production issue as it is a consumption issue and conditions for energy vulnerability and fuel poverty are created from the moment of generation till the point of consumption'. There is thus a need for analytical advances to assess the role that interventions at the point of production might play within the context of addressing fuel poverty and reshaping social justice in energy systems more broadly. The vast majority of energy production in the UK derives from large-scale, centralised sources (BEIS, 2020b). However, in the last decade there has also been an expansion in energy production at the community-level through 'community renewable energy', which sees local communities own and operate usually small-scale renewable energy infrastructures (Walker and Devine-Wright, 2008; Creamer et al, 2019). While it has been suggested that the fuel poor are frequently excluded from renewable energy investments (Moghadam et al, 2020), a systematic review of CRE literatures highlights that addressing fuel poverty is often high up the list of aspirations of community-based initiatives (Berka and Creamer, 2018). Moreover, research has shown that local and community-based models of energy generation are likely to be key to attracting additional income flows to assist the fuel poor (Saunders et al, 2012), such as through the feed-in tariff scheme in the UK which offered payments over a number of years to support small-scale energy

generation[13] (Vaze and Tindale, 2011; Rydin and Turcu, 2019). In addition, there is evidence to suggest that community-based actions to address fuel poverty outside the realm of energy generation have been shown to be effective elsewhere. For instance, advice and advocacy for fuel poor households (Community Energy England, 2016; Martiskainen et al, 2018) in the UK and the installation of household energy efficiency measures (Sifakis et al, 2019) through REScoops in continental Europe suggest modest effects in reducing energy consumption and accessing support. Such community-based actions can be likened to bottom-up attempts to enact energy justice (Forman, 2017; Lacey-Barnacle and Bird, 2018; Mundaca et al, 2018) that are relevant for understanding the role of such approaches for engendering greater social justice within and beyond the energy system.

Such issues render community renewables development as an important site for tracing the emerging social justice impacts of bottom-up approaches to energy justice. Community renewable energy has risen to prominence over the last decade to assume a position as a hotly contested area of academic debate. In order to further understand the role of CRE and how it is relevant for energy justice, the following sections of this critical literature review will therefore consider the state of knowledge and concepts in relation to community renewable energy and just energy transitions.

2.4 Understanding Community Renewable Energy

Energy-related issues such as fuel poverty present significant energy justice challenges for realising a just transition to renewable, low-carbon energy. As such, there is a clear need for analytical advances to understand equity and social justice concerns related to energy policy and practices which are relevant for energy transitions more broadly. In this respect, as outlined in section 2.2.1, it is important to recall the social impacts of energy transitions are often most keenly experienced at the community-scale, where energy-related infrastructures find their material expression (Eames, 2011; Park, 2012; Seyfang et al 2013). Building on this foundation, this section of the critical literature review seeks to review knowledge and concepts in the context of CRE through an overview of selected UK and international literatures. In doing so, this section builds on the previous sections of the review which suggest (i) the relevance of bottom-up activities for rendering new insights into the negotiation of energy justice, and (ii) how community renewable energy as one such form of bottom-up activity may be relevant for improving energy justice by addressing energy-related issues such as fuel poverty.

[13] Although the feed-in tariff scheme ended for new applicants in March 2019, the government continues to pay for already existing contracts and the scheme continued to attract new entrants at the time this research took place.

Community renewable energy has become a significant locus for academic research and citizen activity in the UK and internationally. In Wales, whilst the concepts and practices of CRE can be traced back to initiatives pursued by the Centre for Alternative Technology in Machynlleth, policy interest over the last decade to facilitate CRE at a UK level coincided with a new rhetoric of locating energy production at local community-scale in order to consolidate wider benefits and encourage greater citizen engagement with energy (Walker et al, 2010). In the UK, this culminated in a high point in January 2014 with the publication of the Community Energy Strategy (DECC, 2014). CRE has thus been lauded from the point of view of building and enhancing community capacities, rejuvenating local economies, encouraging community co-operation and participation, building interpersonal and institutional trust and solidifying actor relations whilst re-orienting community awareness and action towards more sustainable practices and pathways (DTI, 2000; Walker et al, 2010; Hielscher et al, 2011; Berka and Creamer, 2018; Hoppe et al, 2019). Such wider benefits are seen as accruing in addition to the perceived instrumental value of situating energy initiatives in local spaces in order to ease opposition to renewables development (Cowell et al, 2011), as well as 'promot[ing] locally appropriate and beneficial technology trajectories and generat[ing] greater understanding and support for renewable energy investments' (Walker et al, 2010: 2655). Historically, there has thus been much belief in a positive role for CRE in the UK and beyond that stretches far beyond the aims of simply decarbonising the energy system and meeting international obligations for both renewables generation and reducing greenhouse gas emissions. In this respect, CRE is touted as a mechanism for envisaging comprehensive change by reinvigorating local communities and fostering increased civic engagement. As Walker et al (2010: 2657) emphasise: 'there are clearly expectations that local action can and will be effective, that communities can function as both the site of collective and cooperative activity and the recipients of collective benefits'.

However, policy interest in the UK since the high point of CRE in 2014 has waned, with a steady loosening of key support mechanisms (Mirzania, 2019). Moreover, whilst there is no shortage of research on CRE concepts, a number of recent systematic reviews (Berka and Creamer, 2018; Nolden et al, 2020) suggest that there are still gaps in knowledge with respect to understanding the implications of CRE-developments in practice, highlighting the need for empirical research to provide analytical advances in key areas. In this respect, as this section of the review shall argue, empirical examinations of CRE have often struggled to grapple with potential justice implications relevant from the perspective of improving social justice within and beyond the energy system in projects on the ground. Before moving on to consider these issues, the historical narrative for a 'soft' energy path (Lovins, 1977) based on local, community-based renewable energy production will be set out, before

moving on to examine the contested ways in which the concepts and practices of community renewables have been explored on the ground in the UK and internationally. In so doing, the impacts of CRE for energy justice perspectives will be explored throughout.

2.4.1 Tracing the emergence of local approaches to energy generation

Community renewable energy has become a prominent theme in academic and policy discourse over the last decade as a central element within policy strategies and local movements promoting the creation of small-scale, decentralised and diversely owned models of renewable energy generation (Walker et al, 2007; Walker and Devine-Wright, 2008; Hoffman and High-Pippert, 2010; Devine-Wright and Wiersma, 2013). Definitions of community renewables range from the narrower to the more expansive reflecting the oft-cited 'slippery' nature of the phenomenon (Devine-Wright and Wiersma, 2013; Seyfang et al, 2013; Strachan et al, 2015). Following van Veelen and Haggett (2016), this research focuses specifically on *community renewable energy* which is regarded as: (a) exhibiting a scalar character consistent with meso-level developments (Walker and Cass, 2007; Devine-Wright and Wiersma, 2013), (b) involving local participation in the development and generation of renewable energy and in the experience and equitable allocation of benefits (Walker and Devine-Wright, 2008), and (c) a model of more locally appropriate development, expressing diverse sets of values, and ensuring greater sensitivity to local context alongside heightened acceptability within host communities (Walker et al, 2007; Hielscher et al, 2011; see also: Demski et al, 2015). Whilst the literature on community, decentralised and distributed energy has burgeoned alongside its increasing relevance in policy in recent years, its provenance extends from more established literatures on appropriate technology (Dunn, 1978) and small-scale development (Schuhmacher, 1973), and evokes strong comparisons with Lovins (1977) influential energy paths framework.

This emergence of CRE in UK policy discourse in the early 2010's follows a long-standing historical narrative advocating a 'soft' energy path (Lovins, 1977) and the promotion of a more localised approach to energy as distinct from mainstream, centralised and large-scale energy infrastructures. Central to this agenda have been the themes of alternative technology, small-scale development, self-sufficiency, participatory politics and community empowerment (Schuhmacher, 1973; Illich, 1974; Lovins, 1977; Dunn, 1978). Lovins (1977) distinction between 'hard' and 'soft' energy paths in particular stands out as a landmark in the literature both in the context of CRE-developments and in the understanding of energy development trajectories more generally. In this conception, the 'hard' path characterises historical patterns of energy development both in the United States and across the industrialised world (Sovacool, 2011). Features of the 'hard' path include: a dependence on

non-renewable resources including coal, oil, gas and uranium; a mismatch within the spheres of scale and quality relative to energy end-uses; complexity verging on the impenetrable so that no single person can fully understand the system in its entirety; lack of resilience meaning that failures affect the entire system, and; an inability to manage and adapt to sudden changes in energy demand amongst end-users (Lovins, 1977; Sovacool, 2011). Each of these features, their confluence, and interaction, are evidenced clearly in Bennett's (2005) analysis of the North American blackout of 2003; where, through the lens of 'assemblage', she argues that the US energy system momentarily exhibited an agency of its own: 'Thus spoke the grid' (Bennett, 2005: 462; see also Verbong and Loorbach, 2012). Such a trajectory, as Strachan et al (2015: 98) note:

> *relies on the continued expansion of complex, large-scale electricity generation technologies (classically nuclear power), with electricity distributed through high voltage grids, using institutional machinery, which tends to confer power on centralized bureaucracies and corporate oligopolies while marginalising the role of citizens.*

As an alternative to the 'hard' path and its inherent complexities, Lovins (1977) proposed what came to be termed the 'soft' path. Characterising the 'soft' path is the promotion of energy technologies that are: 'diverse, providing energy in smaller quantities, from decentralized sources; renewable, operating on non-depletable fuels; simple, or relatively easy to understand; modular, or matched in scale to energy needs, and; qualitative, or matched in energy quality to end-use needs' (Sovacool, 2011: 1178). As Strachan et al (2015: 99) note:

> *'Soft paths' entail more serious consideration of energy efficiency and the pursuit of renewable energy technologies, which deliver more flexible, decentralized and locally-tailored energy systems, with greater accessibility to citizens and more dispersed risks.*

The emphasis in the soft path on the promotion of particular energy technology forms, at small scales, further aligns with discourses on 'alternative technology' (AT) (Dunn, 1978; Smith, 2005; Elliott, 2016). Indeed, as Smith (2006) observes, it was a practical objective of AT activists to attempt to facilitate a movement away from a hard energy path and onto a soft alternative. In this regard, the alternative technology movement was concerned with the transformation of technological systems, their supporting infrastructures, and society more broadly, into more environmentally benign forms (Elliott, 2016). The vision associated with the AT movement was one

> *based on decentralised, relatively self-sufficient communities; in which participatory democracy is widely practiced in the management of steady-state economies; and in which goods and services were*

provided through local production, using low inputs and renewable resources in relatively closed cycles (Smith, 2006: 323).

One of the enduring legacies of the AT movement is the emphasis on the use of technology for human betterment and its concurrent focus on ensuring that technological choice is befitting of both social and ecological circumstances (Elliott, 2016). There are clear resonances in these aims with processes and practices of social and environmental justice that have subsequently risen to prominence since the 1970s, when the AT movement was most active, up until today. In contrast to the complex and comprehensive social and technological change envisaged in the context of the energy transitions literatures, however, the early emphasis within the AT movement was focussed specifically on small-scale innovation. Moreover, the focus within AT being developing technologies that were environmentally and socially appropriate, based in decentralised, small-scale and self-sufficient communities, emerges as a strong precursor for energy justice and the notion of a just energy transition. Thus, conceptions of energy paths and alternative technology can be conceived as forerunners to, and as laying the groundwork for, research and real-world interventions to improve social justice within and beyond the energy system from the bottom-up. The way in which these discourses mobilise agendas for localised, decentralised energy futures and the application of appropriate technology mirrors recent efforts in CRE-development and the need to go 'low-carbon'. Furthermore, this provenance speaks towards the vision of a more collectivist, communitarian approach towards energy infrastructures that the emergent CRE sector in the UK has sought to embody (Catney et al, 2013a; Franklin and Marsden, 2014).

This is a crucial claim from the perspective of energy justice, where Sovacool et al (2014: 85, emphasis added) highlight that an 'equitable distribution of energy services *will only be accomplished by the development of a new global energy system that is based … on renewable sources … and distributed generation'*. Moreover, CRE-development has increasingly come to be associated with a significant assortment of benefits, ranging from the creation of sustainable income streams, fuel poverty alleviation, skills development, promoting social cohesion, addressing inequalities, enhancing equity, community regeneration, and building autonomy (Hargreaves et al, 2013; Wiersma and Devine-Wright, 2014; Callaghan and Williams, 2014; Berka and Creamer, 2018). Such outcomes remind us of the central nature of energy to life in the 21st century and how the achievement of desired functionings in modern daily life is inextricably bound up with access to energy. In these ways, CRE-development mirrors soft energy path trajectories, potentially delivers a diverse array of benefits with potentially wide-ranging justice affects, and acts as a test-bed for tracing the ways in which public values and conceptions of (energy) justice are enrolled in the context of energy system change. CRE-development is therefore considered as both

an expression of and an arena for the enactment of energy justice, negotiated at a more local-level than has hitherto been considered to date.

2.4.2 Trends in CRE development in the UK

The high-point of CRE in the UK is often interpreted as the publication of the Community Energy Strategy in 2014 (DECC, 2014). The Strategy promised £10 million in funding for a new Urban Community Energy Fund to complement the already-existing £15 million Rural Community Energy Fund, the establishment of a 'one-stop' information resource, and to consider how barriers to the expansion of community renewables might be further reduced. At the same time, the FIT scheme offered significant incentives for CRE expansion, providing payments for small-scale renewable energy schemes and a route to generate profits beyond the initial capital investment (Rydin and Turcu, 2019). The Community Energy Strategy effervesced encouragement and support for CRE development (Nolden et al, 2020) under the auspices of increasing community-led action which the then government believed would 'tackle challenges more effectively than government alone, developing solutions to meet local needs, and involving local people' (DECC, 2015b: 7). As a result, it was increasingly argued that a community-based 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: 71).*

Meanwhile, in Wales, CRE-development was supported through the Ynni'r Fro programme, the Welsh Government's former flagship support policy for community renewable energy schemes. Ynni'r Fro was the outcome of joint funding between the Welsh Government and the European Regional Development Fund (ERDF). A requirement for ERDF funding was an explicit focus on the themes of enhancing equal opportunities and environmental sustainability (Welsh Government, 2016a). Such requirements ensured that, although not explicitly, from the very start Ynni'r Fro emphasised the role of community-owned and developed energy generation as a tool for achieving a broad range of social, environmental, and economic objectives; placing energy centre-stage in supporting the wider well-being of people and communities. Indeed, support for community renewables by the Welsh Government is part of a broader package of policies in Wales that place a legal obligation on public sector bodies to commit to sustainable development across all aspects of policy and service delivery, which is unique in the United Kingdom. These actions are outlined in the Well-being of Future Generations (Wales) Act 2015, which highlights the integrated nature of social, economic, environmental and cultural well-being (Welsh Government,

2015b), and deems installed capacity of renewables one of a number of indicators relevant for achieving such aims (Welsh Government, 2016b). In this respect, support for community renewables is thus perceived to contribute towards commitments to increasing community cohesion, prosperity, resilience and responsibility (Welsh Government, 2016a).

This combination of support for community renewables was to lead to rapid sectoral growth. Indeed, between 2003 and 2013, CRE capacity grew almost three times faster than overall renewables capacity (Harnmeijer et al, 2013). By 2019, Community Energy England's 'State of the Sector 2019' report identified 275 CRE projects in operation across England, Wales and Northern Ireland, with a total combined generation capacity of 168MW (Community Energy England, 2019). In Scotland, a further 550 CRE installations add another 82MW of capacity, taking total generating capacity from community renewables in the UK from 4.1MW in 2003 to around 250MW in 2018 (Harnmeijer et al, 2013; Energy Saving Trust, 2020). In terms of technology, over half of this capacity is based on deployment of solar PV although, in Scotland, deployment of wind technology dwarfs other forms of community renewables generation (Community Energy England, 2019; Energy Saving Trust, 2020). While such rapid sectoral growth sounds impressive, the increase in numbers of CRE deployment outlined above masks low absolute capacity in the context of the UK energy system as a whole. In this respect, electricity generated from community renewables represented less than 0.4% of the UK's total renewable energy capacity in 2014 (Mirzania et al, 2019). For a more current comparison, parallels can be made with the UK's recently mandated new nuclear megaproject Hinkley Point C which, *alone*, will have a generating capacity of over 3GW (or 3260MW, compared to total CRE capacity of 250MW in 2018). Thus, whilst CRE has undoubtedly experienced remarkable growth from a low baseline in 2003, it is arguable that such developments still sit outside the mainstream of UK energy policy (Cowell et al, 2017a; Hewitt et al, 2019).

This is emphasised in particular by the fact that policy interest in the UK since the high point of CRE in 2014 has waned, with a steady loosening of key support mechanisms. This includes the exclusion of CRE projects from Enterprise Investment Tax Relief (HMRC, 2015), and the decision by the FCA to block the registration of new energy cooperatives on the grounds that such groups do not constitute *bona fide* cooperatives (van Veelen, 2017b). Most critically, the reduction of payments, and eventual closure, of the FIT scheme in 2019 are widely understood as the low point for continued expansion of CRE in the UK (Martiskainen, 2014; González et al, 2019; Rydin and Turcu, 2019; Mirzania et al, 2019; Nolden et al, 2020). Indeed, Community Energy England's 'State of the Sector 2019' report subsequently noted that 'changes to the Feed-in Tariffs [meant] it was the toughest year yet for community energy, with new generating capacity falling steeply' (Community Energy

England, 2019: 1). More broadly, the approach of the UK government to CRE development has come in for subsequent criticism; with problems identified including assumptions that CRE-developments could be quickly scaled-up under a widely replicable model that underplays the need for tailored local solutions (Bunt and Harris, 2010; Eagle et al, 2017), for labelling CRE as a 'special interest which exists only for better equipped and capable communities' (Park, 2012: 404; see also Catney et al, 2013b), for abrogating state responsibility in key areas of public policy and appropriating the notion of 'community' (Catney et al, 2013b; Taylor Aiken, 2015), for pushing communities to operate in the same areas as commercial players (Harnmeijer et al, 2018; Nolden et al, 2020), and for subsequently dismantling the supportive environment for CRE-development before it was ever even fully delivered (Rydin and Turcu, 2019; Mirzania et al, 2019).

In spite of such issues, CRE schemes set-up under the FIT continue to be paid, and recent academic research and sectoral literatures suggest that the sector is attempting to innovate and adapt to develop new business models that will render future CRE-development less vulnerable to the whims of government support (Roby and Dibb, 2019; Mirzania et al, 2019; Community Energy England, 2019; Kumar, 2019; Braunholtz-Speight et al, 2020). How the concepts and impacts of CRE developments are understood is therefore of ongoing importance for the role of community renewables in improving social justice within and beyond the energy system.

2.4.3 Implementing community renewable energy in practice

The ways in which CRE development has been understood is highly relevant for tracing justice impacts and issues emerging from such projects. Examining the early evolution of CRE in the UK, Walker et al (2010) emphasise that community renewables has developed in a piecemeal, haphazard fashion in practice. This is reflected in the observation that the 2003 Energy White Paper contained a 'scattering of the words "local" and "community" across various parts' (Walker et al, 2010: 2656). Conversely, however, any ambiguity around CRE at that point allowed an early exploration into the means, capacities and support required by communities to mobilise around energy initiatives; as well as allowing a diversity of models to be tried and tested (Walker and Devine-Wright, 2008; Park, 2012). As Walker and Devine-Wright (2008: 499) observe: the

> *"space" [occupied by CRE] in the UK has, to date, been pragmatically and strategically of value. It has enabled experimentation with many different models of project development; it has enabled projects to be formed in ways that are appropriate to local circumstances and contexts; it has enabled a flourishing of grassroot activity without*

restricting this to a particular top-down notion of what a community project had to look like.

This flexible, emergent CRE space was arguably convened in a more structured way under the subsequent Community Energy Strategy. However, the early phases of UK-based CRE-development provided the opportunity for 'project-based experimentation' as a means through which to test different configurations and facilitate social learning between stakeholders (Rydin et al, 2013). Such a frame is useful from the standpoint of opening up space for communities that have less access to resources to participate in and benefit from CRE (Park, 2012; Bomberg and McEwan, 2012; Catney et al, 2013b), and are therefore relevant for understanding potential intersections between CRE-development and justice-issues in disadvantaged communities. However, the apparent disjuncture between the rhetoric of local and community approaches to energy compared to available policy support denote a degree of 'lip service' to environmental and CRE objectives. This critique is one that has been echoed by Hodson and Marvin (2013) who argue that national strategies for 'low carbon' foreclose localised alternatives by privileging market approaches and elite responses.

In this respect, strategic narratives of 'sustainability' (Ofgem, 2020), through to emphasising 'low carbon' (Hodson and Marvin, 2013) and 'building resilience' (Preston et al, 2014; Cinderby et al, 2014) have historically been important drivers of government energy policy. The primary discourse in current UK energy policy is about 'smart' energy', despite a wider acknowledgement that communities play key roles as consumers, citizens and owners (UKERC, 2016; Rydin and Turcu, 2019). Within these parameters, CRE-development is potentially one approach for addressing such issues collectively. One widely held view of the processes and practices of community renewables therefore, first expounded by Walker and Devine-Wright (2008), emphasises two crucial characteristics pertaining to community renewables pathways. In this view, both the local and collective nature of the outcomes and the open and participatory processes employed in negotiating them are perceived to be distinctive features of CRE-development compared to large-scale, centralised energy infrastructures (Walker and Devine-Wright, 2008; Hielscher et al, 2011).

The space that such initiatives inhabit is visualised in Figure 2.3 whereby 'ideal'-type projects, characterised by an emphasis on open and participatory relations and local and collective benefits, fall within the top-right quadrant. Thus, whilst large-scale privately developed renewables models have been a predominant feature of the UK's centralised pattern of energy development, they would be much less favourably positioned owing to the fact that such projects involve little stakeholder involvement and benefits tend to flow back to the developer (Walker and Devine-Wright, 2007; Hielscher, 2011).

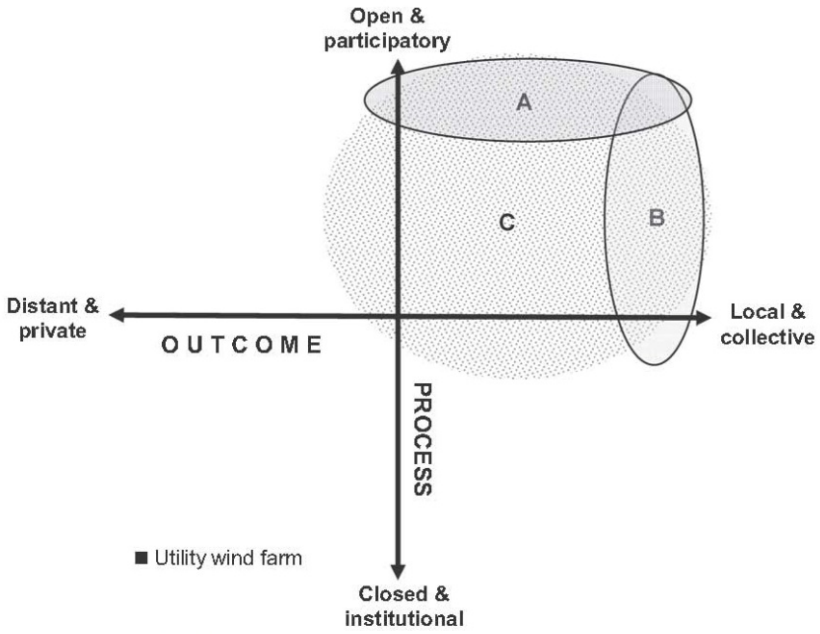

Figure 2.3: Understanding of community renewable energy in relation to project process and outcome dimensions (Walker and Devine-Wright, 2008: 498)

Community renewable energy projects are thus widely understood to exhibit both 'process' and 'outcome' dimensions. 'Process' considerations concern who a project is developed and run by, who is involved and who has influence. 'Outcome' considerations concern who the project is for and how the benefits are distributed in social and economic terms (Walker and Devine-Wright, 2008). As such, CRE is 'typically represented as a "bottom-up" rather than "top-down" process that by definition suggests the meaningful participation of a range of locally based actors' (Devine-Wright and Wiersma, 2013: 1102) and with considerations of equity and justice embedded in the distribution and allocation of costs and benefits (Walker and Devine-Wright, 2007). Indeed, Gross (2007) and Aitken (2010) have suggested—though not tested—that a fairer process with an emphasis on equity issues throughout the negotiation of CRE-developments increases both the legitimacy and acceptance of the outcomes, which may be further enhanced when coupled with community *ownership* (Warren and McFadyen, 2010). More generally, how communities and citizens are enrolled in CRE initiatives is widely considered to be relevant for their perceived legitimacy (Simcock, 2014; 2016; Mundaca et al, 2018; Lehtonen and de Carlo, 2019).

From an 'outcome' perspective, scholars have increasingly sought to consolidate evidence on the benefits associated with CRE-developments (Berka and Creamer, 2018; Wyse and Hoicka, 2019; Nolden et al, 2020). Moreover, whilst the process/outcome approach has gained widespread influence, it is increasingly challenged (i) by understandings of CRE as heterogenous, emergent and relational (Creamer et al, 2017; van Veelen, 2020) which

highlight that CRE-initiatives cannot easily be categorised, (ii) for being poorly equipped to address issues of temporality in CRE-developments, such as how individual projects potentially evolve and transform over time (Creamer et al, 2019), and (iii) as with broader literatures on renewable energy (Windemer, 2019), for disproportionately focusing attention on CRE at the point of project development (Berka and Creamer, 2018). In this respect, the literature on community renewables tends to be ahistorical, focusing overwhelmingly on their development and dynamics of 'social acceptance' at the point where projects are developed and seek consent (Berka and Creamer, 2018; Windemer, 2019), which may not wholly capture the implications for justice. This is a critical gap for understanding the impact of CRE for social justice issues within and beyond the energy system over time.

The relevance of these theoretical perspectives for practical applications of CRE on the ground are explored in the following sections.

2.4.4 Aspirations for community renewables in the UK and beyond

Building on the process and outcome characteristics, early research by Hielscher et al (2011) highlights a further three components that pertain to CRE as distinct from alternative models; a multi-faceted approach, the ability to change contexts, and a focus on engagement. In this regard, CRE-developments are often characterised in practice by a collection of activities geared towards the twin aims of reducing energy consumption and facilitating energy generation; thus highlighting the ways in which CRE can extend beyond energy generation alone (Hielscher et al, 2011; Seyfang and Haxeltine, 2012; Martiskainen et al, 2018). Initiatives that adopt a multi-faceted approach in this way are considered better equipped to be able to influence and embed wider and more systemic change and thereby seek to amend the 'rules of the game' in order to achieve more sustainable production and consumption outcomes (Heiskanen et al, 2010; Hielscher et al, 2011; Hoppe et al, 2019). Part of this is through an approach that emphasises widespread engagement and participation, thereby creating a supportive and empowering environment that is able to use local knowledge to both inform people of actions and demonstrate success through real life examples (Hielscher et al, 2010; Seyfang and Haxeltine, 2012). More significantly, as Hielscher et al (2010: 11) observe, 'participation in such initiatives is often driven by a desire to create a space where alternative values may be lived out and practiced: to experiment with alternative ways of living and provisioning and to demonstrate that alternatives are possible'.

Across multiple contexts, however, more instrumental drivers can also play an important role in CRE-development, reflecting the ultimately heterogeneous nature of the localities

from which such initiatives emerge. As Bomberg and McEwan (2012: 443) observe: 'economic deprivation can even be a driver of energy action, provided that action is linked to regeneration projects or attempts to address fuel poverty'. More recently, international literatures on CRE also emphasise ambitions for extending access to CRE to vulnerable and low-income households to enable them to benefit from ownership and cheaper energy supply (REScoop, 2017), contesting perceptions of CRE as largely white, middle class and male (Melville et al, 2018). In this respect, while 'RESCoops' form one influential banner in a European context that have in the past called attention to justice issues[14], it is not clear from the limited empirical evidence that exists on projects established under the auspices of REScoop that such activities have been successful at reaching vulnerable citizens in practice (Sifakis et al, 2019; Hoppe et al, 2019; Mitzinneck and Besharo, 2019). Moreover, other research has suggested that while social and moral norms play an important role in broadening *participation* in CRE-developments, it was less clear that such influences played into the prioritisation of *outcomes* (Bauwens, 2016). Meanwhile, research on carbon reduction in disadvantaged communities in the UK through the EVALOC project showed the importance of process-issues of trust, transparency and accountability in providing access to CRE outcomes (Mayne, 2013; Lucas et al, 2017). Other scholars have sought to understand how small-scale renewable energy technologies can be applied in social housing successfully from a process perspective (McCabe et al, 2018). In addition, research from an explicit energy justice perspective has sought to highlight the role of intermediaries in supporting local energy infrastructure developments (Lacey-Barnacle and Bird, 2018) which, although ostensibly focussed on the 'civic' energy sector, was ultimately based on research conducted in CRE projects.

In Europe more broadly, CRE scholars have also called attention to what has been described as the inherently political nature of CRE-development, which they connect with social movements for degrowth, autonomy and democracy (Becker and Kunze, 2014; Kunze and Becker, 2015). Such findings also resonate with emergent understandings of culture in low-carbon developments (Toke, 2018). In this respect, studies show CRE-development playing an important role in extending and protecting local culture, which has been evidenced by CRE scholars in Wales and Scotland (Forman, 2017; Haf and Parkhill, 2017) as well as in Finland (Korjonen-Kuusipuro et al, 2017). Elsewhere in the UK, project rationales for CRE-development have been shown to extend from improving the fabric of local homes, benefiting stakeholders financially, and reducing poverty and social exclusion (Mayne, 2013; Wiersma and Devine-Wright, 2014). More broadly, research cautions against

[14] Although it is worth reflecting that as at June 2020 the 'REScoop model' website (https://www.rescoop.eu/the-rescoop-model) does not *explicitly* identify social or justice benefits as clear aims.

understanding CRE-development as fixed, homogeneous and consolidated, arguing that CRE projects are places of struggle, contestation, and inherently plural challenges (Fischer et al, 2017; Mitzinneck and Besharo, 2019). Indeed, CRE is a prominent international debate, with literatures reflecting engagement with issues as diverse as profit distribution in different CRE business models in Denmark (Gorroño-Albizu et al, 2019), the role of intra- and extra-community engagement in successful projects in the Netherlands (Warbroek et al, 2019), the overrated emphasis on financial versus environmental and communitarian influences for involvement in CRE also in the Netherlands (Sloot et al, 2019), links between local planning and CRE infrastructures in Canada (Wyse and Hoicka, 2019), and diverse understandings of the benefits of CRE here in the UK to Germany and the USA (Brummer, 2018; Nolden et al, 2020).

Across these literatures, the emergent issues and perspectives are clearly highly relevant for understanding issues of justice in CRE-developments, and the ways in which in such initiatives might improve social justice outcomes both within and beyond the energy system. However, in spite of this promising starting point, there continue to be gaps in understandings of the *specific*, *tangible* benefits associated with CRE in practice. A systematic review by Berka and Creamer (2018: 3414) noted 'a paucity of consistent evidence for local impacts associated with project development processes and direct outcomes'. In this respect, it is arguable that at least in part there has been a tendency within emerging CRE literatures towards group-think with respect to the benefits of such initiatives, with an emphasis on citing the claimed and hypothesised benefits of community renewables rather than undertaking empirical work to explicitly test them. Indeed, a review by Nolden et al (2020)—explicitly focused on identifying the benefits associated with different CRE business models—replicated this trend without actually implementing any original research to test the results. Whilst there is merit to the systematic review approach for consolidating the evidence base and identifying gaps in key areas, it is evident that there is a clear need for analytical advances to begin to understand the outcomes and benefits associated with CRE-development in practice. Indeed, in a retrospective on CRE development, Walker and Devine-Wright (joining up with early career researchers in the area) recently reflected that 'Researchers and policymakers are increasingly well versed in what CRE should mean; looking forward, we argue that *it is important to understand what CRE does in practice*' (Creamer et al, 2019 – emphasis added). Addressing such gaps is highly relevant to the key themes outlined in previous sections regarding energy justice, bottom-up approaches, and addressing energy-related issues such as fuel poverty to improve social justice outcomes within and beyond the energy system.

As a final reflection, whilst such models present an attractive view of change, Marvin and Guy (1997) emphasise caution with the simplistic assumption that they are unproblematic simply because they are local. Similarly, both Catney et al (2013b) and Aiken (2014) warn about the dangers of localist approaches to the extent that they either signify the abrogation of responsibility by the state or the appropriation of the notion of 'community' as a pretext for extending governmentality and the 'prosaic state'. These concerns further echo critiques in the resilience literature 'highlight[ing] the danger of the term being used as part of a neoliberal focus on self-reliant individuals developing their own resilience' (Davoudi et al, 2012: 310). As such, whilst CRE is developing on the ground, these concerns point towards the need to take a critical view of the circumstances and processes driving such initiatives. However, to the extent that communities want to act on energy issues—and the rapid sectoral growth over the last two decades would suggest they do—understanding the benefits of such developments for delivering environmentally and socially just outcomes is of critical importance.

Whilst the analysis presented here highlights the difficulties associated with the mainstreaming of CRE-development, it is not fundamentally at odds with the idea of a distributed energy system that is being increasingly touted as the modus operandi of the next energy transition. Such a system would perhaps be more usefully viewed as a networked model of energy production and demand-side management that finds its rationale in adherence to principle rather than a prescribed set of technological arrangements merely to be transposed into local settings. Moreover, this would enable a broader approach to CRE-development; emphasising activities and initiatives that promote reduced energy consumption and demand reduction in existing energy practices and repertoires in addition to the ownership of generation capacity (Shove and Walker, 2010; Hall, 2013; Martiskainen et al, 2018). In this way, such analyses chime with calls for a place-based approach that envisage such initiatives set within the context of addressing broader local social and economic concerns, such as Bridge et al (2013) point towards and has recently been advocated by Hodson and Marvin (2013), and a distributed energy system composed of community initiatives and concurrent networks. Such an arrangement would further sit within the current discourse of creating a broader, smarter, more optimised energy system in the future (Rydin and Turcu, 2019). It is a model that, as Hodson and Marvin (2013: 29) note, emphasises 'the promotion of community responses organised around local issues and social justice concerns. [It is] essentially a view of relocalisation based on notions of rights and justice'.

The extent to which CRE is able to embody these principles and work towards the alleviation of problems such as fuel poverty is a crucial issue for envisaging more socially and

environmentally just futures and a transition in the energy system that embraces a reconstructive politics of low carbon moving forward. Such principles herald an era in which justice in energy systems from production to consumption are prioritised and, as such, brief consideration will be given to some of the main ways in which such issues have been experienced across select CRE literatures to date.

2.4.5 Justice, equity and community renewables

Justice and equity in the context of CRE cut across a number of considerations: the distribution of opportunities to partake in such initiatives (Park, 2012; Catney et al, 2013b), the distribution of burdens and benefits in any CRE model (Walker and Day, 2012), and the role allocated to communities in the negotiation of such projects on the ground (Gross, 2007; Simcock, 2016). From the standpoint of community renewables, fuel poverty and the realisation of successful initiatives mediating between the two, Park (2012: 404) makes the significant observation that 'there is a discrepancy between the rhetoric and the political action, to encourage communities—in particular, informal, less experienced and financially vulnerable communities—to participate'. This question of who participates also extends to debates over the meaning of community more generally. Indeed, the community in question need not necessarily be a 'community of place' (Dunham, 1986)—attached to a bounded spatial locale—but may exhibit alternative characteristics. As Bristow et al (2012: 1109) note: 'it has long been established that communities of place are far from homogenous and include multiple and diverse "communities of interest"'; suggesting that attention must be paid to the power dynamics within any community renewables initiative to ensure equity of process and outcome. It is not apparent however that communities of place and interest need necessarily be mutually exclusive, and there is tentative evidence for extension of access to CRE for vulnerable groups across the literature (McCabe et al, 2018; Lacey-Barnacle and Bird, 2018).

However, whilst the expansion of community renewables initiatives has been useful from the standpoint of applying and testing various models for their realisation, there is an ever-present danger that citizens and communities who potentially stand to benefit the most from access to such initiatives are effectively excluded from the process (Melville et al, 2018). Importantly, as Catney et al (2013b: 13) note: 'Mobilising collective action in deprived communities cannot operate in a vacuum'. As such, ensuring that equity considerations are an embedded feature of CRE-developments from inception to completion is a crucial factor for realising greater social justice within and beyond the energy system. In this respect, Park's (2012) identification of neglect of equity issues within the context of participation in

CRE thus provides a cautionary tale regarding the potential of such initiatives to address energy-related issues like fuel poverty and contribute towards improving social justice.

Notable in this context are the means through which such initiatives are financed. Indeed, CRE-developments often come with a significant financial burden attached. As such, many start-up projects are faced with raising capital through accessing grants, applying for loans, or issuing shares (Park, 2012). Indeed, grant funding is widely considered to be one of the most important mechanisms for communities to raise finance by virtue of the fact that it does not need to be repaid (Hinshelwood, 2001; Walker, 2008; Munday et al, 2011; Park, 2012). However, in spite of the importance placed on grant-funding by the CRE sector (Community Energy England, 2019), Park (2012) draws attention to the fact that there has been a tendency for grants to be awarded to privileged communities that exhibit already existing capacity at the expense of those that have more limited capabilities. As Catney et al (2013b: 12) note: 'people in some places are unable to marshal the necessary resources—material, social and personal—to become self-organising and self-reliant, much less to become social entrepreneurs who can build their own collective, profit-making energy business'. As such, the apparent preference within grant-funding for empowered communities suggests that access to finance for CRE-developments is unnecessarily prohibitive in communities with more limited resources.

The difficulties associated with grant finance for such initiatives extends further through to the option of share issues; which aim to raise capital by allowing communities to invest directly in the project with a view to accessing the benefits of the scheme. Such models may appear outwardly inclusive by giving communities the choice to participate or not, however, as Walker (2008: 4402) notes: 'share ownership brings benefits only to those able and willing to invest'. The option of share issues thus relies on citizens with an interest in participating being able to pay, thereby potentially excluding sections of the community who lack the material wealth to commit to a significant financial investment upfront. Recent CRE literatures provide evidence that some communities have sought to address this issue by ensuring that the minimum contribution to take part in a share offer is low (Lacey-Barnacle and Bird, 2018), both as a strategy to promote inclusion in vulnerable communities and to facilitate greater citizen participation. Nonetheless, from the standpoint of energy-related issues such as fuel poverty and CRE-developments in deprived communities, such complications may prove to be an irreconcilable barrier to participation without more comprehensive support for such measures. As such, the problems associated with financing community renewables initiatives in vulnerable communities portray a failure to establish command over energy that led Park (2012: 402) to conclude that 'there is little

evidence on attention being paid to ensure the equitable distribution of opportunities between communities'.

In this respect, recent research has suggested new institutional frameworks for CRE-development are required if such initiatives are to play a role in a just energy transition (Heldeweg and Saintier, 2020). Moreover, whilst issues of procedure and participation in CRE have been explored from both locational perspectives (Catney et al, 2013b; Johnson and Hall, 2014) as well as within particular communities (Simcock, 2016; Lacey-Barnacle and Bird, 2018), the issue of specifically *how* participation in CRE takes place is not currently well understood. Indeed, as Creamer et al (2017: 9) note, there is

> *significant scope for further conceptual and empirical work on the intersection between participation and inclusion in material systems in the context of plural and dynamic understandings of community energy, including the types of participation enabled and the connection between inclusive participation and just outcomes.*

Such perspectives resonate with calls to see CRE-development from a relational standpoint (van Veelen, 2020), and for a more open perspective on participation with respect to the practices and repertoires of energy production and consumption (Chilvers and Longhurst, 2016; Walker et al, 2016). In this respect, *how* citizens are engaged in CRE-developments could prove to be as important for extending social justice in energy systems as issues related to outcomes, distributions, and benefits.

The issue of equity within community renewables projects is further evident in the context of the role of public and private actors in developing such initiatives and, further, the distribution of benefits derived from a given project. Whilst the rhetoric of community renewables beckons more locally owned, developed and led models of energy generation, the involvement of external actors may dilute the extent to which such initiatives are considered to be truly for the community rather than driven by external agendas (Park, 2012; Bristow et al, 2012; Devine-Wright and Wiersma, 2013). Indeed, Devine-Wright and Wiersma (2013: 1108) note that projects are perceived as being less local when led by private-sector actors imposing a top-down agenda as opposed to projects initiated by community, third and public-sector organisations. In addition, energy developments imposed on communities potentially exacerbate local divisions; reinforcing inequalities and power structures that belie notions of equity and justice by instigating energy development *for* local communities rather than *in* or *by* local communities (Aitken, 2010; Hewitt et al, 2020). In this respect, the allocation of benefits from such projects further potentially aggravates equity considerations. Whilst community benefit funds—apportioning a proportion of the income derived from energy generation to the community—have become

an increasing feature of wind power development models, Aitken (2010) points towards the danger of such funds being perceived as bribes, whilst Cowell et al (2011) consider the extent to which such provision is viewed largely in instrumental terms to compensate for development impacts rather than more effectively serving long-term agendas for justice and sustainability. Moreover, Munday et al (2011) observe that the precise needs of communities are difficult for external developers to assess, whilst Bristow et al (2012: 1111) further highlight that 'channelling all of these growing benefit flows through small communities of place, with their highly varying goals and capacities, may not address other important needs in the wider area'. Given the paucity of evidence to date regarding the benefits emerging from CRE-developments (Berka and Creamer, 2018; Wyse and Hoicka, 2019), whether these challenges are ultimately resolved within community renewables initiatives is under-considered within the literature. Such perspectives are highly relevant from the standpoint of understanding how CRE-developments may improve social justice within and beyond the energy system.

In sum, whilst there is some evidence that CRE-developments potentially contribute to mediating energy-related issues and social justice within and beyond the energy system, such research as exists on this subject—and it is limited—suggests empirical examinations of community renewables have often struggled to grapple with the justice implications of projects in practice. In the next section of this thesis, further insights for this research are considered by reviewing key concepts in the literatures on socio-technical transitions.

2.5 Envisaging a Just Energy Transition

2.5.1 Theories of change in transition processes: The Multi-Level Perspective

The account of historical narratives for change in energy systems outlined in the foregoing sections speak towards much broader and more substantive processes of transformation in socio-technical systems that have been usefully conceptualised more thoroughly in the context of transition theory (Grin, Rotmans and Schot, 2010). Literatures on energy transitions thus characterise such processes as diverse and complex phenomenon, which denote radical shifts from one dominant formation to another through the contestation of already-established social, political, and economic arrangements and practices. For bottom-up perspectives on justice in transitions, such perspectives point towards the bigger picture; emphasising the fact that multiple sets of processes, interactions and triggers are at work, at multiple scales, in the movement towards envisaging more just and sustainable futures more broadly. However, as noted earlier, much of the transitions literature is historical and explanatory; saying little about the underlying character and quality of such processes as they unfold, the outcomes they engender in practice, or the final destinations they ultimately

imply. With this in mind, it has been argued that for a future transition to low carbon energy to avoid replicating the unequal distribution of costs and benefits associated with historical fossil fuel-based transitions, research in energy transitions must necessarily be informed by principles of justice (Eames and Hunt, 2013) and that energy justice perspectives have the potential to provide important insights in this respect (Sareen and Haarstad, 2018; Jenkins et al, 2018). The processes by which bottom-up perspectives for addressing energy-related issues and negotiating a just energy transition might take place are thus relevant for understanding how and in what ways CRE may potentially reshape the future for local communities and the energy system alike.

The distinction between 'hard' and 'soft' energy pathways outlined in the previous section is relevant in this respect. However, whilst such a binary delivers powerful simplicity, as Strachan et al (2015) highlight, it is in practice likely to be an oversimplification of the scope for change. In Lovins' (1977) articulation, the energy paths are diametrically opposed in an 'either/or' formulation. As such, the choice is effectively constrained to one extreme end of the spectrum or the utopian other; where 'each path entails a certain evolution of social values and perceptions that makes the other kind of world harder to imagine' (Lovins, 1979: 12). Whilst concepts of path dependency (Pierson, 2000) and lock-in (Unruh, 2000) highlight the ways in which venturing down a particular development pathway may shut down alternative options, it remains important to recognise that there is no simple way to move from one model system to the other (Lagendijk and Verbong, 2012; Rydin et al, 2013). As such, change in the energy development trajectory of a given system must be fostered from within; until, as both Hodson and Marvin (2013) and Rydin et al (2013) suggest, such change is able to challenge existing arrangements through the constitution of new dominant practices. As Strachan et al (2015: 99) note: 'In reality, there is a plethora of energy development pathways … and any account of transition—such as the capacity for community renewables to expand—needs to recognize this scope for hybridity'. Building on this still further, Rydin et al (2013: 638) observe that a hybridity of energy development pathways 'are neither static nor mutually exclusive, but instead represent a range of options that might overlap, reinforce, or clash with each other as they either are rolled out and upscaled, or disrupted and disconnected'. As such, there is a need for analytical advances to understand the ways in which the current energy regime may be reconfigured; recognising that there may be 'harder' or 'softer' paths to alternative energy futures (Strachan et al, 2015). Within these hybrid pathways, mainstream processes either compete with or are complemented by emerging practices thus reinforcing 'an understanding of sustainable energy systems as the end product of contested sociotechnical processes, implicit within which are alternative technological strategies which, in turn represent distinct philosophies of environmental place-making' (Rydin et al, 2013: 638). Such perspectives are highly

relevant for a just energy transition and improved social justice outcomes within and beyond the energy system.

The emphasis on 'socio-technical' configurations within the transitions literature more generally recall the priorities of the alternative technology discourse for the creation of, as Schuhmacher (1973: 120) vividly described it, 'technology with a human face'. Following Bijker and Law (1992), socio-technical systems suggest that the social and the technical are intricately intertwined and that the particular form of a given technological constellation is a response to wider, multi-actor social practices and processes. Within this formulation, technologies are not simply designed and engineered material artefacts, but are instead socially embedded technological components both necessitated and shaped through the actions, practices and desires of producers, consumers, infrastructures, industry, end-users, regulators and political process (Bijker et al, 1987; Bijker, 1997). Central then to any understanding of socio-technical systems is an implicit acknowledgement that 'The technical is socially constructed, and the social is technically constructed' (Bijker, 1997: 273); that the social and the technical are opposed in a dynamic relationship whereby they are conceived as mutually co-constitutive, in a constant process of interaction and (re)shaping with exchanges in both directions. This is highly relevant from the perspective of CRE-development and interventions at the energy production end of the energy system more generally. In this respect, CRE developments potentially create new spaces in which the material and psychological distance between citizens and energy infrastructures is compressed relative to large-scale, centralised energy systems, potentially providing opportunities for reconfiguring the social relations embedded within them.

The notion of change in socio-technical configurations is a central component of the transitions literature, as evidenced by Geels and Schot (2010: 13), who observe that 'actors in transition processes give technology a prominent role in their change strategy. Technology is a site for organizing change'. For the purposes of the analysis presented here, transitions may be defined, as Verbong and Loorbach (2012: 6) note, as 'large-scale transformations within society or important subsystems during which the structure of the societal system fundamentally changes'. As Bridge et al (2013: 333) observe: historical examples of transitions have tended to be associated with broader patterns of social, political or economic change. As such, the transitions literature offers a potentially useful way in which to think about the role of CRE in envisaging more environmentally and socially just futures, to the extent that the material infrastructures of community renewables serve potentially as a site for configuring change. Historical examples of transitions include: demographic change towards urbanisation, transitions from predominantly industrial to service-based economies across much of the developed world, the shift in modality from

extensive to intensive agriculture, and the growth of consumer society and its attendant emphasis on individualistic lifestyles moving away from more communitarian processes and practices (Verbong and Loorbach, 2012; Bridge et al, 2013). Central to processes of transition are a number of core characteristics, as set out by Verbong and Loorbach (2012: 7):

- *Transitions are co-evolutionary processes that require multiple changes in socio-technical configurations.*
- *Transitions are multi-actor processes, involving a large variety of social groups.*
- *Transitions are radical shifts (in scope) from one configuration to another.*
- *Transitions are long-term processes on a macro-level.*

Thus, for Rotmans et al (2001: 16):

> *A transition is the result of developments in different domains. In other words, a transition can be described as a set of connected changes, which reinforce each other but take place in several different areas, such as technology, the economy, institutions, behaviour, culture, ecology and belief systems. A transition can be seen as a spiral that reinforces itself; there is multiple causality and co-evolution caused by independent developments.*

Shifting from an emphasis on the general phenomena of transitions has been the inevitable move towards understanding 'transition management' (Loorbach, 2010; Verbong and Loorbach, 2012). As such, transition management seeks to understand the dynamics, influences, and processes, of how transitions occur in practice and to configure such variables into a practical framework for steering transitions towards desired outcomes (Verbong and Loorbach, 2012). As Verbong and Loorbach (2012: 7) note: 'To understand the challenge of innovation processes that can bring about transformations in socio-technical systems in favour of sustainable development, a broader analytical perspective is needed'. One such central framework to the transitions literature is the multi-level perspective on socio-technical transitions (MLP) (Geels, 2002). Developed over the course of the last two decades, the MLP is a heuristic device for conceptualising how transitions occur in practice; 'understand[ing] transitions as outcomes of alignments between developments at multiple levels' (Geels and Schot, 2007: 399). The scales at which transition is envisaged through the framework are at the levels of the socio-technical landscape, socio-technical regime, and technological niche innovations (Geels, 2002; 2019). In terms of their relationship, 'the three concepts can be understood as a nested hierarchy, meaning that regimes are embedded within landscapes and niches within regimes' (Geels and Schot, 2010: 18). Brief consideration will be directed towards each of

the hierarchical scales before discussing their implications in the context of energy transitions, and their relevance from the perspective of CRE and a more just energy future.

Firstly, 'socio-technical landscapes', suggested as an analytical scale following a comprehensive review of theories of technological change by Rip and Kemp (1998), is understood as the broad exogenous context within which 'socio-technical regimes' and 'technological niches' operate. 'It consists of features such as the geographical position of the land, climate and available resources, as well as softer features such as political constellations, economic cycles and broad societal trends' (Verbong and Loorbach, 2012: 9). Socio-technical landscapes exert influence on selection pressures for transition in the way that they 'provide deep-structured "gradients of force" … [that] need to be perceived and translated by actors to exert influence' (Geels and Schot, 2007: 403). The landscape category thus forms an external environment with capacity to shape developments at other scales; making some actions and processes easier than others based on how actors within those other spheres interpret the landscape dynamics at play.

Secondly, moving vertically down the hierarchy to the next level are situated 'socio-technical regimes'. Such regimes are composed of 'dominant rule-sets supported by incumbent social networks and, as such, [are] embedded in dominant artifacts and prevailing infrastructures' (Verbong and Loorbach, 2012: 9). Socio-technical regimes are characterised by their 'dynamic stability', thus emphasising their hegemonic nature which makes them a challenging context within which to bring about change. As such, 'social networks are larger; artifacts, regulations, markets, infrastructures etc., have coalesced into stable configurations; and rules are articulated, clear and have more structuring effects' (Geels and Schot, 2010: 19). The emphasis on stability and structuration evident within in socio-technical regimes highlights the extent to which such regimes are understood to operate such as to resist change and reinforce their dominance when faced with potentially destabilising circumstances (Bulkeley et al, 2011). In this regard, socio-technical regimes are associated with tendencies towards 'path dependence' and 'lock-in' to established development pathways and technological trajectories (Unruh, 2000; Geels, 2004; Geels and Schot, 2010). Under such conditions, dominant rule-sets, established actor and organisational networks, and the rigidity and interdependence of incumbent artefacts, materials and infrastructures manifest in the existing socio-technical system, coalesce to ensure that 'it becomes nearly unthinkable for the technology to change in any substantial fashion' (Geels, 2004: 911). Thus, from the standpoint of envisaging transition in socio-technical systems more broadly, substantial pressures and forces extant at the level of the regime suggest that change is inevitably challenging to bring about (Geels and Schot, 2007).

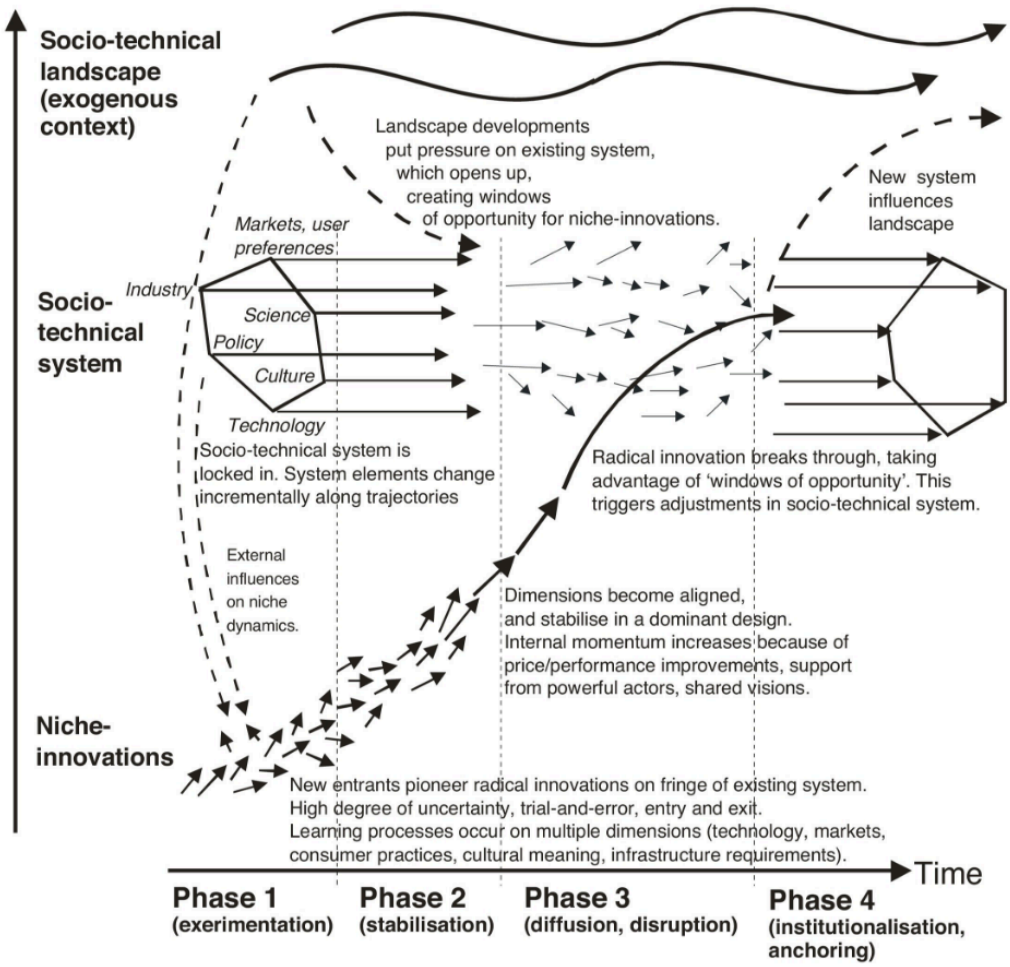

Figure 2.4: The multi-level perspective on energy transitions (Geels, 2019: 191)

Thirdly, at the bottom end of the scale are 'technological niche innovations'. Other scales of the hierarchy explored thus far taken together can be seen to represent the overarching context within which the possible scope for change is configured. Conversely, change is understood to arise from and gain momentum from the bottom-up in so-called niche spaces: 'small, protected spaces, in which new socio-technical practice can develop, protected from harsh selection criteria and resistance from prevailing regimes' (Verbong and Loorbach, 2012: 9). Niche innovations are often premised on the assumption that 'radical innovations often emerge outside or on the fringe of existing regimes, where niches act as incubation rooms that protect novelties against mainstream market selection' (Geels and Schot, 2010: 22). As such, social and technological niches have been an important locus for envisaging change in energy development pathways such as moving away from 'hard' paths characteristic of centralised energy infrastructures and on to 'soft' or 'softer' alternatives led by renewables and locally-based, distributed patterns of energy production (Lovins, 1977; Strachan et al, 2015).

2.5.2 Unpacking the justice of energy transitions

From a technological standpoint, the discourse on socio-technical systems and infrastructures beckons a conception of (community) renewable energy technologies 'not simply as a series of engineered artefacts performing energy conversions, but as configurations of the social and technical which have emerged contingently in particular contexts and which mirror wider social, economic and technical relations and processes' (Walker and Cass, 2007: 459). Recalling Lovins (1977) conception of the 'hard' path of energy development—based on a centralised, fossil fuel based system characteristic of contemporary systems of energy production, consumption, and governance—the implication of this for the extent to which such processes can be said to 'mirror wider social, economic and technical relations and processes' is to represent a broader qualitative shift in the logics underpinning historical patterns of energy development based on large-scale, centralised infrastructures. As Sovacool (2011: 1178 – emphasis in original) points out: 'the true contest between the hard and soft paths is less to do with the technologies involved, and more about the way that policymakers, planners and system builders *think* about energy'. As such, current trends that emphasise renewables, the need to go 'low carbon', and emergent CRE futures more generally, potentially highlight the ways in which incipient processes of transition are already embedded and becoming increasingly manifest.

Indeed, the expansion of renewable energy in the UK which underpins CRE development can be understood through the framework of the MLP. In this respect, domestic and international action to address climate change in the socio-technical landscape act as an impetus for the creation of novel niche-to-regime interfaces. Subsequent incremental change in the socio-technical regime was facilitated by government action to increase the proportion of renewables in the energy mix through policies such as the feed-in tariff. Such action was facilitated by the need to meet statutory targets for the proportion of energy produced from renewable sources resulting from the Renewable Energy Directive 2009 and emissions reductions required under the UK Climate Change Act. Such regime shifts created windows of opportunity for novel renewable technological niche innovations to break through into the mainstream. This pattern of sustained and mutually reinforcing changes across each scale can be evidenced most clearly in the near-collapse of coal power generation in the UK (Rentier et al, 2019) at least partly attributable to a consistent increase in the proportion of power generated from renewables. Indeed, the proportion of the UK's electricity generated from renewable sources increased between 2000 and 2019 from 2.6% to 38.9% respectively (BEIS, 2019b; 2019c).

Significant effort has sought to understand the role of technological niches as the primary driver of transition processes (Berkhout et al, 2004; Smith, 2012; Bulkeley and Broto, 2013). On the other hand, there are gaps in understandings of the interface between the three scales of the hierarchy including with respect to issues of agency as well as the mechanisms by which incumbent regimes might be dislodged and replaced (Shove and Walker, 2007). Indeed, as Chilvers and Longhurst (2016) and Walker et al (2016) have recently shown, opening up and extending understandings of participation in relation to repertoires of energy production and consumption has a crucial part to play within the context of envisaging a just energy transition. Recalling that such transitions 'are conceptualized in the model [MLP] as occurring when landscape pressures destabilize prevailing regimes, providing breakthrough opportunities for promising niches' (Verbong and Loorbach, 2012: 9), an over-emphasis on the role of niche innovations in the context of broader transition processes may potentially underplay the role of cumulative dynamics based on the interface between the three scales of the hierarchy (Coenen et al, 2012). In this respect, the influence of niche innovations and their associated impacts on established orders for envisioning more socially just energy transitions is less well understood (Sareen and Haarstad, 2018; Jenkins et al, 2018).

From the perspective of CRE, Smith (2012: 202) thus notes that 'Niche theory provides a potentially helpful framework for understanding the diffusion of community energy in civil society; but does not seem so well equipped to explain the processes by which niche practices attain wider influence'. Following this assertion, Strachan et al (2015: 97) emphasise that 'niche-to-regime relationships require more analysis' in order to understand how and to what extent CRE might expand. The significance of such perspectives in any analysis of the concepts, practices and processes of CRE is to emphasise the need to build understandings of the role of such bottom-up processes in (re)configuring the local systems of places in which they are situated. In such spaces, niche innovations knock-up against and intermingle with already-existing arrangements and practices at the boundaries of the incumbent regime to offer a competing vision of the future (Murphy, 2015). Thus, as Cowell (2020: 83) notes: 'For low carbon energy, too, we should expect the emergence of systems of places that configure the dynamics of future change'. Consequently, there is a need for analytical advances to understand how and why niche innovations such as CRE impact and influence mainstream processes in order to infer how they shape the future for local communities and the energy system alike.

This section has utilised the framework of the MLP to understand how energy transitions might take place in practice. In this respect, the processes by which transitions are considered to occur within the framework of the MLP are shown to be highly relevant for understanding CRE from the perspectives of both (i) how bottom-up approaches to energy

production such as through CRE might scale up, and (ii) how technological niche innovations interact with the dominant socio-technical regime. As to how these issues relate to energy justice in transition processes, niche-to-regime influence has been shown to be particularly relevant for envisioning a more just energy future. In this respect, while niche activities are understood within the MLP to attain influence through 'windows of opportunity' within the regime, doing so relies at least in part on niche innovations providing benefits which enable them to demonstrate the improved techno-economic performance and socio-cultural acceptance necessary for political feasibility which have all been identified as central for niches to trigger wider adjustments in socio-technical systems (Kemp et al, 1998; Geels, 2019). While theories of energy transitions often underplay issues of justice and social sustainability (Jenkins et al, 2018; Sareen and Haarstad, 2018; Geels, 2019), one avenue for their exploration is through understanding the mechanisms by which niches achieve socio-cultural acceptance. This is highly relevant from a CRE perspective, which offers opportunities for more diverse citizen engagements with the energy system at the energy production end and where analytical advances on the benefits CRE projects provide are potentially relevant for addressing issues of justice which could help engender the required socio-cultural acceptance for CRE to gain traction. The absence of such perspectives potentially undermines ambitions to understand how CRE shapes the future for local communities, the energy system and society more broadly.

2.6 Conclusions

Community renewable energy matters for energy justice. Community-based interventions to address energy-related issues have been shown to be important agents for change, including for improving justice outcomes in the context of fuel poverty. However, as discussed in the foregoing sections, there is a gap in understandings of the role of interventions at the energy production-end of the energy system for addressing fuel poverty and other energy-related issues. This approach to conceptualising CRE-developments as a potential mechanism to address such challenges offers a new way for scholars of energy geography and energy justice to critically engage with understanding how community renewables might shape social justice both within and beyond the energy sector as part of a just transition to renewable, low-carbon energy.

In this respect, it is important to recognise that community renewables initiatives are not without effect. This review of literatures suggests that such projects can have real impacts in real places by creating opportunities for new citizen engagements with the energy system. Whilst there is a small and emerging body of literature which explores the concepts and practices of CRE-developments, the outcomes of these new engagements are still not well understood. In particular, there is a critical gap in understandings of the potential

benefits associated with community renewables. Analytical advances in this area are thus highly relevant both for (i) understanding the potential for CRE to shape social justice outcomes within and beyond the energy system and, (ii) fostering the socio-cultural acceptance of CRE-development that is likely to be necessary if future energy pathways based on such models are to gain traction.

The aspirations and motivations associated with individual CRE projects are important in this respect, as they configure the scope and trajectory of potential outcomes. This critical review has indicated that rationales for CRE-developments significantly vary from place-to-place. Whilst there is some evidence of the emerging character of the community renewables sector in Wales as it relates to cultural rationales, less is known about the sector as a whole or how it relates to wider UK and international trends. Moreover, motivations are key to understanding processes and participation in CRE. To date, such research has primarily focussed on participation in community renewables at the point of project development. There are critical gaps in understandings of the nature of participation in the CRE sector in Wales, and from the perspective of community renewables as an ongoing process, beyond the project development and planning stages. In this respect, it is important to recall that literature on community renewables tends to be ahistorical, ignoring temporal dimensions. This is a further critical gap for understandings of the impact of CRE on social justice issues within and beyond the energy system *over time*. These issues are currently not well understood across community renewable energy or energy justice literatures.

This matters from an energy justice perspective. Not only have the views and experiences of citizens and communities been much neglected in favour of approaches which prioritise policy-makers in the enactment of energy justice. In addition, this review has shown the diverse kinds of issues that citizens in CRE-developments choose to act on, which potentially pose challenges for perspectives on energy justice that tend to focus on outcomes and processes in and for energy *alone*. Indeed, there is a need for analytical advances to show whether, by focussing exclusively on processes in and for energy, key energy justice perspectives risk underplaying the role of issues *beyond the energy system* as potential drivers or outcomes of energy-related issues and actions.

Taken together, all of this presents a broader challenge for energy justice. To date, theoretical perspectives on energy justice envisage change happening primarily as a top-down process. As such, there is a risk that energy justice research underplays the relevance, traction or influence of justice concepts ‘in the wild’. There are tentative signs that this tide is turning. Leading energy justice scholars are beginning to recognise a place for bottom-up knowledge, perspectives and action to produce energy justice or act on

energy *in*justice. However, research at the intersection between bottom-up approaches and energy justice perspectives continue to be scarce across the burgeoning literature on energy justice. With bottom-up perspectives on energy justice starting from a low base, this issue highlights the need for analytical advances to test the implications of such understandings for energy justice more broadly.

Such insights are important and necessary for ultimately understanding the role of CRE in negotiating greater social justice both within and beyond the energy sector in a just transition to renewable, low-carbon energy. Beyond this, such insights are highly relevant for a more holistic understanding of energy justice. This research aims to address these gaps by providing necessary novel contributions to the debate.

3 Research Design & Methodology

3.1 Introduction

Understanding how principles of fairness, equity and justice might be (re)negotiated throughout energy systems is necessary for a just transition to renewable, low-carbon energy. Through the lens of energy-related issues such as fuel poverty it is evident that a preponderance of adverse distributional impacts can be associated with large scale, centralised energy systems—predominantly characteristic of the context in Wales and the UK more broadly—and that levels of equality, opportunity and access in relation to energy are uneven. As the critical literature review suggests, the occurrence of such conditions has been a contributing factor in the emergence of community renewables. As localised initiatives under the auspices of CRE become increasingly pronounced, understanding can be sought, through the multiplicity, as to the differential ways in which such models suggest energy relations might be reconfigured in order to address the wider issue of social justice within and beyond the energy system.

Such rationales are central to the formation of this research, underpinning its purpose to understand the ways in which social justice concerns emanating from conventional energy systems might be addressed through CRE. As such, the study seeks to understand how issues pertaining to energy justice unfold in CRE initiatives across Wales. To meet this aim, the study will examine the processes, outcomes and benefits associated with CRE-developments in practice. The study also seeks explanation as to the motivations and aspirations associated with CRE-developments in Wales, which matter for justice as they potentially configure the scope and trajectory of potential outcomes. More broadly, the study has a concern for the wider landscape of change in energy systems, characterised by increasing movements towards ‘local’ and ‘distributed’ modes of energy production and management typical of the rhetoric of CRE, and seeks understanding as to the energy futures associated with the expansion of community models in which both social and environmental justice are held central.

Whilst the study is informed and underpinned by transformative aspirations it seeks to integrate a range of qualitative case study methods across the sites under examination coupled with a participatory action research (PAR) inspired approach to facilitate learning in relation to its aims. This chapter sets out the methods and data collection phases of the study, which took place 12 month period between 2014 and 2015, outlining data collection techniques, methodological tools utilised, and the ways in which such methods were mobilised to carry out research.

3.2 Research Questions

The primary objectives of the study extend from an extensive review of the literature undertaken to explore the connections between energy justice, energy-related issues such as fuel poverty, community renewable energy, and energy transitions set out in Chapter 2. In light of this review of literature and the gaps identified, this research will seek to address the following questions.

1. *How can the motivations of the community renewable energy sector in Wales be understood? How do these drivers help understand the energy justice implications of community renewables?*

2. *How does participation in community renewable energy take place: who is involved, at what times, and why? How can the implications for procedural aspects of energy justice be understood?*

3. *How do community renewable energy projects influence distributive fairness both within and beyond the energy sector?*

4. *How do community renewables shape the future for local communities and the energy system alike? How can community renewables research better influence understandings of energy justice?*

3.3 Worldviews and Community Renewables Research

The traditional starting point for any research project is a discussion of the underlying philosophical assumptions and worldviews which inform the study. This sheds light on the rationale for the overarching approach, as well as informing the research design and selection of methods in order to translate the approach into practice. Such assumptions are frequently referred to as 'worldviews' and reflect both the epistemological and ontological stances guiding research. They define, as Guba and Lincoln (1994: 107) note: 'the nature of the "world", the individual's place in it, and the range of possible relationships to that world and its parts'. Whilst philosophical ideas are largely silent within research, their underlying influence for the manner in which research is conducted, and methodological approaches justified, makes it important to acknowledge such assumptions at the outset (Slife and Williams, 1995). Historically the positivist worldview has been considered dominant in research, however, it has increasingly been challenged by alternative approaches advocating a more humanistic approach to the practice of social research (Bryman, 2008; Creswell, 2014). The 'social constructivist' worldview is one such alternative that will guide and frame this research, whilst aspects of more 'transformative' worldviews

will underwrite the forward-looking nature of the questions under examination as well as innovative, participatory methods involved.

Social constructionism eschews recognition of an objective, pre-existing social reality 'out there' in the world waiting to be studied (Bryman, 2008: 19). It has roots in the work of Berger and Luckmann (1967) and Lincoln and Guba (1985), questioning traditional claims about the role of knowledge and its characteristics. Constructionism suggests that social phenomena, categories and meaning are established and ascribed through a relational process of social interaction between actors in which social reality is understood as a state of constant (re)negotiation (Bryman, 2008). Constructionism takes the form of, as Guba and Lincoln (1994: 110) note: 'multiple, intangible mental constructions, socially and experientially based, local and specific in nature … and dependent for their form and content on the individual persons or groups holding the constructions'. Research informed by constructionist approaches into the present day tend to be characterised by efforts to seek understanding, embrace multiple participant realities, and examine social and historical contexts and perspectives as generative influences in the construction of individual meaning (Crotty, 1998; Creswell, 2014). Constructionist research thus typically seeks understanding from amongst the complexity of multiple different participant meanings in relation to a given phenomenon, and suggests that contexts and settings play a central role in the way that people construct meaning. The researcher's goal in such an approach is to make sense of the realities other people have constructed and, through that, inductively develop a theory or pattern of meaning (Creswell, 2014). Social constructivism is thus a form of research characteristic of the interpretive tradition of social science research (Berger and Luckman, 1967; Schwartz-Shea and Yanow, 2012).

A constructivist worldview is highly relevant to this research. Understanding the energy justice implications of CRE relies on parsing the meanings different participants in such initiatives ascribe to their engagement, which may in turn be contingent on issues such as perceptions of need and injustice within the spaces and places in which they are constructed. In this way, a constructivist worldview leaves the question of meaning in relation to CRE open and, thus, for multiple participant realities to be explored. This approach respects the context specific nature of CRE initiatives and, as such, their potentially uneven and idiosyncratic forms extending from the diversity of ways in which people and place may come together to make alternatives possible.

An appreciation of this diversity ultimately recognises that the construction of meaning and the actualisation of practice is inherently material as well as social; as Sayer (1992: 28) notes: 'Social phenomena have a crucial material dimension … Knowledge of society,

whether scientific or lay, should therefore always include reference to this material side'. As such, it is necessary to maintain an alertness to the materiality of energy infrastructures, as well as the ways in which they structure and influence participants' perceptions and responses. Such perspectives are relevant for understanding the ways in which alternatives shape the landscape for wider change; such that 'Understanding concepts in society and how they change ... requires an understanding of the material processes associated with them and the way in which they are contested' (Sayer, 1992: 34). To the extent that CRE embodies a contested vision of society's energy future—laden with alternative expressions about the nature of relations between subject and object such as the (re)negotiation of social justice within energy systems—the diversity of such projects represents a crucial link to understanding how more systemic change in our energy systems may be realised, configured and embedded.

Materiality in the context of geography is highly contested; with calls on either side of the material/immaterial dualism for the relevance of one approach over the other (Jackson, 2000; Philo, 2000; Anderson and Wylie, 2009). Whilst the 'cultural turn' has seen a move towards increased emphasis on dematerialised perspectives, the ongoing influence of the material for social geography suggests that it has a relevance that cannot simply be ignored. Any suggestion that the 'real world' is thus irrelevant may come, as Philo (2000: 35) notes, 'as rather surprising to the countless people struggling to get by in the middle of very material cities and countrysides whose everyday mundane reality (the buildings, the distances, the deprivations) is never in doubt to them'. Such perspectives are highly relevant to the study of local approaches to energy justice. Indeed, circumstances of material deprivation or, indeed, other local needs, may configure responses based around CRE futures which, in turn, have their own specific material expression. In this way, immaterial perspectives are shaped by their material circumstances and vice versa. The effect of this is to condition the scope for social constructivist perspectives, recognising that the material and immaterial are not mutually exclusive and that the immaterial can have dramatic material consequences (Philo, 2000). Thus social science must incorporate an interpretive understanding or 'double hermeneutic' (Giddens, 1984) in which the researcher enters the world of the participant in order to understand it from their perspective. Such approaches emphasise the '"fusing of the horizons" of listener and speaker, of researcher and researched, in which the latter's actions and texts never speak simply for themselves, and yet are not reducible to the researcher's interpretation of them either' (Sayer, 2000).

Whilst CRE-development highlights the transient, spatially, and temporally contingent nature of our energy systems, the persistence of specific material expressions, such as those embodied by energy infrastructure, and the dominant meanings and relations

associated thereto can be considered to be preserved through embedded systems of domination (Sayer, 1992; Freire, 1996). As Sayer (1992: 35) observes:

> *They are maintained not only through the appropriation, control and allocation of essential material requirements by the dominant class, race or gender, but also through the reproduction of particular systems of meaning which support them. The relevant constitutive meanings … are certainly not neutral or indifferent to their associated practices and different groups have very different or even contradictory material stakes in their reproduction or transformation.*

Recognising both the partiality and the way in which power is unevenly distributed between different groups and actors involved in the contestation of our energy systems links the struggle to realise more progressive energy futures with more transformative worldviews. This has implications for this research in the form of mediating relations between participant(s) and researcher such that, as Mertens (2015: 21) observes, transformative researchers 'consciously and explicitly position themselves side by side with the less powerful in a joint effort to bring about social transformation'. In this way, the transformative worldview extends the tenets of constructionism and maintains that research ought to be integrated into agendas for political change to ensure social oppression, in its various forms and guises, is confronted (Mertens, 2009). Transformative worldviews thus reflect a preoccupation with marginalisation and attentiveness to issues of power, social (in)justice, discrimination and oppression (Creswell, 2014).

For this research, the challenges associated with energy-related issues such as fuel poverty and their alleviation highlighted in Chapter 2—manifest in the form of the powerful interests of energy suppliers within the current model and the failure of policy to target support efficiently—suggests a need for alternative approaches which embed transformative principles and provide a voice for those seeking alternatives. As such, the relevance of such perspectives for this research help to understand CRE as a strategy to both resist and challenge the inequities perpetrated through existing energy systems. In addition, it highlights a need to empower participants through the research process to realise more equitable energy futures.

3.4 A Qualitative Approach

The philosophical assumptions underpinning the study entail that a strategy of inquiry informed by the qualitative research paradigm will be pursued. The ongoing relevance of the qualitative paradigm in research, including for the present study, relates to its orientation as a set of prescriptions for naturalistic inquiry into the exploration of real world problems; seeking complex and detailed understanding and meaning of particular social situations, events, groups, processes, roles or interactions, in their settings, from the standpoint of

those who are directly involved with the issues under examination (Hatch, 2002; Denzin and Lincoln, 1998). Qualitative research seeks, as Denzin and Lincoln (2011: 243) note, 'to make connections among lived experience, social injustices, larger social and cultural structures, and the here and now'. These characteristics are each highly relevant for this research in which an in-depth understanding of both the 'contexts and situations' and 'views and experiences' of CRE-participants will be required in order to facilitate learning in relation to its aims. As such, brief consideration will be given to a select range of features informing qualitative approaches relevant for this research.

- *Participant Focus:* Central to the qualitative research process is the attention directed towards establishing and reconstructing the meanings and interpretations of the problem at issue from the standpoint of the participants involved (Lincoln and Guba, 1985; Hatch, 2002; Creswell, 2007). As Guba and Lincoln (1994: 106) observe: 'Human behaviour … cannot be understood without reference to the meaning and purposes attached by human actors to their activities'. In this way, qualitative research acknowledges and seeks to understand the existence of the multiple realities and interpretations held between researcher, participant(s) and the wider world (Lincoln and Guba, 1985).

  For this research, participant focus is highly relevant for developing an in-depth understanding of distributional issues within CRE projects; thereby 'opening up' the character of such projects to more detailed examination through an assumption that they will be 'multi-voiced' with views and experiences sought from the wider constituency of which such projects are comprised. This approach will help understand the motivations and drivers behind engagement with CRE initiatives, provide insight into the inclusivity (or not) of social justice objectives, and shed light on their outcomes and benefits. This approach of learning from the standpoint of the people involved serves as a central rationale for the adoption of a qualitative research design.

- *Natural Setting:* Lincoln and Guba (1985) make the case for a non-positivistic approach to research under the auspices of a 'naturalistic' paradigm, arguing that traditional approaches to inquiry needed to be supplemented by more humanistic perspectives. In practice, such modes of inquiry entail research that takes place in its natural setting 'at the site where participants' experience the issue or problem under study' (Creswell, 2007: 37).

  This feature of qualitative research is relevant to this research from the standpoint of working with participants within their local communities at the site(s) specific to their

projects. An emphasis on the importance of place and context in this way draws attention to the influences surrounding the creation and motivations for pursuing CRE initiatives in the sites under examination. Keeping in sight the need to maintain an attentiveness to the materiality of energy systems, an emphasis on research in its natural setting enables an examination of the influence of such factors for communities seeking to act on energy objectives. As Creswell (2007: 40) highlights: 'We cannot separate what people say from the context in which they say it'. Thus, the emphasis within the qualitative paradigm to strive for inquiry in a 'natural setting' precipitates the use of such an approach by virtue of the fact that it will facilitate an exploration into the nature of specific CRE initiatives in their surroundings and the conditions and influences structuring the ability of communities to act.

- *Emergent Design:* A core feature of many qualitative studies is the emergent nature of the process involved in qualitative research (Creswell, 2007). In practice this means that researchers must be flexible with respect to all aspects of the research design and not be bound by a tightly prefigured framework, taking a view of research as an iterative process, constantly unfolding, and necessitating fine-tuning along the way. As Creswell (2007: 39) notes: 'The key idea behind qualitative research is to learn about the problem or issue from participants' and, as such, the research process must be responsive to the situation on the ground as it unfolds. This may mean that 'the questions may change, the forms of data collection may shift, and the individuals studied and the sites visited may be modified' (Creswell, 2007: 39).

  An emergent design both responsive and flexible to the situation on the ground is a key rationale for the adoption of a qualitative approach in this research. As noted in Chapter 1, expectations about 'the field' at the outset of this research were not entirely met, with CRE-developments being far less advanced than initially anticipated at the time the fieldwork took place. Moreover, the CRE sector is a constantly shifting landscape, with policy developments and impinging and enabling factors unfolding across multiple scales in 'real time'. An emergent research design is a practical one in this respect, providing a framework within which to manage impacts and issues which arise.

- *Holistic Account:* One final feature of the qualitative study is the aim to 'try to develop a complex picture of the problem or issue … bound not by tight cause-and-effect relationships among factors, but rather by identifying the complex interactions of factors in any situation' (Creswell, 2007: 39).

This feature is highly relevant for a cross-sectoral examination of CRE in Wales, including for addressing cross-cutting themes across the sector as a whole alongside more detailed understandings of the energy justice implications of CRE in specific settings. This necessarily demands a holistic approach comprised of detailed engagement with particular CRE projects on the ground in order to understand relevant processes, outcomes and benefits in their causal contexts, as well as more widespread engagement with projects at a higher level to understand broader issues and trends. A holistic account also necessitates an element of reading between the lines regarding the outcomes of CRE-developments. In this respect, this research follows Ürge-Vorsatz et al (2014) in understanding outcomes and impacts as not reducible to discourse alone.

3.5 Designing Community Renewables Research

The conventions of social science research demand that a rigorous set of procedures and processes be in place for the conduct of any research project, known as a 'research design'. A research design stipulates the approach to fieldwork in a way that is informed by its worldview and paradigmatic associations and which enables in-depth examination of the object(s) of analysis (Bryman, 2008). Thus, for this research, shaping the research design required consideration to the aims of attention to context, enquiry in a natural setting, and the creation of an holistic account in order to understand the transformative potential of CRE for realising energy justice in a cross-sectoral analysis. As such, this approach implies a concurrent programme of data collection at multiple scales, with collection of data in ways that are sensitive to the context and detail of CRE projects in situ whilst opening up the landscape of community renewables in Wales to inspection.

3.5.1 Multiple Case Study Research

With the foregoing requirements in mind, a multi-sited case study design (Yin, 2003; Stake, 2006) inspired the approach to carrying out data collection. The relevance of a case study approach is predicated on the basis that such designs are particularly amenable to interpretive research and the in-depth examination of contextual conditions; the 'particularities of the context, of the situation and of the actors, then, are important features of case studies' (Mitchell, 1983). As Schwartz-Shea and Yanow (2012: 46) note:

> *The possibility of the multiplicity of meaning is one of the things that makes connection to context critical for both the conduct of interpretive research and its design; the reasons things take these particular forms and not others has to do with their specific contexts of time and place.*

In this respect, case study designs are widely considered valuable precisely for the depth of examination they facilitate and owing to their spatial and temporal sensitivity. As such, case

studies facilitate the examination of a phenomenon in its situation where 'the situation is expected to shape the activity, as well as the experiencing and the interpretation of the activity' (Stake, 2006: 2) within and between the stakeholders involved. For this research, the utilisation of a case study approach opens up the possibility of exploring CRE at an aggregate, cross-sectoral level whilst, at the same time, attending to the spatial and temporal circumstances constituting actual projects at a local level; reflecting the coalescence of rationales and circumstances conditioning the development of CRE and the aims to which it is employed.

This simultaneity of analysis across scales shall be achieved through the mobilisation of an intensive-extensive research framework (Sayer, 1992). In the context of case study research, this approach implies case examination at both 'intensive' and 'extensive' scales; striving to envisage as comprehensive a sense of the picture of the phenomenon under examination as possible (Swanborn, 2010). In this view, extensive research is concerned with generalisation and the elucidation of common patterns and properties amongst taxonomic groups, evidencing formal relations of similarity but which need not actually connect or interact with one another. On the other hand, intensive research is characterised by a focussed and exhaustive mode of enquiry aimed at examining causal processes in situ amongst groups exhibiting substantial relations of connection (Sayer, 1992). As such, an intensive-extensive approach is highly relevant for detailed research in specific CRE projects in context whilst also providing an opportunity to gain insights into the wider landscape of CRE in Wales.

For this research, the extensive phase refers to the examination of CRE-developments in Wales broadly conceived, alongside key sectoral stakeholders. These include (although are not limited to) policymakers, planners and local authorities, collectively constituting and shaping the terrain of CRE across Wales. The intensive phase of the study was informed by the extensive phase, such that the latter sample is understood in the context of the former, facilitating in-depth examination of selected CRE-developments in situ in order to explore internal group processes, meanings, relations, outcomes and benefits. The combination of intensive-extensive approaches in this way thus aids a more comprehensive and complex understanding of CRE in Wales that considers structural issues associated with the expansion of CRE models as well as the details and idiosyncrasies of actual CRE-developments on the ground. Both perspectives are needed as complementary strategies, and so that insights from the more general might be integrated into understandings of the

more particular and vice versa[15] (Sayer, 2000; Swanborn, 2010). As Sayer (1992: 248) notes: 'Contexts or causal groups are rarely just background; exploration of how the context is structured and how the key agents under study fit into it—interact with it and constitute it—is vital for explanation'. It is in this tradition that this research aims to examine CRE in Wales; deploying a cross-sectoral analysis at two levels of detail, attending to both the wider field of CRE as well as its material expression found in specific projects on the ground.

3.5.2 Bounding the Study

With a case study design determined, brief consideration must be directed to the selection of sites for intensive examination. A broad range of case study types variously serve the aim of enhancing knowledge in relation to a chosen phenomenon through the creation of a rich, detailed and multifaceted account of a situation in its real-life context (Stake, 1994; Yin, 2003). In this regard, cases 'embody causal processes operating in microcosm' (Walton, 1992: 122) and provide an 'opportunity to discover knowledge about how [the case] is both specific to and representative of a larger phenomenon' (Wieviorka, 1992: 170). As such, the choice of study sites must exhibit potential as a device for driving learning and understanding in relation to the issue(s) under examination, such that 'the main work is science – an enterprise to gain the best possible explanations of phenomena' (Stake, 2006: 24).

Amongst the various types of case study that might be employed, Yin (2003: 46) notes that the 'evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as more robust'. For this research, selecting multiple sites for intensive analysis allowed for consideration of heterogeneous project-specific forms (technologies employed, organisational models, project aspirations) and for a potentially more inclusive and holistic model of inquiry both open and sensitive to the context in Wales as well as the diversity of projects on the ground. Furthermore, a multi-sited research design allows for projects at different stages to be examined and, thus, to provide insight into the themes of community renewables and justice from a temporal standpoint, an issue which is underexplored in the literature. Ultimately, as Stake (2006: 23) notes: 'An important reason for doing the multicase study is to examine how the program or phenomenon performs in different environments'. As such, a multi-sited intensive design of CRE in Wales provides significant scope for exploring the interplay between community renewables and energy justice by providing the opportunity to examine different project types and characteristics (important in view of the immature state of CRE in Wales and the diversity of models being

[15] Although it is recognised that there are trade-offs to be made with such an approach insofar as any research design that seeks to view the problem across scales in this way potentially qualifies the amount of depth it is able to ascribe to individual study sites within the prescribed timescale.

tested) whilst, at the same time, providing a framework within which to interrogate the development and evolution of CRE across the Welsh context more broadly.

In this research, the number of intensive study sites under examination was informed by its extensive phase and chosen to reflect the diversity of the context in Wales. Yin (2003) suggests that as small a number as two is sufficient for a multi-sited study, however, more than this enables greater coverage of the 'interactivity between programs and their situations' (Stake, 2006: 22). The selection of specific CRE-developments for more detailed research over time is consistent with an intensive-extensive research framework, whereby in intensive studies the groups may be drawn from the extensive sample 'one by one as the research proceeds and as an understanding of the membership of a *causal* group is built up' (Sayer, 1992: 244 – emphasis in original)[16] thereby allowing both extensive and intensive stages to run parallel to one another in a co-constitutive manner.

Alongside valuing diversity and opportunity for learning, Miles and Huberman (1994) suggest numerous characteristics to consider in the context of case selection; these are relevance to conceptual framework, potential to generate rich information, enhancement of analytic generalisability, potential to generate believable explanations, presence/absence of ethical concerns and, feasibility[17]. In selecting intensive study sites in this research, these considerations have been held in view such that a sample that is context sensitive and mindful of the heterogeneity of project-specific forms is determined, thereby creating the greatest opportunity for learning about the interface between CRE and energy justice.

The following section will briefly consider the choice of methods deployed in the field, outlining the chosen intensive study sites and explaining the innovative participatory approach deployed.

3.6 Research Methods and the Fieldwork Phase

The choice of appropriate research methods in a given study is an extension and reflection of its underpinning worldview and research design; such that the methodological choices define the techniques to be employed for the gathering of data (Bryman, 2008). Also important to consider with respect to the selection of research methods is the notion of triangulation which traditionally refers to an approach towards driving the validity of a given study to ensure that its conclusions are corroborated (Cresswell, 2007). What is pertinent

[16] The point is similarly made by Stake (2006: 24) who highlights that the relevant sample of cases in a given project 'will build in variety and create opportunities for intensive study' over time.
[17] For more information on each of the characteristics and their application to specific cases, see Curtis et al (2000), who provide a comprehensive assessment of the model.

for the fieldwork phase in the intensive-extensive design of this research, with respect to triangulation, is that multiple information sources are consulted in the course of the study in order to facilitate the most comprehensive reading of the interface between CRE and equity across scales; for, as Fielding and Fielding (1986: 34) emphasise, it

> *… is important to choose at least one method which is specifically suited to exploring the structural aspects of the problem and at least one which can capture the essential elements of its meaning to those involved.*

With these prescriptions in mind, semi-structured interviews (Rubin and Rubin, 2012; Brinkman and Kvale, 2015) were mobilised to interrogate the energy-equity interface at both intensive and extensive scales as a way of capturing both 'structural' and 'essential' elements outlined above. In addition, to further amplify and 'open-up' CRE-developments in the intensive sample, a participatory workshop was designed using the 'Ketso' method (Furlong and Tippett, 2013; Tippett, 2013; Wengel et al, 2019). Throughout the study, each of these primary methods were supported with a range of supplementary case study methods such as participant observation and documentary analysis (Bryman, 2008).

For the purposes of coherence the extensive and intensive phases and their constituent methods have largely been presented as isolated stages. In practice, however, both phases of the research occurred in tandem in a mutually co-constitutive manner; moving in an iterative and recursive fashion and reinforcing one another such that 'the back and forth [between extensive and intensive] takes place less as a series of discrete steps than it does in the same moment' (Schwartz-Shea and Yanow, 2012: 27). Brief consideration will be given to the utility of the methodological choices and intensive-extensive samples, before outlining the data analysis strategy and the role of research ethics in the project.

3.6.1 Semi-Structured Interviewing

In semi-structured interviewing, 'the researcher has a specific topic to learn about, prepares a limited number of questions in advance, and plans to ask follow-up questions' (Rubin and Rubin, 2012: 31). As an interviewing approach one of its key advantages for research projects seeking to explore individual meaning is its inherent flexibility; such that 'with a less formal, less standardized and more interactive kind of interview, the researcher has a much better chance of learning from the respondents what the different significances of circumstances are for them' (Sayer, 1992: 245). Moreover, semi-structured interviews further serve the purpose of accessing and addressing issues that are outwardly concealed 'between the lines' (Brinkman and Kvale, 2015: 33) thus facilitating a more authentic reading of participants' meanings and experiences. Given the aim of this research to examine energy

and justice issues within and between CRE-developments, the enrolment of semi-structured interviews was a crucial step for facilitating the uncovering of 'nuanced accounts of different aspects of the interviewee's life world' (Brinkman and Kvale, 2015: 33) relevant for intensive and extensive research phases alike.

Semi-structured interviews were deployed as the main research method in the extensive sample, and as a supporting method in the intensive. Interviews were deployed in two waves during the extensive phase: (i) project interviews with representatives of CRE-initiatives involved in YF to understand issues within projects, and (ii) stakeholder interviews with policymakers, planners and local authorities to examine the context and wider environment of CRE-development in Wales. Interview guides were produced[18] based on categories from the extant literature during December 2014. These were trialled in December 2014 (stakeholder interviews), January 2015 (project interviews) and March 2015 (project member interviews) in pilot interviews 'to assess how effectively the interview will work and whether the type of information being sought will actually be obtained' (Berg, 2001: 80). In line with conventions surrounding semi-structured interviewing, interview guides were rarely employed as an exhaustive list of questions to be rigidly adhered to. Instead, conversations with participants were allowed to flow in a natural manner to allow reflection on themes and issues pertinent to the respondent (Patton, 2002; Sayer, 1992). Interviews sought to shed light on the processes, outcomes and benefits of CRE-developments at intensive and extensive levels of detail, enabling a broad and detailed interpretation of the energy-equity interface from the standpoint of those involved with specific projects in situ.

3.6.2 Participatory Action Research and Participatory Workshops

To help access CRE-participant views in situ and from different standpoints, whilst engaging and empowering project members, the study will seek to employ a form of participatory workshop inspired by PAR approaches (Bell et al, 2004; Reason and Bradbury, 2008). Participatory approaches have an emerging provenance in CRE-literatures (Hobson, et al, 2016; Lucas et al, 2017; Forman, 2017; Lacey-Barnacle and Bird, 2018), however, there is still a call for greater application of such methods from the perspective of energy justice (Jenkins et al, 2020). A key theme of action research is the aim to 'change social reality on the basis of insights into everyday practices that are obtained by means of participatory research—that is, collaborative research on the part of scientists, practitioners, service users' (Bergold and Thomas, 2012). Such approaches thus seek to generate collaboration and solidarity between researcher and subject(s) in a

[18] Interview guides are reproduced in the appendices.

> *participatory process concerned with developing practical knowing in the pursuit of worthwhile human purposes … [bringing] together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people (Reason and Bradbury, 2008: 4).*

'Participatory action research' is one such degree of action research; typically inspired by the principles of 'shared ownership of research projects, community-based analysis of social problems, and an orientation towards community action' (Kemmis and McTaggart, 2005: 273). In this way, the use of a participatory research process in the context of CRE-developments thus exhibits the potential to enhance agency (Kemmis and McTaggart, 2005) and 'transform views of structural problems and their values about the systems under study in the process … lead[ing] to more creative "surprises" and solutions' (Bell et al, 2004: 9) with respect to the relationship between community renewables, equity, fairness and justice. In this respect, a participatory workshop was designed utilising the 'Ketso' method (Furlong and Tippett, 2013; Tippett, 2013; Wengel et al, 2019) to understand the role of CRE-developments in improving social justice both within and beyond the energy system.

In this research, developing co-research endeavours required addressing a range of challenges, particularly to the extent that such approaches rely on commitment and involvement from amongst CRE-project members who work voluntarily and face enormous pressure(s) (Parkhill et al, 2015). Thus, within the relevant timescale for conducting and completing fieldwork, a limitation of the approach arises with respect to the amount of depth feasible to achieve across multiple intensive study sites. To the extent that this method provides an alternative lens on the issues under examination, however, it remains a useful exercise in assessing the interface between energy and equity in context and in a supporting manner with respect to the intention to carry out semi-structured interviews within the intensive study sites. The participatory workshops helped to motivate 'catalytic validation' (Lather, 1991; 1993) which 'energizes participants toward knowing reality to transform it' (Cresswell, 2007: 204), in order to build mutual co-understanding between project leaders, participants and community members with respect to the aims, aspirations, objectives and benefits within particular CRE-developments.

3.6.3 Extensive Sample – Ynni'r Fro and the Challenge of Delivering Community Renewables

The extensive sample is drawn from projects funded under the Welsh Government's flagship CRE programme *Ynni'r Fro*. The programme ran between 2010 and 2015, was managed by the Energy Saving Trust in Wales, and sought to encourage development of community-scale renewables across the country. In view of the ongoing nature of the YF programme

over the course of the study, its subsequent winding down, and the collaborative nature of the project with WG, the use of YF projects as a sample for the extensive phase represented the most direct way to access CRE-developments across Wales. In total 52 CRE-projects were contacted, with interviews conducted with 26 CRE-development representatives on behalf of 33 of the 52 schemes contacted[19].

The decision to focus on *Ynni'r Fro* was considered carefully due to the perceived limitations it would impose on the study, particularly with respect to the intended focus on fuel poverty where there had been a naïve expectation of finding swathes of projects across Wales making this link. In this respect, conflict with European State Aid regulations[20], shortly after the launch of *Ynni'r Fro*, structured how grants could be spent and hampered the flow of greater financial support by the Welsh Government for the sector. In the end, the decision to focus on the YF programme was driven by the very real difficulty of navigating and accessing the landscape of community renewables in Wales where there was no readily accessible way to identify projects in a coherent or systematic manner and in which YF was the first such project of its kind. From a justice perspective, a focus on YF made sense as it was designed in such a way as to (attempt to) ensure that community renewables were widely accessible, focussing in particular on statistically deprived parts of Wales in an effort to expand CRE-development beyond so-called empowered communities (see Park, 2012; Catney et al, 2013b). In these ways, the use of YF-funded projects for the extensive part of the study expedited the process of identifying CRE-developments as well as making distinct links to address perceived injustices. In addition, it provided the opportunity to examine the structure surrounding CRE and engage with policy as a supporting condition for driving community renewables development more broadly.

Alongside the candidates drawn from the *Ynni'r Fro* project list, the second wave of the extensive phase sought to examine the structural issues shaping the development of CRE in Wales. Consequent to the ongoing phase of extensive project interviews, a purposive sample was identified that snowballed as other relevant actors acknowledged by projects on the ground were identified (Hennink et al, 2011). The sample was refined on an ongoing basis through a process of context mapping; such that as comprehensive an account as possible of the relevant actors in the field of CRE in Wales are identified and then confirmed (or not) through further extensive interviews. A further 16 stakeholder interviews[21] were carried out in the second wave, taking the number of extensive interviews to 43 in total.

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[19] The difference is due to a small number of respondents developing multiple CRE-projects. Interview schedules are reproduced in the appendices.
[20] Preventing public authorities from potentially distorting competition and trade within the EU by using taxpayer-funded resources to confer advantage on bodies in receipt of funding.
[21] Interview schedules are reproduced in the appendices.

Project Name	Location	Technology	Stage at time of Research	Fuel Poverty Aims?	Number of In-depth Interviews	Participatory Workshop
Welcome to our Woods	Treherbert RCT	Hydro	Feasibility	Discussed, not finalised	3	✓
Llangattock Green Valleys	Llangattock Powys	Hydro	Construction	Not initially, not finalised	4	✓
Ynni Padarn Peris	Llanberis Gwynedd	Hydro	Feasibility	Discussed, not finalised	1	✓
Bro Dyfi Community Renewables	Machynlleth Powys	Wind	Active	Not explicitly, environmental focus instead	4	

Table 3.1: Community renewables projects involved in the intensive sample

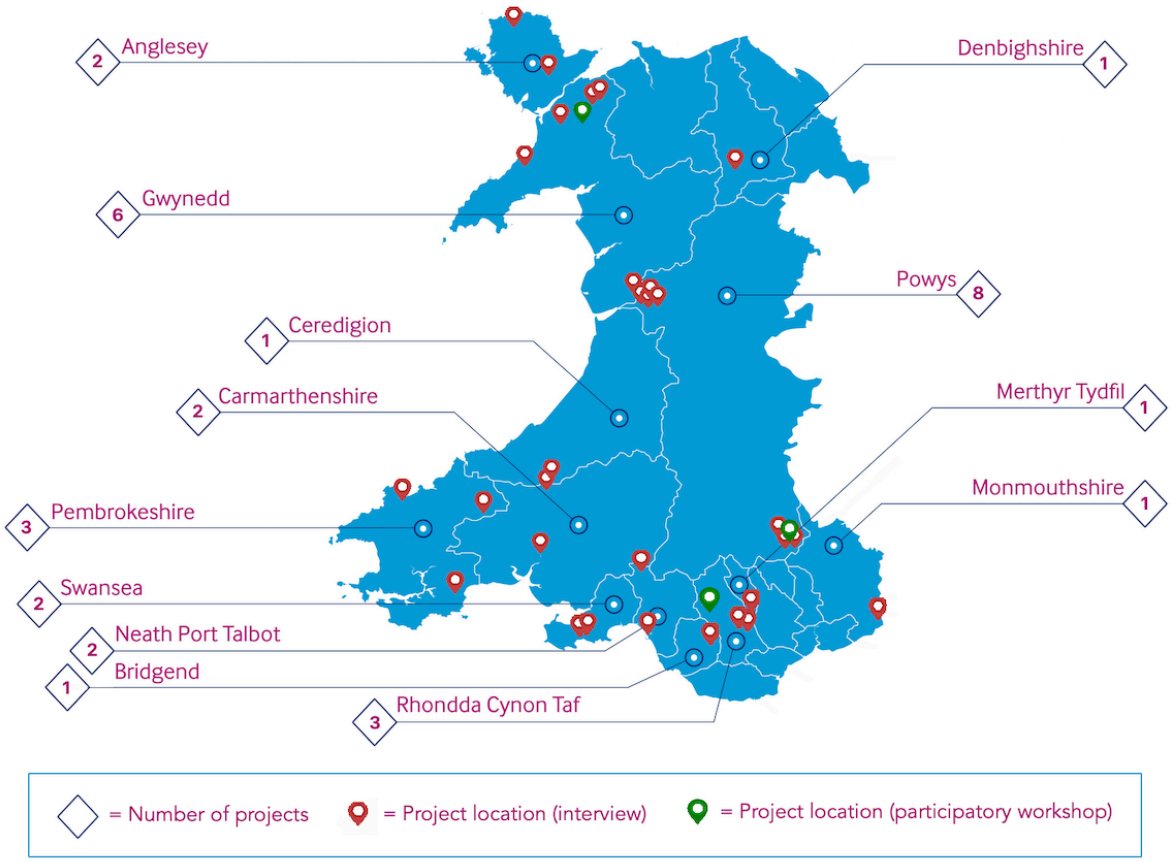

Figure 3.1: Distribution of projects included in this research

3.6.4 Intensive Sample – Unpacking Community Renewables in Wales

Using a multicase-insipred approach, the selection of areas for in-depth study in the intensive phase was an ongoing process in which candidate options were identified over an extended period. Projects in the intensive sample were informed by the extensive phase of the study, the latter being used as an opportunity to 'case the field' (Ragin, 1992), and assessed for suitability on the basis of characteristics identified by Miles and Huberman (1994) with the aim of ensuring diversity across Wales. As projects engaged with the study in its extensive phase, this enabled a further assessment of the suitability and potential for learning from particular projects as well as dealing with the practical issue of the amenity of groups to be involved with in-depth case work. Indeed, many cases were not receptive to participating and the predominantly voluntary nature of CRE-development (see Parkhill et al, 2015) meant that engagement in the study was another pressure for groups to take on[22]. As such, projects were selected for in-depth case work primarily on the basis of their amenity to involvement in the study. The relevance of project characteristics and aim of ensuring spatial diversity was applied on an ongoing basis as further sites were added to the sample.

One crucial issue was the intended early emphasis on fuel poverty within the study, which was a much more difficult characteristic to be consistent with across the intensive sample. Only a handful of projects made explicit links to the issue and, of these, few were amenable to being involved in the study. Furthermore, in order to ensure that the study maintained a focus on *actual* issues of equity and justice in energy systems and not only *theoretical* ones, a conscious effort had to be made to identify and involve intensive study sites at a more developed stage alongside the less developed projects that comprised the largest component of YF-funding. This need to ensure representativeness with respect to the stage of development of projects within the sample further delimited the extent to which the study was able to consistently maintain a focus on fuel poverty. Latterly this had the effect of prompting a reshaping of the aims of the study towards an emphasis on the more general themes of 'equity' and 'justice' within energy systems, rather than being solely focussed on CRE-experiences with fuel poverty.

With these issues in mind, the sites ultimately chosen for the intensive sample reflect a diversity of technological, spatial and aspirational forms providing an opportunity to interrogate the interface between community renewables and equity in different settings. Final intensive site selections, their locations, key characteristics, and mix of methods deployed are outlined in Table 3.1 and Figure 3.1.

[22] See Curtis et al (2012: 1012) for a discussion of the tension between the desire for analytical generalizations versus the messy empirical realities of practicality and feasibility.

In line with desire to use a PAR-inspired approach, a participatory workshop was designed utilising the 'Ketso' method (Furlong and Tippett, 2013; Tippett, 2013; Wengel et al, 2019) to understand the role of CRE-developments in improving social justice both within and beyond the energy system. Ketso is a 'toolkit in a bag' aimed at enabling productive co-working and thinking, which mobilises a hands-on, visual approach to group work based on the three principles of hearing everyone's voice, building mutual understanding and commitment, and promoting collective and creative thinking (Tippett and How, 2011; Tippett, 2013). The philosophy behind Ketso embraces the principles of PAR outlined earlier, grounded in co-production practices to give voice to a wide range of (marginalised) participants. After Wengel et al (2019), practising Ketso draws on theories of creative thinking (De Bono, 2009), mind mapping (Buzan and Buzan, 2009), experiential learning (Kolb, 1984), and multiple intelligences (Gardner, 1999).

For this research, meetings with project gatekeepers interested in being included in the intensive sample were held at an early stage to identify how a workshop might help the community based on the project's development stage, and to identify areas of convergence in terms of interests. In this way the method complied with the requirement for democratisation of process for, as Bergold and Thomas (2012) emphasise: 'Unless people are involved in decisions—and, therefore, research partners or (co-)researchers—it is not participatory research'. This process suggested that a focus on the benefits desired from CRE-development in host communities would be valuable, particularly given that most projects were at a relatively early stage of development. From the standpoint of the research interests in energy justice in CRE, a focus on community benefits and outcomes and their impacts in communities provides a route to explore the justice effects of CRE-developments within and beyond the energy system. After choosing this focus, engagement was undertaken with the creator of Ketso and researchers at the University of Glasgow, Scotland, who together have extensive experience in workshop design, to understand the best way to get maximum value out of the method in light of the specific research interests, community goals and expected participants. Using their advice, the result was a workshop entitled 'Exploring Community Benefit Priorities'[23] in which participants were asked to reflect on, share and discuss their ambitions for CRE-development and their underpinning rationales, as well as the challenges and opportunities in the communities involved. In so doing, the workshops sought to encourage participants, in turn, to share and contribute views on the diversity of potential justice affects portended by their projects and to help develop concrete strategies for realising them[24].

[23] The workshop schedule is reproduced in the appendices.
[24] The results of the workshops are presented in the Ketso templates in the appendices.

Figure 3.2: Value mapping with Ketso in the intensive sample

Participatory workshops were undertaken in three of the intensive study sites[25]. Following Satterfield (2001), the workshops promoted a creative and affective forum for value-elicitation, providing a clear structure for value-mapping, and incorporated discursive tasks to understand key issues in detail (such as detailed community benefit priorities). Across the cohort, workshops lasted on average 2 hours and involved a total of 18 participants, reflecting a diverse cross-section of the communities involved, including CRE-project representatives, local councillors, local citizens, a member of clergy, a community school governor, and members of other local voluntary groups. The groups reflected a range of ages[26] and an exactly equal gender split. The research sought to involve participants both inside and outside of the projects[27] who were all nonetheless members of (or had professional interest in) the community within which particular projects were situated. Workshops were followed up by semi-structured interviews where participants wished, resulting in a further 9 interviews, and 51 across the study in total.

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[25] A fourth study site had been active for some time so the workshop was of less direct relevance.
[26] Although it should be noted that the study did not seek to collect the ages of participants. One observation in this respect is that across the cohort of participants it almost certainly did not include anyone under the age of 18. Whilst this may have presented additional ethical issues, the author notes that engagement with future generations may be a fruitful area for further research.
[27] One project made an explicit choice to use the workshop as an opportunity to assess intra-group values and attitudes only, as they had not yet 'gone public' and thus sought to develop an outward-facing strategy. The format remained the same for all three groups regardless thereby ensuring consistency and comparability.

3.7 Data Analysis

A grounded theory approach was deployed to enable data analysis, although data analysis occurred continually during fieldwork (such as in the way that extensive-intensive phases co-constituted one another). Grounded theory aims towards the culmination of 'an abstract theoretical understanding of the studied experience' (Charmaz, 2006: 4) that is 'grounded' in the data and formed out of the 'inductive development of categories from data' (Saldaña, 2013: 134). The attraction of this approach for this research derives from its context sensitivity, such that it relies on 'what occurs in the research settings we join and what our research participants' lives are like' (Charmaz, 2006: 2). Given the attention to context and emphasis on learning, from both from the standpoint of and in solidarity with participants during the various stages of this research, grounded theory provides a useful lens through which to consider issues of justice that complement the overarching research design.

A key feature of the grounded theory method is its reliance on a process of qualitative coding which entails the attachment of 'labels to segments of data that depict what each segment is about [such that] coding distils data, sorts them, and gives us a handle for making comparisons with other segments of data' (Charmaz, 2006: 3). With these prescriptions in mind, coding was an iterative process of progressively distilling and making sense of key themes in the data gathered, reconfiguring it in abstraction in order to capture its essential meaning in theoretical form and moving beyond the data itself to the formulation of analytical interpretations of actual experience (Charmaz, 2006; Bryant and Charmaz, 2007). More recent re-interpretations of grounded theory advocate the use of extant theory to inform the research process (Strauss and Corbin, 2008), such that the cumulative outcome of a grounded theory method is a theoretically informed reading of the lived experience of participants' understanding and interaction with the phenomenon under examination. This approach is highly relevant to the aims of this research both to understand energy justice from the standpoint of key conceptualisations, as well as actual issues as they relate to justice, equity and fairness from the standpoint of participants involved.

Both interviews and discursive tasks within the workshops were audio-recorded and transcribed before being analysed thematically (Braun and Clarke, 2006) using a combination of manual processing and NVivo qualitative analysis software to configure the data, de- (and re-) contextualising the different elements to facilitate critical engagement. Thematic analysis followed Vaismoradi et al (2016: 101) in a process of 'coding, collecting codes under potential subthemes or themes, and comparing the emerged coding clusters together and in relation to the entire data set'. Drawing on this and Strauss and Corbin's (2008) approach, coding was thus primarily theoretically driven and partly organised according to issues of distributive, procedural, and recognition justice, facilitating analysis

and allowing synergies to emerge between transcripts in relation to the core themes of key energy justice literatures and frameworks. Ultimately, the cohort of data sought to contribute towards a bottom-up perspective on energy justice through community renewables, with key segments of data organised underneath this objective.

Coding began by using NVivo to identify key sections and phrases in interview transcripts on a line-by-line basis, labelling them with relevant codes. Initially, each line seemed to generate a theme of its own, however, progressing through the transcripts identified similar themes which were given similar labels and consolidated under broader themes (Saldaña, 2013). Complementing this were written 'analytical memos' as 'sites of conversation with ourselves about our data' (Clarke, 2005: 202). Developing detailed memos took place continuously throughout the process to facilitate development of emerging ideas and advance analysis further. This activity was especially useful towards the end of the data analysis phase, serving as a 'pivotal intermediate step between data collection and writing' (Charmaz, 2006: 72). In addition to producing memos, 'diagramming' (Strauss and Corbin, 2008) was used to make sense of codes, to tease out possible relationships, and construct analyses. This approach extended techniques used in the workshops, introducing a tangible, practical way of engaging, and (re)interpreting the data. As analysis progressed, memos and diagrams were revisited and integrated into the formulation of explanations of patterns in the data, and have been extensively relied on for drafting the findings.

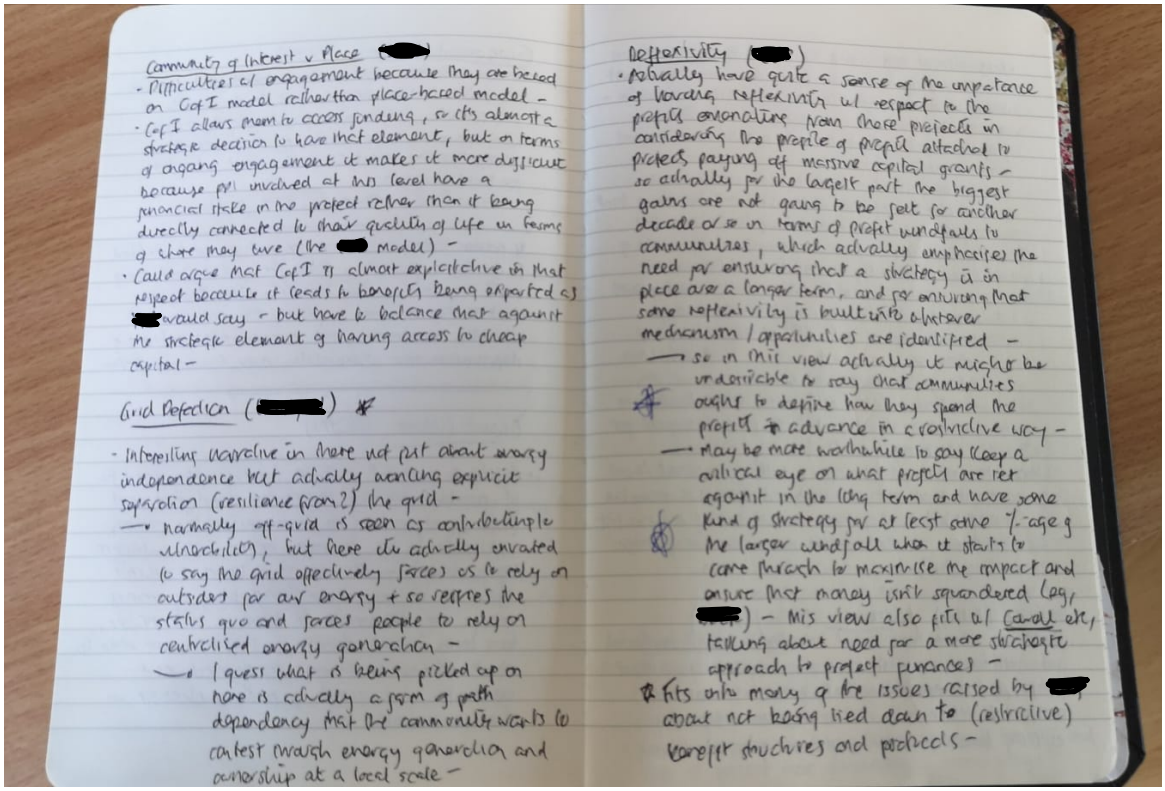

Figure 3.3: Development of analysis through the practice of 'analytical memos'

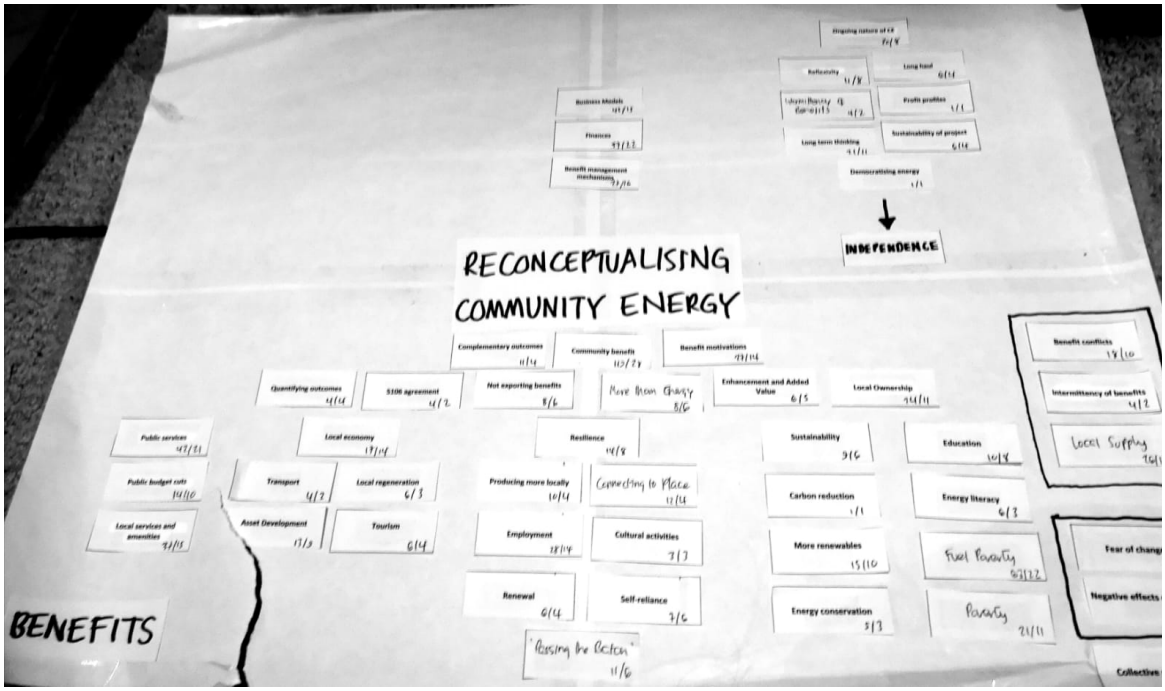

Figure 3.4: Practising 'diagramming' to tease out connections and construct analyses

Taking these techniques together, their combination evokes comparisons with bricolage analysis, which allows a 'free interplay of techniques during the analysis' (Kvale, 2008: 115) and involves the use of a range of approaches to examine the data from different perspectives. In contrast to a systematic approach, meaning is constructed through an interaction of analysis techniques (Kvale, 2008). In this sense, an atypical grounded theory pattern is adopted.

On this basis, the data was organised and managed according to its relevance to key themes which emerged during this recursive analysis: (i) the triumvirate of tenets of energy justice; (ii) outcomes and benefits of community renewables; (iii) internal processes of participation in community renewables; (iii) temporal perspectives on community renewables; (iv) aspirations and motivations for community renewables; (v) the impact of austerity on Welsh communities and the public sector; and (vi) locational and spatial considerations and associated implications. On the one hand, examination addressed whether or not community renewables enhanced energy justice from the standpoint of distribution, revealing both the complexity involved in such processes and differential approaches to doing so. On the other hand, examination focussed on the ways in which participation in CRE-developments unfolds and the form of such interactions, with implications for procedural and recognition justice. These issues form the basis of more in-depth analysis in the following results and discussion chapters.

3.8 Research Ethics Considerations

The research methods proposed in this research imply a number of ethical issues that have been vigilantly attended to throughout all stages of the research process. Indeed, the issue of ethics within research process more generally is considerable such that the ESRC (2012) provide their own framework to ensure best practice in social research. The framework builds on the principles outlined by Bryman (2008), following Diener and Crandall (1978), emphasising that any study ought to take into consideration harm to participants, informed consent, privacy and confidentiality, and whether deception is involved. Each of the issues in the ESRC's framework are briefly considered in turn.

a) *Research should be designed, reviewed and undertaken to ensure integrity, quality and transparency.*

To ensure compliance with this aspect of research ethics, the study was designed over an extended period in consultation with the research team comprising two supervisory staff and a reviewer at Cardiff University. As part of the monitoring process, regular evaluations were conducted and progress reviewed periodically; such that feedback on the design and conduct of the fieldwork as it was in progress was received. Most importantly, ethical approval for the study was applied for on 28th November 2014 prior to the commencement of the fieldwork phase and subsequently granted on 9th December 2014. The granting of ethical approval for the study more broadly ensures that it is designed and assessed on an ongoing basis according to the principles outlined by the ESRC (2012).

b) *Research staff and participants must normally be informed fully about the purpose, methods and intended possible uses of the research, what their participation in the research entails and what risks, if any, are involved.*

This aspect of research ethics speaks towards the notion of 'informed consent' in social science research; that is, as Bryman (2008: 712) notes, the principle that 'prospective research participants should be given as much information as might be needed to make an informed decision about whether or not they wish to participate'. To comply with this requirement, the completion of informed consent forms and participant information sheets was made part of the interview process, making clear to participants the aims and objectives of the study and of their rights in the process. This approach was similarly employed with respect to the participatory workshops. Participant information sheets were emailed to each of the interviewees prior to the interviews and carried in person in the event that they had not engaged with them before the interview. Whilst every effort was made to record informed consent as a hard copy, due to the remote nature of some of the interviews during the extensive phase it was necessary to confirm that respondents had reviewed the participant information sheets and recap key points at the commencement of each

interview. The use of such a procedure is not against social science convention (Punch, 1994) in interviewing and, indeed, the possibility that such a format may be utilised was allowed for in the research ethics application. At all times, respondents retained the right to refuse to take part in the study and to review and edit interview transcripts where requested.

c) *The confidentiality of information supplied by research participants and the anonymity of respondents must be respected.*

Confidentiality was an important issue throughout the research process and was particularly important in view of the sensitive nature of the access that was provided by the Energy Saving Trust and Welsh Government to the *Ynni'r Fro* programme. In the context of interviews, recordings were kept in a secure environment along with personal details in line with the Data Protection Act 1998; although there was no specific intention to collect data subject to the provisions of the Act. Alpha-numeric identifiers were employed at the level of cases, stakeholders, and individuals, and all care was taken to ensure that no information was individually attributable in the course of the textwork. At the level of cases, in the spirit of research informed by a participatory approach, the communities in question were themselves asked to determine whether they would like to be named in the findings; otherwise pseudonyms were used to protect anonymity. Alpha-numeric codes, generated to identify individuals, were kept in secure files electronically. All participants were given the opportunity to withdraw from the process and, where requested, the option to receive a copy of their transcript. As appropriate, the privacy of the interview and participatory sessions were managed by ensuring that relevant settings were agreed upon in advance.

d) *Research participants must take part voluntarily, free from any coercion.*

As described elsewhere, all respondents were given the option to participate in the study and be involved to a greater or lesser extent with respect to the in-depth case work in the intensive phase. The opportunity to withdraw from the study was made known to all participants in the course of the research. The requirement does raise interesting questions with respect to the enrolment of community members in the in-depth case work stages of the fieldwork as far as internal group pressures to participate may play a role. Mitigation of this risk was facilitated where possible through direct contact with prospective participants, regardless of their role and status within the groups in question, in order to explain the value of the research both locally and in the context of the aims and objectives of the study, and by treating such participants as 'co-researchers' in the spirit of participatory methodologies.

e) *Harm to research participants and researchers must be avoided in all instances.*

The requirement to avoid harm in social science research can be interpreted in different ways in view of the multifaceted way in which 'harm' can be defined. Bryman (2008: 118),

following Diener and Crandall (1978), emphasises that consideration should be given to such factors as 'physical harm; harm to participants' development; loss of self-esteem; [and] stress'. For this research, it was initially expected that the involvement of fuel poor participants who may be legitimately classed as 'vulnerable' would require careful consideration in this respect. However, as outlined earlier in this chapter, engagement with vulnerable groups did not end up being a key feature of this research and so no unusual risks were presented. Moreover, care was taken throughout the course of the study to adhere to the requirements of justice in research; as Nind (2008: 5), following Booth (1998), notes: 'Qualitative research can access the perspectives and experiences of oppressed groups lacking the power to make their voices heard'. Particular attention was devoted to researcher-participant power relationships (such as through the participatory workshop) and the study is underpinned by respect for all participants, their circumstances and for the co-construction of knowledge based on a collaborative rather than exploitative set of processes (Karnieli-Miller et al, 2009).

f) *The independence of research must be clear, and any conflicts of interest or partiality must be explicit.*

The issue of research independence is particularly pertinent considering the project is partially funded by WG. The political context surrounding the study was made clear in advance to all potential participants and, indeed, was employed as a strategy to generate interest in the study from amongst the sample(s); such that the contribution made by stakeholders and community groups might strengthen the position of community renewables in Wales. The relationship between WG and the researcher is further governed formally by a research protocol drawn up in December 2013.

This chapter has set out the attempts made to ensure the robustness and authenticity (Lincoln et al., 2011) of this research. This has been undertaken by attending to issues of dependability and credibility (Bryman, 2008) across the research design, including worldviews, methodological choices, data gathering, coding, and analysis. This rigorous approach creates a solid basis upon which to structure, in the chapters that follow, an accurate account, critical narrative and plausible explanation of the role of CRE in improving social justice within and beyond the energy system. The following chapter commences this analysis by examining the motivations of CRE-developments across Wales included in this research. The findings presented in the following empirical chapters are discussed in relation to existing literatures throughout, as well as in the substantive discussion and conclusions chapter which completes this thesis.

4 Understanding Community Renewables in Wales

4.1 Introduction

Understanding how social justice might be (re)negotiated throughout energy systems is a fundamental precursor to the realisation of any low carbon future aspiring towards the aims of sustainability (Agyeman et al 2003; Agyeman, 2005). Through the lens of energy-related issues such as fuel poverty (Boardman, 2010; Middlemiss, 2017), it is evident that a preponderance of adverse distributional impacts can be associated with large scale, centralised energy systems—predominantly characteristic of the context in Wales and the United Kingdom more broadly—and that levels of equality, opportunity, and access in relation to energy are both spatially contingent and unevenly distributed (Hiteva, 2013). The occurrence of such conditions has been a contributing factor towards opening up space for the practice of energy alternatives such as those embodied by emergent and contested forms of energy production and management at the local scale; characteristics that are collectively typical of the terrain of 'community renewable energy' as it has progressively been configured in Wales. As (re)localised initiatives under the auspices of CRE become increasingly pronounced, understanding can be sought, through the multiplicity, as to the differential ways in which such models and variations of project specific forms suggest energy relations might be reconfigured in order to address the wider issues of distributive and procedural fairness within energy systems.

The empirical sections of this thesis thus begin with discussion generated by the first of the research questions guiding the study: *How can the motivations of the community renewable energy sector in Wales be understood? How do these drivers help understand the energy justice implications of community renewables?* This question provokes an in-depth exploration into the quality and character of CRE in Wales as a broad category, introducing evidence from the Welsh context in order to examine the proposition that CRE is an appropriate lens for mediating social justice in energy systems. This question is unpacked through an examination of the motivations expressed by project leaders and participants included in CRE initiatives involved in this study. In this respect, the current state of knowledge of the CRE sector in Wales is relatively weak. Such issues are relevant for justice because they configure the scope and trajectory of potential outcomes.

As such, the chapter builds on the early framework developed by Walker and Devine-Wright (2008) and seeks to disrupt any notion that CRE is a simple or straightforward phenomenon

centred around the 'green' ambitions of communities. Indeed, drawing on research that highlights the need to consider community renewables initiatives as places of struggle, contestation, and inherently plural challenges (Fischer et al, 2017; Mitzinneck and Besharo, 2019) this chapter will demonstrate that a defining characteristic of CRE projects is their very heterogeneity embodied in the profoundly diverse and multi-faceted nature of the aims, objectives, and outcomes of projects in situ. In this sense, projects are reflective further of the varied spatial and cultural contexts in which specific projects find their material expression (Creamer et al, 2017). Whilst this argument contains echoes of early assessments of the incipient community renewables sector in the UK emphasising the malleability, flexibility, and diversity of emergent local energy forms (Walker and Devine-Wright, 2008), the evidence presented here takes up the call for more extended, sensitive, and in-depth evaluation; assessing the extent to which 'localized community energy projects can add up to more than the sum of the "small parts" of renewable energy generation and carbon reduction' (Walker et al, 2007: 78). The chapter thus employs in-depth, qualitative empirical data from the present study to introduce a critical framing of CRE in which its boundaries reach far beyond the aims of reducing greenhouse gas emissions; confirming and extending more recent trends within the extant literature (Wiersma and Devine-Wright, 2014; Fischer et al, 2017), with particular emphasis on European experiences of local energy forms (Becker and Kunze, 2014; Bauwens, 2016), which highlight the need for more a critical perspective towards the meaning of CRE within and beyond the spaces in which it is practiced.

The effects of framing CRE as such are two-fold. Firstly, constituting a novel contribution to understanding the underlying nature of community renewables as a category in its own right. Indeed, whilst there is a small body of research on community renewables in Wales in the last few years (Bere et al, 2017; Haf and Parkhill, 2017; Haf et al, 2019), there is a gap in understandings from a cross-sectoral perspective and from the standpoint of relevance to issues of justice, equity and fairness. Secondly, and perhaps more importantly for the argument presented here, this analysis of CRE-motivations in Wales foregrounds CRE-development as an arena for the enactment of energy justice by extending how we think about what it is that CRE projects do in practice, with respect to which there remain gaps in current understandings (Creamer et al, 2019). Evaluative research on CRE in its emergent stages, which contemplated the motivations associated with individual projects on the ground, explicitly linked the heterogeneity of project specific forms to the experimental nature of development at the time (Walker et al, 2007). Such observations emphasised the need for projects to demonstrate wider 'impacts more subtle, distant in space and time or accumulative, which a multiplicity of small projects can help realise' (Walker et al, 2007: 79) from amongst that complexity. However, understanding CRE as an

expression of locally-held ambitions as a core component of what CRE means in practice, beyond any attributions to its early experimental status, situates the category as a useful lens through which to explore social justice and equity implications against the wider backdrop of low-carbon transition processes. In this view, CRE is at once formed out of and shaped by the context in which it is located (see also Creamer et al, 2017; van Veelen, 2018), whilst ultimately transcending that context by virtue of the quality of the actions it both underpins and unlocks.

Whilst being mindful not to suggest that CRE is a panacea for dealing with addressing issues of justice within and beyond the energy sector, the chapter thus extends the distributive, procedural/participatory, and recognition justice (Schlosberg, 2004) parameters of CRE as a category; introducing in-depth evidence pertaining to the range of motivations and aspirations associated with projects in practice. In so doing, this chapter directly depicts the constitution of the emerging CRE sector in Wales, positioning it as a mechanism through which social justice in energy systems can be reformatted from the ground up. In elucidating and outlining the character and quality of community renewables in Wales, this chapter establishes the ground for addressing the remaining research questions, enabling an in-depth exploration of the distributive, participatory, and transformative implications of CRE projects throughout the rest of the thesis. These issues are relevant for justice because they configure the scope and trajectory of potential outcomes, and the relevance for community renewables for improving social justice within and beyond the energy system.

4.2 Community Renewables in Wales

Whilst the community renewables sector across the UK has grown in recent years, very little attention has been paid to the justice implications associated with the movement towards more local and distributed patterns of energy production. The very obvious carbon reduction credentials associated with both community- scale and renewable energy projects more generally make it tempting to conclude that on the surface CRE appears to do little beyond its contribution to reducing greenhouse gas emissions. Such a framing of the value of CRE is compounded by the overarching motivations associated with local energy initiatives in policy, broadly articulated in terms of the role of CRE in contributing towards environmental objectives at the scale of both national and regional governments (Welsh Government, 2012; DECC, 2014). Whilst it is without doubt that numerous community-scale energy projects stretching across the UK have been geared primarily towards environmental objectives, any assumption that such a view is illustrative of the local energy sector as a whole in the UK or amongst its constituent parts represents a blind spot towards understanding the full scope of what CRE means in practice (Wiersma and Devine-Wright, 2014; Fischer et al, 2017). Indeed, the whole discussion around the justice implications of

CRE itself implies a more wide-ranging set of processes, outcomes, and repercussions associated with CRE as a phenomenon (Forman, 2017; Lacey-Barnacle and Bird, 2018). As such, explicit consideration of the spectrum of drivers of CRE thus represents a central starting point for fully assessing the justice implications of its appearance as a feature of the energy landscape both in Wales and across the UK more broadly, and for recognising the differential ways in which CRE as a practice might improve social justice in energy systems.

4.2.1 Contextualising Project Rationales in Wales

Between 2010 and 2015, community renewables in Wales was largely developed under the auspices of the *Ynni'r Fro* programme, functioning as the Welsh Government's first flagship community renewables package and utilising European structural funding to support community- scale development of renewable energy across Wales. Owing to the sponsorship of the Welsh Government, this research was able to access projects involved in YF, resulting in extensive cross-sectoral engagement with 26 distinct CRE projects, developing 33 schemes, spatially located throughout various local authority areas across Wales[28]. This depth and breadth of coverage of the sector provides significant insight into the motivations associated with the development of projects throughout the country and across the lifetime of the YF programme.

Whilst the projects involved reflect a variety of motivations as will be discussed, it is worth noting at the outset that the YF programme was never originally developed with CRE itself as the express goal. Thus, as one interviewee from Welsh Government noted: 'the main drivers or the main KPI's really were around creating employment opportunities rather than renewable energy output … it's always been driven or measured in terms of the employment opportunities created' (WG Official, Stakeholder Interview). This history is reflective of the fact that the YF programme was seen as a way to exploit funding available through the European Regional Development Fund, which itself aims to 'strengthen economic and social cohesion in the European Union by correcting imbalances between its regions' (European Commission, 2014). Thus, in some respects, *Ynni'r Fro* was an accidental CRE programme, shifting in emphasis from creating employment to fostering CRE development in response to barriers represented by EU 'state aid' regulations. Such requirements prohibit public authorities from potentially distorting competition and trade within the EU by using taxpayer-funded resources in a way that gives advantage to the organisations in receipt of assistance (DBIS, 2015). The existence of the state aid restrictions, as one of the technical

[28] Local authority area was the unit of spatial location used to measure distribution of projects during the YF programme and has accordingly been maintained here.

development officers for the YF Programme outlined, entailed that 'the programme went effectively into tailspin for about 18 months' (Project Organiser, Wind, Pembrokeshire) almost immediately following its launch in January 2010. Indeed, the diversity of project motivations assembled under the umbrella of *Ynni'r Fro* in view of this provenance is perhaps unsurprising considering the troubled early development of the programme which reveals its roots as much more 'social' than 'environmental' in aspiration; potentially shaping the character of the projects involved and laying the groundwork for the development of a thoroughly more diverse CRE sector than might ordinarily be considered through the lens of the 'environment' alone. Whatever the rationale outlined at the level of the Welsh Government, the array of project motivations exposed during the course of the fieldwork phase depicts a diverse and vibrant fledgling CRE sector in Wales; albeit one that is struggling to get to its feet following the end of the feed-in tariff (Rydin and Turcu, 2019).

In order to highlight project motivations, three iterations of coding were undertaken to establish explicit project rationales across each of the CRE projects involved in the study; with each iteration of coding collapsing the range of rationales until a set of categories were identified and furnished with the relevant aims and objectives as pursued by their constituent projects (Saldaña, 2013). The final range of categories determined reflect eight types of project aims across Wales outlined as: 'environmental', 'social environmentalism', 'self-sufficiency', 'community resilience', 'cultural regeneration', 'service-gap', 'social "added value"', and 'poverty- driven' projects. Whilst these categories are representative of the heterogeneous range of project motivations identified and reflective of the context in Wales, in view of similarities between some of the explicit aims in a number of the categories, a final stage of coding was undertaken in order to assemble analogous categories under broader headings, thereby capturing the diversity of project rationales involved whilst acknowledging similarities between motivations in terms of overarching goals. Community renewables project rationales in Wales, each of which shall be covered in depth throughout the remainder of this chapter, are thus explained in terms of four broad approaches: 'environment', 'just sustainabilities', 'cultural resilience', and 'social regeneration'. Specific project-types are thus correlated under these headings. It is important to understand these rationales at the outset of this thesis, as they are highly relevant for shaping the potential trajectory of projects and outcomes on the ground.

The distribution of projects between categories suggests that the most frequently cited motives associated with projects in Wales relates to those pursuing explicit environmental themes. This contrasts with research on motivations elsewhere in the UK, which shows a much more widespread pattern of rationalisations (Wiersma and Devine-Wright, 2014). Whilst *environment* thus forms the largest distinct category, the remaining bulk of the

projects, comprising over two thirds of the sample involved in the study, encompass a much wider set of aspirations. The motivations underpinning these projects differ ranging from a more diluted emphasis on environmental objectives, typically associated for instance with putting an environmental 'spin' on what are ostensibly community asset development ambitions, to projects with little to no explicit environmental rationale at all. In the latter case, such projects are evidenced as using natural resources in a much more instrumental way to achieve altogether different aims associated with what might be considered more typically social and cultural aspirations (Forman, 2017; Haf and Parkhill, 2017). Indeed, projects exhibiting primarily environmental rationales comprise only a third of total projects involved in this research. The diversity of project motivations visible on the surface of the data are thus indicative of deeper and more wide-ranging repercussions stemming from the quality of the actions these projects seek to undertake and the ability of projects to live up to their characteristically more social, economic, and cultural goals. In this respect, following Űrge-Vorsatz et al (2014), justice and impacts are understood as not simply reducible to discourse.

In this view, the potential for extending social justice in energy systems can be seen to flow through the very heart of CRE objectives in Wales. In order to understand the diverse depth and breadth of motivations involved and thereby foreground an examination of the energy justice implications of CRE-development more broadly, each of the approaches and categories identified will be considered in turn. In doing so, objectives, boundaries, and characteristics associated with each of the four broad approaches and component parts are explored.

4.3 'Environment' Approaches

Whilst three of the four broad approaches to community renewables in Wales are comprised of multiple categories containing analogous aims, the first broad approach here identified reflects alone the largest project category defined across the corpus of data. Projects sampled thus pursued aims related explicitly to the aforementioned environmental credentials imbued throughout community renewables which, as renewable energy projects, community renewables naturally provide. Projects falling under this category thus typically referred to aspirations towards carbon reduction priorities, climate change objectives, reducing carbon and ecological footprints, and developing further renewable energy projects.

> *Our company objects … are to promote for the benefit of the public all forms of energy conservation and sustainable and renewable energy, advance education in the same context, and then to … apply the residual of all profits from the turbine each year for the benefit of*

> *Pembrokeshire … for the express purposes of sustaining and encouraging all forms of energy conservation and all forms of sustainable and renewable energy (Project Organiser, Wind, Pembrokeshire)*
>
> *… the project was driven fundamentally by a collective need to address climate change and provide local energy generation and therefore a reduced carbon footprint (Project Organiser, Wind, Powys)*
>
> *… I think the whole point of it is climate change, the starting point was climate change, so I wouldn't be happy giving [that] up (Project Organiser, Wind, Carmarthenshire)*

A substantial proportion of projects therefore saw one of the key benefits as simply implicit in the development and energising of the actual schemes involved. Beyond this, a further avenue for implementing environmental objectives was through actively reinvesting the community benefit funds emerging from the projects into the local community with the express aim of supporting carbon reduction activities. As the project organiser for one project in particular explained:

> *... amongst the actions associated with that objective was to train up community members to take practical advice to their communities, to give away things like compact fluorescent lamps, to invest in community halls or schools and subsidise insulation materials, to try and help schools to change to green tariffs and especially as well to try and provide energy audits and to try and increase the take-up of home energy checks (Project Organiser, Wind, Powys)*

Community renewables projects exhibiting primarily environmental approaches were in general terms almost exclusively motivated by a desire to make a difference to climate change and reduce greenhouse gas emissions. A further number of these saw scope through their objectives for driving further environmental benefits by actively and deliberately steering local action through their community benefit funds along similar lines. Thus, even then in the realm of what are the most explicit and ostensible environmental projects within the sample, there exists the potential for wider knock-on impacts at the community scale resulting from the desire of such projects to spread environmental benefits in whatever shape that takes in terms of associated actions and projects within the local communities on the ground. As such, the prospect of wider justice affects, even from projects exhibiting primarily environmental approaches, cannot be overlooked.

4.4 'Just Sustainabilities' Approaches

The second broad approach to community renewables development identified in Wales is composed of the individual categories of 'social environmentalism' and 'self-sufficiency'. Together these are considered to be indicative of a 'just sustainabilities' approach to the

development of the sector across the country. In this view, a just sustainabilities approach builds on discussion in the literature review reflecting the 'equity deficit' (Agyeman, 2005: 44) prevalent across dominant discourses of sustainability. In this view, environmental aspects are foregrounded as paramount whilst considerations of social needs, welfare, economic opportunity, and environmental limits at a more local scale are marginalised within discourses of sustainability (Agyeman et al, 2002). Just sustainabilities is thus defined as 'The need to ensure a better quality of life for all, now and into the future, in a just and equitable manner, whilst living within the limits of supporting ecosystems' (Agyeman et al, 2003: 5). Projects exhibiting just sustainabilities rationales thus reflect concerns within the associated categories and projects for what are ostensibly environmental rationales coloured by an explicit concern with connecting the bigger picture to local context. As such, projects in this approach seek to embed environmentalism throughout processes of community regeneration whilst reinforcing the notion of living within the limits of resources and supporting ecosystems. Such perspectives further highlight the need for solutions and ways of living that are locally-appropriate, eschewing the idea of a 'one size fits all' approach to environmental issues and invoking the prospect of multiple sustainabilities in practice. As noted, this approach is comprised of two separate rationale-types which shall be addressed in turn.

4.4.1 'Social Environmentalism' Rationales

The category of 'social environmentalism' reflects those projects within the study where otherwise environmental rationales were conditioned by a commitment towards driving social objectives within the context of the communities in question. The position is summarised succinctly by the organiser of a wind project in Pembrokeshire falling into this category who emphasised that 'most environmental action is about social justice as well' (Project Organiser, Wind, Pembrokeshire). In this view, whilst classic environmental approaches were still important, there was a general sense that the pursuance of environmental objectives ought not to be separated from the context in which people live, suggesting that wider social and environmental aims are intricately intertwined and that the former is indeed dependent on the latter. Indeed, as one project noted:

> *We shouldn't be setting our social stuff on what we expect in terms of our aspirations around poverty, what we need to do is look at what are the environmental limits and then work backwards (Project Organiser, Hydro, RCT)*

The projects in the study identified as social environmental in character exhibit a diversity of specific project goals, including the expression of aspirations towards carbon reduction, local regeneration objectives, increasing local ownership, and developing local enterprise.

Environmental objectives were thus seen to be realisable within the broader context of CRE as a driver for patterns of community regeneration, community development, and local reinvestment of financial returns.

> *We're all much more motivated by the environmental side in the knowledge that, for example, if the finance can be fed into improving people's homes, to reducing poverty, to really creating projects and maybe businesses that have an environmental bent, those are more our motivations I think (Project Organiser, Wind, Pembrokeshire)*

> *… it is primarily carbon emissions but also, I think we'd probably say local engagement and decentralisation … it brings money into the area to be spent … [and] it also makes people engage more with what electricity is and where it comes from, I think (Project Consultant, Hydro, Denbighshire)*

Such rationales are evident further through the lens of one organisation who, whilst developing their own project, similarly sought to assist other community groups in the local authority area to develop their own and observed of one specific project that:

> *… half the money goes to support a community café and the other half of the money goes to support childcare provision, which means that you've got a certain number of people who are getting subsidised childcare place, they can then access work, they bring money back into the community, whether they spend that on insulation on the house or not (Project Organiser, Hydro, RCT)*

Projects exhibiting social environmental ambitions thus sought, as part of their core aims, to explicitly rationalise the expansion of CRE as a community development tool (see also van Veelen, 2017a) through which to support environmental objectives both at a broad scale but, more potently, by performing and unlocking inchoate environmentalisms through wider local and social objectives. This is captured by the commitment of projects falling into this category to advance social aims through initiatives that can be given an 'environmental bent' both in terms of the way they are physically developed and additionally through the co-benefits of such development (Űrge-Vorsatz et al, 2014; Sovacool et al, 2017). In particular, in some projects the explicit and latent expression of desires towards widening the notion of 'recycling' to encompass economic activity as a community development tool in itself is a further avenue for embedding and widening incipient environmentalisms in this context. As one project explained:

> *I think trying to foster that attitude so that a lot of what you do … [supports] that local economy, ownership of, recycling of that economy and not spending it out in Tesco or watching people putting up turbines who are then going to just take all the money and then invest it out of the country… If you can foster that from the very smallest thing you do*

> *up to the biggest thing you do then that's only got to be a good thing whether people know it's happening or not (Project Organiser, Wind, Pembrokeshire)*

4.4.2 'Self- Sufficiency' Rationales

Projects exhibiting what have been defined here as 'self-sufficiency' rationales to CRE-development predominantly reflect concerns associated with general patterns of resource use and consumption characteristic of modern societies. Such rationales are rooted in perceptions that (over-) consumption is one of the primary drivers of global environmental change and hence reconfiguring human relationships with resources is a pathway towards sustainable living (Hobson, 2002; Walker and Day, 2012). Projects falling into this category were thus typically characterised by more muted or latent concerns with environmental issues, not necessarily eschewing discussions of the importance of environmental rationales in the context of community renewables development, but rather explicitly highlighting the resource dimensions associated with environmental degradation, energy security, and patterns of inequality.

> *I've kind of always had a sense for the inequalities in society and I think that, actually, I came to a realisation at some point that I trace that back, essentially, a lot of that back down to control of natural resources … It's more the ideology of helping community control of energy security then necessarily climate change for example. It was about, actually, we need to produce this stuff locally and own the means of production (Project Organiser, Solar, Swansea)*

> *… what I think is vital for communities like us [is] to set an example to say that if we can get together and become self-reliant using our own renewable energy then anybody else can do that in their own communities (Project Organiser, Hydro, Ceredigion)*

Moreover, rationales centred on contesting resource consumption and increasing self-sufficiency often snowballed out of wider discussions about local resource use where energy was just one of a set of resource-related objectives. In this regard, one hydro project in Rhondda Cynon Taf falling into this category, which operated first and foremost as a woodlands group, utilised the landscape as a community development tool set within the premise that 'natural resources could be used to alleviate, could assist communities with issues around deprivation' (Project Organiser, Hydro, RCT). The organiser of a solar project similarly in this category highlighted their core aims as related to food production rather than energy *per se*—'we bought the land specifically to do something around food' (Project Organiser, Solar, Swansea)—eventually snowballing into a focus on CRE under the auspices of extending local control over natural resources. The relevance of such observations relates to the overarching theme of using resources as a tool to connect

people to place, thereby creating more self-sufficient communities looking across the entire spectrum of social and environmental needs in which energy forms just one part. In this way, self-sufficiency rationales for CRE development seek to contest 'the social restructuring of space that offers to each person the constantly renewed experience that the centre of the world is where he stands, walks and lives' (Illich, 1974: 88). Particularly interesting in the context of groups exhibiting self-sufficiency rationales are the underlying suggestions that local control of resources and patterns of local ownership more generally are seen as vehicles for breaking patterns of inequality. In this view, 'whoever's got control, how those things are supplied and distributed—whether it be money, energy or food—governs the people that don't' (Project Organiser, Solar, Swansea). In this respect, research has shown that participation of local people is often neglected in natural resource management (Hohenthal et al, 2017). Welsh experiences of CRE challenges this by showing how community renewables might be considered as a mechanism for shifting patterns of resource use to more socially and environmentally equitable models whilst, at the same time, allowing communities to decide, on their own terms, how they ought to benefit.

4.5 'Cultural Resilience' Approaches

The third key approach to the development of community renewables in Wales emerging from this research is characterised by aspirations to foster, rebuild, and maintain what is considered to be a distinctively Welsh culture whilst, at the same time, enhancing the assets of local communities of place (Dunham, 1986). Framed here as 'cultural resilience' approaches to community renewables, this set of projects encompass two rationale-types comprising (i) 'community resilience' rationales—the second largest project category across the corpus of data—further coupled with (ii) projects exhibiting 'cultural regeneration' rationales. The identification of an overarching cultural resilience approach towards CRE development reflects a movement away from the emphasis in the foregoing sections on the environmental benefits of community renewables. Instead, projects falling into this category have at their core a more explicit emphasis on the place-based value of CRE for projecting and protecting Welsh cultural identity and building local community cohesion, with any environmental benefits emerging primarily as background motivations.

Such characteristics bring together Bomberg and McEwan's (2012) concept of 'symbolic resources' with what both Raco and Sweet (2009) and Shaw (2012) term a 'radical resilience agenda'. In this view, the cultural resilience approach identified in Wales reflects a desire to strengthen 'non-material resources, such as identity, legitimacy, authority or the quest for autonomy' (Bomberg and McEwan, 2012: 437) through an approach to resilience that contests incumbent social and economic arrangements and practices and 'opens up

opportunities for political voice, resistance, and the challenging of power structures and accepted ways of thinking' (Shaw, 2012: 309). Cultural resilience approaches thus combine the more typical survival strategies associated with traditional understandings of resilience based on material 'discourse[s] of … uncertainty, vulnerability and recovery' (Shaw, 2012: 309) with a forward-looking normative discourse that 'involves attending to possibilities for life, not just survival' (Leach, 2008: 13). Indeed, there is a significant amount of overlap between the two rationale-types within the cultural resilience category, with the distinguishing feature expressed primarily in terms of the character of the discourse underpinning the rationales put forward by the projects in question. As shall be discussed, projects exhibiting 'community resilience' rationales tend to project a more positive discourse of revitalising localities and communities in contrast to 'cultural regeneration' rationales, which project a more defensive discourse of supporting community cohesion in response to perceptions of a threatened Welsh cultural identity. In this respect, research has shown how so-called 'incomers' bring both diversity and intrusion into established rural ways of life (Mair and Duffy, 2020) that is highly relevant for understanding these nuances. The divergent discursive strategies employed between the two rationale-types together emphasise a Welsh cultural resilience approach to CRE development focussed on a 'dynamic process in which change and constant re-invention provide the grounds for social, economic, and/or environmental strength' (Raco and Sweet, 2009: 6) offered by the re-localisation of energy infrastructures.

A pertinent feature amongst projects falling into the cultural resilience category is their situation exclusively in local authority areas in North Wales, divided between Gwynedd and the Isle of Anglesey. Such a distinctive feature of CRE development in Wales is suggestive of an incipient regional resilience (Bristow, 2010) 'which sees local and regional economies developing more localized and environmentally benign development trajectories which do not necessarily depend on continuous economic growth' (Bristow and Healy, 2014: 931). The concentration of initiatives both in the same location and exhibiting such similarities in terms of rationales is a highly distinctive feature of CRE-development across the country which renders the picture in North Wales one of particular interest for further research. As noted, the cultural resilience approach is comprised of two separate rationale-types each of which shall be considered in turn.

4.5.1 'Community Resilience' Rationales

Projects characterised by 'community resilience' rationales commonly reflect a collective ambition towards ensuring that any income generated through their schemes are reinvested to support a diverse range of aims within the local community (see also van Veelen, 2017a).

In this view, CRE- infrastructure is effectively considered as a place-making device through its ability to contribute towards the improvement of local communities both in terms of services and opportunities offered now and in the future.

> *… We kind of spun out from what was essentially a rant by the person who is now the chairman because the profits [of other local schemes] were perceived as going out of the area… You know, you're using local resources, and the profits are just disappearing somewhere … I was much more interested in seeing us do something positive that would feed money back into… any kind of community project that accelerates or builds on sustainable development agenda type stuff. It's either on energy security, or insulation, or training… You know, something positive… Not Christmas lights! Something that'll make more money for somebody else in the future, the kind of stuff that maybe builds on community resilience or something like that … It's about social gains isn't it… Or community gains … What I do see is of benefit to me as I get older is a really good resilient community because it's essential (Project Board Member, Hydro, Gwynedd)*

> *… Generating a sustainable source of income to be spent in the local area with the primary goal of creating social and economic gain and environmental gain is very important. So I say the first thing is generating a sustainable source of income but then using that locally and using it to create a healthy and sustainable community as well; and part of creating a healthy community obviously is looking at the environment, fuel poverty, creating jobs, rejuvenating the high street (Project Organiser, Hydro, Gwynedd)*

> *… Somehow we would put the money back into the community again … whether it would be by share issues for people that live in the vicinity, or whether it would be by providing grants for projects in the community, but certainly something that we could do to help just develop the community and make life better for everybody here (Project Organiser, Hydro, Gwyned)*

Of particular importance for communities and projects exhibiting such aspirations is a belief in the relevance of such activities for improving and safeguarding an underlying sense of cultural identity within the communities in question. In this view, 'culture is seen as a set of [particular] attitudes, practices and beliefs that are fundamental to the functioning of different societies' (Throsby, 1995: 202). Crucially, the enactment of social and economic objectives are considered here to contribute towards the nurturing of local cultural identity, enhancing and reinforcing a sense of collective local solidarity at the community scale by creating more resilient communities, explicitly demonstrating responsibility towards inhabitants, and by invoking positive visions of more socially and environmentally sustainable communities over the long term.

> *… It's all about sustainability and it's environmental sustainability, social, and even cultural and linguistic sustainability…We wanted to find a way to raise revenue which we could spend within the community*

> *without seeking the permission or blessing of any other group … We wanted and needed the independence to follow our own agenda … and we've got some cultural issues here because we've got the Welsh language and we'd identified that we would also like to sustain that if we could (Project Organiser, Wind, Anglesey)*
>
> *… The community groups in the quarrying areas here have gone because the quarries have shut and lots of them have just closed down. But in Blaenau, because there are still elements of that existing and the groups are still there - so they have gardening groups, they have, you know, various art groups or poetry groups or a choir and all that kind of stuff - and the Communities First people have been working with them just to strengthen them and build on what was already there. It would be very different in a community like mine for instance because the quarries have been shut since the late 60s and those groups, if they ever existed, have long gone and the people who knew whether they existed or not have also gone …I think they've been gone for too long to rejuvenate anything but it [the CRE project] might create new ones which would be quite nice (Project Board Member, Hydro, Gwynedd)*
>
> *… But it goes back to this desire to create a healthy and sustainable community on all levels because sustainability isn't all about the environment it's about economic sustainability, social sustainability, it's about educating people, it's about, you know, how to kind of insulate your houses better and respect the environment, it's creating a healthy society [and] I think that's the main aim (Project Organiser, Hydro, Gwynedd)*

Community renewable energy infrastructure thus plays a distinct enabling role in the context of community resilience rationales to the extent that it is effectively rendered a source of tangible cultural capital (Throsby, 1995; 1999). As Throsby (1999: 7) highlights:

> *These assets give rise to a flow of services that may be consumed as private and/or public goods entering final consumption immediately, and/or they may contribute to the production of future goods and services, including new cultural capital.*

The development of CRE assets in this view thus enact a particular set of material and cognitive outcomes within their constituent communities, performing a dual function as agents of (material) social and economic change whilst portending an instantaneous transformation in the (cognitive) cultural capacity of such communities to effect and realise change on their own terms.

> *It's just there is this range of motives amongst the people and, you know, again some of it is driven by the need to find ways of funding social needs which are being badly affected by cuts in existing service provision, you know, the medical services et cetera, and care for the elderly … and again this feeling of we've got to stand on our own two feet comes through in that as well … a very important issue is the sort of social ownership of the venture whereby, you know, it would be good for communities to stand on their own two feet rather than be spoon-*

> *fed bigger morsels from other sources, I think that's a hugely important aspect is developing strong communities (Project Organiser, Wind, Anglesey)*
>
> *But you just want to give people that capacity to be able to deal with it on their own… Without having to depend on somebody from the outside to do something about it. And I think, also, it gives people that idea of kind of being self-reliant, of having the confidence to be able to do things themselves (Project Board Member, Hydro, Gwynedd)*

Considered in this light, the value of community renewables, especially for peripheral and disadvantaged communities, is significant to the extent that it allows such communities to regain a sense of autonomy by exerting a level of control in response to the pressures created by austerity and historic perceptions or patterns of disenfranchisement (see also Becker and Kunze, 2014; Haf and Parkhill, 2017). Thus, conceived in terms of community resilience rationales, CRE offers a pathway for peripheral and disadvantaged communities to exercise an agency across a range of areas of social reproduction in their local communities that may otherwise be unattainable.

As has been noted previously, the spatial location of projects exhibiting community resilience rationales reflects an exclusive distribution across the North Wales region which, as has been evidenced over the course of the study, is widely considered to be marginal to the interests of the South Wales Government in Cardiff.

> *This area of North Wales as I'm sure you know is not a very… It's a poor area generally, there's a lot of economic difficulties here (Project Organiser, Hydro, Gwynedd)*
>
> *… Because of economic decline we need to be future proofing our communities [in North Wales], you know, maybe in South Wales they feel a bit safer, they're closer to Cardiff (Project Organiser, Hydro, Gwynedd)*
>
> *North Wales in terms to Welsh Government is distant, we're not that far from Welsh Government so there's a guilt factor that they have to do something for us every now and again … Maybe that reliance on Government to throw in a short-term solution is still around down here whereas in North Wales they've given up on that completely (Project Board Member, Hydro, RCT)*

The evidence of such rationales indicates a sense of detachment from the rest of the country and is suggestive of a form of CRE exhibiting a profoundly different character to what has been observed elsewhere in Wales. In this view, CRE assumes an overtly political personality which is considered an expression of a distinct cultural identity from that espoused by the government in Cardiff. Such a conceptualisation is reminiscent of a form of CRE development that is akin to what Becker and Kunze (2014) identify as 'collective and

politically motivated renewable energy', whereby CRE development is instrumental to the achievement of more political aims and objectives as specific projects negotiate 'political aspirations beyond being part of the change or transition to renewable energy' (Becker and Kunze, 2014: 181). Further evidence of the distinctive nature of community renewables development under community resilience rationales in North Wales is indicated by the fact that, since the end of the fieldwork phase of the study, *Cyd Ynni*—a consortium of CRE projects located in and representing the specific interests of the sector relative to the particular needs and circumstances in North Wales—has been established in the north of the country. Given that community renewables in Wales is already represented under the auspices of both Community Energy Wales and Renew Wales, the establishment of an explicit regional consortium in North Wales highlights the ways in which CRE-development assumes a distinctive and purposive character in the region.

However, whilst such rationales adopt a largely positive view of how community renewables can facilitate local change, differences and patterns of distinct cultural identity inherent in North Wales (Machura et al, 2019) are even more stark considered against the more pejorative discourses associated with the 'cultural regeneration' rationales also constitutive of cultural resilience approaches considered below.

4.5.2 'Cultural Regeneration' Rationales

The category of 'cultural regeneration' reflects projects that express many of the same aspirations characteristic of the foregoing 'community resilience' rationale but more explicitly cast in terms of more defensive discourses resulting from actual or perceived threats to Welsh cultural identity. Albeit a small category, projects were similarly located exclusively in North Wales where, as has already been illustrated, a more distinctive shared Welsh cultural heritage and identity has been evidenced than elsewhere in the country during the course of the study (see also Machura et al, 2019). In this view, Welsh language in particular is effectively mobilised as a securitizing discourse (Buzan et al, 1998) to insist on more local control of development in order to build opportunities in North Wales and reverse patterns of regional decline. Such reactions are perhaps inevitable for, as Throsby (1999: 6) notes, 'a shared language provides the means by which cultural messages are represented and transmitted' thereby enabling calls for special measures to ensure its continuity in response to local perceptions of threat.

> *I think, you know, because we live in a very Welsh area with over 70% of the people in the village, or 80% of the village speak Welsh as their first language, but there's lots of kind of holiday parks so we see the influx of people for their holidays but also people who are buying second homes and maybe moving into the area and not wanting to*

> *partake of our language and culture. So for us that's very important and it's one of the main aims of our organisation as well is to promote the language and culture so that we don't become a kind of Bolton by the sea – well we're not by the sea – but that we don't become just a holiday park for people in the North West and the Midlands of England; we want to own our own assets and we always have done… Like Treherbert and the Rhondda there's still a sense of community here where people know each other – it's not necessarily about commuting to work it's about living as part of the community – so that's why we see ownership as… so we're trying to keep ownership of some streams (Project Organiser, Hydro, Gwynedd)*

Perceptions of threats to Welsh language and culture, posed explicitly by non-Welsh outsiders, thus form a core rationale for the development of CRE infrastructure to support local social and economic investment as a strategy to resist and contest patterns of regional, linguistic, and cultural decline in North Wales. A key stimulus for the creation of CRE infrastructure in this regard is its capacity to unlock further opportunities, potentially making North Wales a more attractive place for young people to stay and reverse what locals describe as a cycle of rural depopulation.

> *Not everybody wants to be just a service industry for the tourists, we don't just want to be a seasonal kind of playground, so we want to have that ownership [which] then shows young people they can stay and prosper in the community because what we have a lot of in North Wales is a lot of bright young people … but what happens once they got their qualifications, like yourself now, they want to go to Cardiff to uni and they don't come back then and we lose them… They're Welsh-speaking, they're people who have been raised in the communities and who have done well in the communities, they then stay in Cardiff or London or wherever they've gone, we've got an aging population then which isn't sustainable in the long-term is it (Project Organiser, Hydro, Gwynedd)*

> *Let's say that I'd love to see some element of the money going into paying either for people from poorer backgrounds to go to university or to pay them to go to the local FE college to train to become plumbers or whatever. I'd love to see that. To set up their own businesses or whatever their ideas are… Whatever they think is necessary (Project Board Member, Hydro, Gwynedd)*

> *… Without a strong economic base then there's a migration of the young people out of the rural areas, you know, and it's a high percentage, you know. So all the kids that leave school speaking Welsh, you know, when you follow them 10 years later a very high percentage have left Wales, you know, they're not still in their country of birth, they're not even within the Welsh speaking areas, they have actually left (Project Consultant, North Wales Region)*

The demand for solutions devised by local communities themselves is a further feature of both cultural regeneration and community resilience rationales evidenced in the study, and connects to research which emphasises the need for tailored local solutions (Bunt and

Harris, 2010; Eagle et al, 2017). Commenting on another community in North Wales developing a hydro scheme, one project organiser emphasised that:

> *… They see the reality that they need to do something to support work for themselves and the village and the community, that it's not being given to them, that they need to take control of things (Project Organiser, Hydro, Gwynedd)*

Similarly, another group emphasised that:

> *… there is the sort of other benefit obviously of being in charge of your own destiny both, not just in simple material terms, but also in terms of the driving sense of, you know, this is our project and we're not picking crumbs up off anybody else's table (Project Organiser, Wind, Anglesey)*

Such observations suggest an underlying mistrust in peripheral communities and regions like North Wales (O'Sullivan et al, 2020; Golubchikov and O'Sullivan, 2020) towards local authorities and government to enact locally beneficial solutions to locally perceived problems. Cultural regeneration rationales as defined in the present study thus aim to utilise community renewables development to implement locally devised social and economic objectives as an explicit antidote to perceptions of cultural, linguistic, and regional decline. Alongside community resilience rationales, which similarly espouse local social and economic development from the more progressive discursive perspective of enhancing social reproduction within communities, an overarching 'cultural resilience' approach to CRE development is constructed. In this view, community renewables are valued first and foremost for their place-making potential in response to a range of issues identified on the ground in the communities in question rather than for its environmental benefits[29] or its specific energy-related outcomes.

4.6 'Social Regeneration' Approaches

The fourth and final overarching approach to community renewables development in Wales reflects three project rationale-types defined as 'service-gap initiatives', 'social added value', and 'poverty driven' projects. Taken together this group of projects evidence what is defined here as a 'social regeneration' approach to community renewables in Wales, whereby CRE infrastructure development is valorised first and foremost for its place-making capacities as a community development tool to support a range of local social and economic regeneration activities. Whilst there are accordingly similarities with the foregoing cultural resilience approach, CRE projects falling into the social regeneration category contrast by

[29] Although this is not to say that these are not still relevant as further background motivations rendering CRE even more compelling as a strategy for the communities in question.

virtue of the emphasis given to the need for such development. Thus, as one project organiser, representing a wind project in Neath Port Talbot, succinctly described it: 'It's about trying to tackle poverty at the same time as tackling the need' (Project Organiser, Hydro, Neath Port Talbot). Thus, whilst cultural resilience initiatives sanction CRE-enabled development from the standpoint of fostering, rebuilding, and maintaining Welsh cultural identity, social regeneration initiatives approach local social and economic development from the discursive standpoint of meeting local needs, specifically addressing perceived gaps in public sector provision, and addressing poverty. Projects categorised under the umbrella of social regeneration approaches thereby exhibit as their central precept the notion that CRE is considered to unlock a set of regenerative activities and processes to address perceived disadvantages and add value to the communities in question. In this way, social regeneration models of CRE development chime with many of the aims associated with the creation of community-scale generative economies, defined as 'a living economy that is designed to generate the conditions for life to thrive, an economy with a built-in tendency to be socially fair and ecologically sustainable' (Kelly, 2013). Whilst the scope for communities to bring such visions into fruition is challenging given the scale of change envisaged, CRE-development provides a pathway through which activities exhibiting the character of, and supporting such objectives, might be realised on the ground.

A common feature amongst each of the specific rationale-types characteristic of the social regeneration approach lies in the fact that local action is typically understood to be necessary as a result of a lack of state provision. In this view, the opportunities offered by CRE-development are pursued as a reaction to perceptions of the state failing to meet the needs of people and local communities whether in terms of service delivery, work and skills, or economic opportunity (see also Lacey-Barnacle and Bird, 2018 in context of austerity).

> *The park is a former mine site and it joins the two local villages, it's between the two of them, and it acts, since it's been built it has become a focus of those two communities and therefore what we were always worried about … was that sooner or later, you know, with the way that finances are and there's no statutory requirement for local authorities to maintain parks that we'd lose our park which is a valuable asset (Project Organiser, Hydro, Merthyr Tydfil)*
>
> *... Perhaps we are expecting too much of our communities, of the very people, well, are we expecting too much of the most vulnerable perhaps? (Project Organiser, Hydro, RCT)*
>
> *… There is no money here and the Government ought to do something… Quite what the Government ought to do… I mean it's a Herculean task as to what you do with the Valleys, the Welsh Government haven't solved it in my time here and I don't think they ever will (Project Organiser, Hydro, Bridgend)*

Such projects thus explicitly seek to provide an alternate source of income, development, and support for the communities in question, with an overtly social focus defining the range of specific activities pursued. Whilst projects do not explicitly seek to supplant or challenge incumbent governance structures, the need for locally devised solutions coupled with a demand to take control emphasises a dissatisfaction with the status quo and a perceived disconnect between what is required locally with the provision ultimately forthcoming.

As noted, the social regeneration approach is comprised of three project rationale-types each of which shall now be considered in turn.

4.6.1 'Service-gap Initiative' Rationales

Projects exhibiting 'service-gap' rationales generally work within a tight remit of using income generated from community renewables initiatives to support a particular service considered to be of value to the community. Throughout the corpus of data there are multiple instances of CRE groups referencing lack of services or cuts to existing services as motivating factors and potential candidates for the receipt of revenues.

> *You know we've got a local swimming pool which is like every other swimming pool; it's reduced its hours of opening and, who knows, that might not be around … If you want to keep those services and that's what's important to you then you might just have to bite the bullet and do it … And you can sit stubbornly and say oh well the State shouldn't have closed that school but if you don't take some action… (Project Organiser, Wind, Pembrokeshire)*
>
> *One of the things that we want to develop within the centre is a crèche facility which is sadly lacking in the area. We've had a couple of community engagement meetings where we've asked the community what they want from the building and the crèche and a community cafe was mentioned (Project Organiser, Hydro, Neath Port Talbot)*
>
> *There's a conversation about the fact that there might not be many GP's left around here let alone libraries and hospitals and things… (Project Board Member, Hydro, RCT)*
>
> *… The Treherbert library has been cut which is where all those meetings were and that's not the only library in the area that's been cut (Community Resident, Treorchy, RCT)*

Whilst this rationale is evidenced frequently, in the vast majority of cases it is cited as one of a number of drivers for CRE-development and is thus typically subsumed within a broader overarching strategy for pursuing community renewables. This trend is inverted however in the particular category of service-gap initiatives, where the development of CRE infrastructure plays a singularly instrumental role as a mechanism solely to generate income

to support a local service or services. One particular initiative in Merthyr Tydfil exemplifies the sort of projects falling into this category:

> *The issue we have ultimately is at the moment the local authority hasn't got the funding to man the park so for us the bottom line always has been that we raise enough finance to keep it manned so that it doesn't deteriorate and become a place where people won't go because they're scared to go. It is a very valuable community asset and without that management it will just deteriorate, that's what it's ultimately about for us (Project Organiser, Hydro, Merthyr Tydfil)*

A significant issue for projects exhibiting service-gap rationales has been the decline in public services in recent years (Tingey and Webb, 2020) which is pushing communities to step in and prop up former state assets 'especially in the wider climate of public budget cuts' (Bristow et al, 2012: 1111). Whilst the foregoing passage undoubtedly illustrates the importance ascribed to the park by local communities in Merthyr Tydfil, the example demonstrates how the shedding of local authority- owned assets valued by communities more generally restricts the scope for community renewables projects to support and deliver new or innovative activities reflective of wider local perceptions of need and supporting more diverse justice goals. Given that broader access to local ownership of CRE assets has been viewed as a tool to 'improve the level and quality of economic development outcomes in rural economies of Wales' (Munday et al, 2011: 10) as well as delivering wider social benefits and supporting justice aims (Cowell et al, 2012; Bristow et al, 2012), the coincidence of such patterns with the onset of fiscal austerity has clearly proved problematic for the realisation of such outcomes (Lacey-Barnacle and Bird, 2017). Instead, communities have been effectively faced with the challenging decision of having to assume responsibility for local assets or risk losing them entirely. As one project in Rhondda Cynon Taf remarked:

> *At the moment what's happening is the State's withdrawing and it's basically just handing everything over. There's no managed retreat … We need to work with communities to say we're moving out of this now, we can't do this anymore because the problem's become too difficult (Project Organiser, Hydro, RCT)*

Such attitudes suggest a place for a more pro-active approach from local authorities to public assets and the possibilities of delivering them in conjunction with communities rather than simply on behalf of communities. Indeed, a further project in Neath Port Talbot, who previously took over responsibility for a community building before embarking on developing a hydro scheme, criticised 'the sad fact … that councils do not act like entrepreneurs and it's only as a last resort that they get rid of the building because they can't afford to maintain it' (Project Organiser, Hydro, Neath Port Talbot). Underlying this, however, remains an assumption that communities are both willing and able to undertake responsibility to this

effect and does little to resolve the issue of whether such avenues are ultimately the most beneficial ways of utilising CRE revenues. Indeed, this research emphasises that some communities clearly do have the desire and capacity to assume responsibility for local assets for the good of the wider community. Regardless, assuming that such will and capacities are ubiquitous in communities would be naïve, raising the prospect of an uneven distribution of (ex-state) assets between communities and exacerbating disparities in access to services at a time when such services are already limited.

4.6.2 'Social Added Value' Rationales

The category of 'social added value' reflects projects whose community renewables ambitions are characterised primarily in terms of the social and economic opportunities unlocked through ownership of CRE assets. In this view, there is very little, if any, value ascribed explicitly to CRE in and of itself. Instead, its worth extends solely from the ends to which revenues are directed.

> *… It's all well and good saying 'now here's a hydro scheme' but it doesn't do anything and it just sits there and generates electricity – it's all the peripheral activities such as the academic side of it, the job creation, the tourism, creating jobs – all of that is sort of the benefit for the community and the energy programme is just a catalyst really (Project Organiser, Hydro, Neath Port Talbot)*

Projects falling into this category thus typically seek to pursue activities associated with social and economic regeneration such as creating local jobs, upskilling members of the local community, and contributing where possible towards enhancing the provision and diversity of local services offered in the community. Most notably, such activities are explicitly rationalised on the basis of their contribution towards improving social reproduction and opportunities from the standpoint of the people within those communities rather than appealing to concepts like community resilience as evidenced elsewhere.

> *The aspect that we've adopted, in anything we do, is that we look at the community benefit and we look at how we can enhance the community, who can benefit from it, how can we enhance that benefit, how can we create jobs, how can we create volunteering opportunities, and really it's all about that social aspect of the work we do that, to us, is the jewel in the crown. The fact that we'd have a hydro scheme on that river would be very nice, the sustainable income would be a benefit thank you very much, but let's see if we can't add value to that, make it a demonstration model, try and create some jobs out of it, being part of a wider research project, see if we can't get some of the locals trained up to maintain it, see if we can't get some locals trained up to be tourist guides… It all sort of has an additional life to it that adds to the community benefit (Project Organiser, Hydro, Neath Port Talbot)*

The notion of 'community benefit' is clearly of significant importance to projects falling under the umbrella of social added value rationales. Indeed, by virtue of the way that such projects seek to portray a broad range and wide platform for the distribution of such benefits they actively contest more traditional, narrow understandings of community benefit as a sum paid to communities by commercial operators (Munday et al, 2011; Bristow et al, 2012).

> *… We administer the … wind farm community benefit fund and … we've provided pots of money here, there and everywhere but, at the end of the day, no-one gets trained, no-one gets a job out of it, and there's very little actual community benefits that will be here in five years time (Project Organiser, Hydro, Neath Port Talbot)*

The sense of community benefits provided on behalf of commercial operations being almost superficial in nature, limited in the extent to which they are able to contribute towards positive long-lasting outcomes, drives a demand in such communities for more locally designed and owned solutions. Indeed, the sentiment that benefits provided to communities by commercial operations lack both substance and longevity is echoed elsewhere by projects in affected areas.

> *… Personally I see it as that renewable energy is where we should be going and what I also see it as is a future industry for places like the Valleys. The way we're going about it is a little bit lazy; we're only picking the ones that are nice and easy, here's the setup cost, this is the tariff for twenty years, we'll just collect this… They may do nice art projects in the local school or whatever they're doing with the money but, actually, there's no work, no security, there's no confidence or anything in there, d'you know what I mean? And I think all the added value that you could give to something like this is being missed (Project Organiser, Hydro, RCT)*

In this view, the demand to add value through local ownership of CE assets is at least in part attributable to a reaction against commercial operations that are perceived as essentially exploiting the resources and opportunities available to local communities. Such a view of community renewables insists implicitly that communities ought to have right of first refusal over prospective renewables developments within their locality as a device to realise more locally appropriate forms of development responsive to the long-term needs of communities on the ground.

4.6.3 'Poverty-Driven' Rationales

The final rationale comprising the broad category of social regeneration approaches refers to projects whose primary motivations extend from perceptions regarding the extent and depth of poverty within local communities in Wales. 'Poverty-driven' rationales, as with other

rationale-types in this category, thus pursue community renewables development from the perspective of the place-making opportunities it unlocks, with a view to channelling revenues from CRE development into supporting job creation, skills development, expanding local services, and creating local economic opportunities. Such activities are sanctioned on the basis of patterns of economic decline and perceptions of lack of support for local communities from government.

> *I remember the economic change happening in the village when the granite quarries closed and it was quite erratic, I could see people moving away and the poverty struck quite heavily (Project Organiser, Wind, Gwynedd)*
>
> *… Quite a large proportion of the community, particularly the younger community, are demoralised, they've got to get out to get on … but the obstacles because of the poverty in the area I think to a lot of youngsters seem almost insurmountable (Project Organiser, Hydro, Bridgend)*
>
> *… It is about anti-poverty, a lot of it's about regeneration … we're focusing on getting people into employment, education, upskilling them, health … We want to do good, that's what we're about … We are very people-centred (Project Organiser, Hydro, RCT)*

Although evident across most projects falling into the social regeneration category to some extent, particularly pertinent to projects exhibiting poverty-driven rationales is a sense of responsibility and solidarity with fellow members of local communities coupled with a desire to see real and observable material deprivations addressed.

> *… I really would like to see the difference in the village and leave something behind which would make a difference to that little village (Project Organiser, Wind, Gwynedd)*
>
> *… The base motive is you get something out of giving back to the community and so that's why I'm involved in this I suppose (Project Organiser, Hydro, Bridgend)*
>
> *And people, you know, the majority of people that we work with live in the here and now, they're not thinking about five or six years, they haven't got the money to think five or six years down the line, they're just living week to week (Project Organiser, Hydro, RCT)*

As the above passages indicate, poverty-driven rationales implicitly insist upon a geography of community renewables endowed with a sense of social responsibility consistent with meeting local needs. In this respect, such projects eschew both explicit and latent environmental motivations often associated with other approaches to CRE-development identified in this research. Indeed, such rationales portray the greatest distance from environmental motivations of any kind, such that CRE-development is considered in this

view to principally be a mechanism towards achieving aims explicitly linked to poverty reduction and social deprivation.

> *15% of the profit would be spent directly on individual households - they would get sort of a bonus every year towards their fuel bills - it wasn't done on a… Ideally we'd like to know who, if there were any people that would have needed, but that would cost so much to administer, so much easier to just give every household in the village a share of the 15% of the profit which works out, it doesn't work out as a huge amount, it's £150 per annum I think over a 20 year period, it's not going to break anybody's bank or make a huge difference but I think for some of the poorest people there … which really, really need it… (Project Organiser, Wind, Gwynedd)*

> *… It could have been a seed corn to these groups such as community associations … Bad Bikes down in Blackmill is interesting, it works with young people advancing education and youth unemployment … So, yeah, it's a bit of seed corn to local groups that we will provide (Project Organiser, Hydro, Bridgend)*

4.7 Conclusion

This chapter, the first of the empirical sections of this thesis, has considered the range of motivations and actions associated with the development of community renewables projects in Wales. Such discussion is generated through consideration of the first of the questions guiding this research: *How can the motivations of the community renewable energy sector in Wales be understood? How do these drivers help understand the energy justice implications of community renewables?* As has been illustrated, the Welsh experience of CRE development is far from being clear cut, with a diverse and vibrant range of rationales identified as constituting the fledgling sector as a whole. Whilst a range of projects pursue community renewables from the classic perspective of environmental motivations, a much larger set of projects seek CRE as an antidote to a range of perceived social, cultural, and economic afflictions. Indeed, inferences from this research suggestive of forms of both 'community renewables as culture' and 'community renewables as poverty-alleviation' move towards an understanding of community renewables that—whilst indicative of trends observed elsewhere in the literature (Becker and Kunze, 2014; Bauwens, 2016)—is significantly broader in both aims and scope than has hitherto been observed of the sector. A Welsh conception of CRE foregrounding social, economic, and cultural actions and aspirations, in addition to more typical environmental aims, thus represents a significant advancement in understanding the diverse and nuanced ways in which CRE as a category can contribute towards the enhancement of social justice in energy systems. Particularly considering the place-making potential of community renewables observed in a number of the approaches outlined in this chapter, CRE is shown to be widely considered a valuable tool for transforming, underwriting, and leveraging

entitlements to justice within local communities that mark out its consequences as potentially much more far-reaching than might be considered through a narrow environmental view of its objectives.

In addition, this chapter has drawn attention to a number of key background issues pertaining to the Welsh context, which appear to influence the character of community renewables as set out in the foregoing sections. Both patterns of state withdrawal and deprivation in post-industrial regions of Wales have been identified particularly for stimulating broader ambitions associated with CRE-development. Such patterns are indicative of aspirations for more local control and locally designed solutions to perceived issues and injustices that set apart community renewables in this understanding as an expression of desires for increased local autonomy. Notwithstanding, CRE-development is a huge undertaking for local communities only for it to effectively enable them to get back on their feet rather than adding value. Whilst this chapter has demonstrated the clear contribution that community renewables can potentially make towards the enhancement of a range of justice objectives, the burden on local communities to negotiate such responses at times of crisis almost singlehandedly is an injustice in itself.

Main Theme	Sub-theme	Description of Theme	Key features
Environment	Environmental	Projects motivated by a desire to act on climate change and reduce greenhouse gas emissions	Projects aim to generate clean electricity; targeting energy consumption practices (e.g. providing low-energy lightbulbs)
Just Sustainabilities	-	Projects aiming to achieve social objectives in context of environmental activities while reinforcing the notion of living within the limits of resources and supporting ecosystems	Projects highlight the need for solutions and ways of living that are locally-appropriate, eschewing the idea of a 'one size fits all' approach
-	Social environmentalism	Projects mainly addressing environmental aims while stressing importance of social objectives	Environmental objectives seen as realisable within context of community regeneration, development, and local investment
-	Self-sufficiency	Projects motivated by concerns about general patterns of resource use and consumption	Explicit prioritisation of resource dimensions of environmental degradation, energy security, and patterns of inequality; demands for local control of resources
Cultural Resilience	-	Projects motivated by desire to foster, rebuild, and protect Welsh culture, including enhancing local assets	Projects emphasising the place-based value of CRE in the context of projecting and protecting Welsh cultural identity and building local community cohesion
-	Community resilience	Projects motivated to ensure incomes are reinvested to support a	CRE development enacts a range of political and cultural objectives;

		diverse range of aims based around improving and safeguarding cultural identity	Communities express desires for autonomy through CRE-development
-	Cultural regeneration	Projects aim to defend Welsh culture from actual or perceived threats (e.g. incomers, regional decline, rural depopulation)	Projects aim to implement locally devised social and economic objectives as an explicit antidote to perceptions of cultural, linguistic, and regional decline
Social Regeneration	-	Projects aiming to use CRE for place-making as a community development tool and to support local social and economic regeneration activities	Emphasis in projects on meeting local needs, addressing gaps in public sector provision, and addressing poverty
-	Service gap	Projects aim to support a particular service considered to be of value to the community, often in context of austerity	Emphasis on lack of services or cuts to existing services; desires towards supporting local ownership/control
-	Social added-value	Projects rationalise CRE-development solely in terms of the social and economic opportunities unlocked by asset ownership for improving the local community	Prioritisation of local regeneration, creating local jobs, upskilling members of the community, enhancing the provision and diversity of local services
-	Poverty driven	Projects aim to support a range of local activities specifically from the perspective of addressing poverty	Sense of responsibility/solidarity with fellow members of local communities, coupled with desire to address material deprivations; often coupled with dissatisfaction with government support and economic decline

Table 4.1: Chapter 4 findings summary table – CRE Motivations

5 Procedure, Participation and Inclusivity in Community Renewables

5.1 Introduction

Procedure, participation, and inclusivity are key components of the drive towards a just energy transition. Such aspirations have grown in prominence in the context of an increasing range of social and environmental externalities associated with the highly centralised energy systems of the industrialised world. Reflecting their predominantly closed nature, these systems have come to be characterised by the limited scope they offer for public participation, decision-making, and involvement (Hodson and Marvin, 2013); instead constructing a view of the public as primarily passive energy consumers at the end of the distribution wire. Whilst it is true there is a long history of research that examines local participation in large-scale energy decision-making (Wynne, 1982; Davies, 1984; Kraft and Clary, 1991; Morton et al, 2009), such participation has primarily taken a consultative form and focussed on issues such as infrastructure siting – rarely if ever extending to anything more transformative in approach or outcome. Such a narrow view of the space for public engagement and intervention in energy transition processes is typical of the hard paths of energy development (Lovins, 1977) embodied by large- scale, centralised energy infrastructures across the industrialised world, including in the empirical site of this research in Wales and the UK at large. Understanding how involvement in community renewables restructures participation in and facilitates more diverse engagements with the energy system, and with what wider effects, is an empirical gap that potentially offers new perspectives on how energy justice is defined, pursued, and negotiated in local contexts. Thus, as van Veelen and van der Horst (2018: 20) note, participation plays 'an important instrumental role in discovering and implementing demands for justice'

Whilst a discussion on the procedural dimensions of energy justice and community renewables were envisaged as part of the theoretical approach to this study, the specific impetus for this chapter to focus on issues of participation grew out of the data analysis phase of the study, during which a puzzle connected to participation in community renewables became increasingly pronounced as data analysis and coding progressed. On the one hand, ample attention has been directed in the literature towards participation in community renewables as a means for establishing and building CRE projects (Walker and Devine-Wright, 2018; Simcock, 2016). On the other hand, comparatively little is known about participation in community renewables as an ongoing process (Creamer et al, 2019).

As a consequence, the ongoing nature of participation in CRE as an activity, beyond the point at which projects are energised, is not currently well understood. Indeed, as Forman (2017: 655) notes: 'the challenge of temporal approaches is especially relevant to community renewable energy, given that research in this area is ultimately in its infancy considered against the lifespan of the energy infrastructures created'. This is an important point to the extent that numerous projects involved in this research drew attention to, and highlighted concerns with, the processual character of community renewables; emphasising a perceived skewed emphasis on CRE-development and the associated social and financial outcomes and configurations to support that, rather than how participation takes place and changes over time and with what wider effects (Berka and Creamer, 2018, Creamer et al, 2019). Indeed, as McCauley et al (2018: 321) note: 'Views of energy justice are not static or individually manufactured. They are formed, reformed and then renegotiated in response to other views over time'.

Data gathered over the course of the study quite clearly showed a much broader range of problems and aspirations in this regard, whereby community renewable energy in Wales is underpinned by a range of perspectives on participation with assorted aims and agendas. In some cases, these confound the conventional view of participation in community renewable energy as a local activist social movement endeavour (Boon and Dieperink, 2014; Chilvers et al, 2015), highlight the diverse ways in which publics manifest in order to intervene in the energy system (Chilvers and Longhurst, 2016; Chilvers et al, 2018), and suggest how participation in community renewable energy is currently and might in the future be shaped by the material dimensions of projects over time. These issues suggest a need for alternative ways of conceiving of participation in community renewable energy as a means for understanding its associated energy justice affects. Consequently, this chapter facilitates a more detailed perspective on the role of participation in community renewable energy as a means for understanding its justice-promoting potential, while extending understandings into the ongoing, temporal character of community renewable energy—issues which together have received limited explicit attention in the literature to date. In doing so, this chapter aims to address the following research question: *How does participation in community renewable energy take place: who is involved, at what times, and why? How can the implications for procedural aspects of energy justice be understood?*

5.2 Perspectives on Participation in CRE Projects in Wales

The community renewable energy groups involved in this study expressed a range of perspectives on issues relating to participation and inclusivity. In addition to views elicited by interview, further evidence as to how participatory particular projects are in practice was assessed by examining both the specific organisational arrangements and engagement

strategies in place from project-to-project. A significant majority of community renewable energy project representatives involved in this study made claims to being participative, or hinted at intentions of becoming so at a future point in time. This distinction between, on the one hand, what projects actually do in practice and, on the other hand, what projects say and aspire to do is an important one to the extent that it serves as a potent tool for examining the mediation of justice 'in the field'. Indeed, whilst this research has uncovered many positive stories about community renewable energy projects in Wales striving to be participative and inclusive, an overarching theme to emerge is the problematisation of how participation and inclusivity within projects takes place. Whilst this finding has echoes of studies conducted with community groups elsewhere (Grossman and Creamer, 2017), the difference to emerge from this research is the explicit emphasis community renewable energy projects in Wales placed on how participation changes over time, and with what wider effects. The following sections unpack these issues in more detail as a means of considering the justice-promoting potential of community renewable energy projects in practice. To do so, three key themes to emerge from the study are addressed: (i) mobilising participation, (ii) becoming inclusive, and (iii) temporality and participation.

5.3 Mobilising Participation

Patterns of distributed energy generation, including community renewable energy, form a nascent, fledgling sector both in Wales and across the UK more broadly. Indeed, part of the function of the Ynni'r Fro programme in Wales was to kick-start development of this sector, where previously only a handful of frontrunning projects existed. Indeed, it is important to remember that what community renewable energy infrastructures have been created in the UK have been in place for a relatively small period of time compared to existing large-scale, centralised energy infrastructures. Even with the latter, which are commonplace across industrialised societies, it is a common perception that apathy towards the question of where our energy comes from is almost ubiquitous. Whilst the rapid emergence of community renewable energy projects in Wales and elsewhere outwardly appears to defy this trend, what interest and progress there has been in establishing community renewable energy projects ultimately masks very low absolute capacity in terms of the sheer volume of energy community projects are capable of contributing to the energy system at large (as outlined in Chapter 2). This is not to suggest that community renewable energy cannot have transformational impacts in the places it is pursued—highlighting that kilowatts may be the wrong measure of impact in this regard—but nonetheless points towards the broader issue of lack of public engagement in energy systems, and the challenges associated with generating more substantive interest and engagement with energy amongst those who benefit from it.

This overarching context continues to have relevance for social science studies in energy, and is an important factor to consider in the context of tracing the modalities of participation in phenomena such as community renewable energy. Indeed, views expressed in the course of this research suggest that such attitudes are no less pervasive a challenge for community renewable energy in Wales than with respect to any other energy infrastructure in any other place in the world. As one project member in Powys noted with respect to the challenges associated with increasing awareness about community renewable energy within the local community: 'society is made up of all kinds of people, it's made up of people who don't care and aren't interested, and it's made up of people who do care and are interested' (Project Member, Hydro, Powys). Underpinning this statement is a recognition that generating support for community renewable energy comes from a difficult starting point, in an industrialised society where the availability of energy is largely taken for granted and characterised by ambivalence towards issues of energy production and consumption. An additional challenge specific to the Welsh context is the history of extractive industry in Wales—particularly coal mining in South Wales, but also extending to the slate quarries in the North—and the post-industrial legacy associated with the decline of those industries (Foden et al, 2014; Llewellyn et al, 2017) that has left formerly proud mining communities amongst the poorest in Europe with little prospect of relief (see also: Milbourne and Mason, 2017). As a number of interviewees involved in projects situated around South Wales noted:

> *I'm not saying we should reopen the mines and whatever but it was a whim of a political decision to say "no more" which resulted in jobs going, resulted in unemployment, resulted in poverty, in anguish... The injustice in that... (Project Member, Hydro, RCT)*

> *... We've been used here before... The reason that this whole community's here is because of energy, because of the coal that came from the top end of Treherbert... There was a handful of people that lived here, four hundred- odd people lived at this top end, there is now about ten or fifteen thousand people and hundreds of thousands in the valley... So the whole place is here due to energy and lots of the problems are due to what happened when that energy boom finished and everything just walked away (Project Organiser, Hydro, RCT)*

Furthermore, the fact that community renewable energy is a fledgling sector, with limited understanding or visibility in the public consciousness, undoubtedly compounds these challenges and was an issue that was often evidenced amongst projects involved in this research. As one project organiser noted:

> *... it suddenly occurred to us that we didn't have any kind of image to communicate what it is that we're trying to do, although we've got it in our heads what we're trying to do ... The concept [of community renewable energy] does jar with people and people don't get it – people think of solar as industrialisation (Project Organiser, Solar, Swansea)*

Underlying these statements is an important recognition that community renewable energy remains what is essentially a fringe activity for the vast majority of people and communities, and that engaging people and facilitating their participation is fundamentally a difficult thing to do in practical terms, even moreso in this case as a result of Wales' troubled history concerning energy production (Llewellyn et al, 2017; Milbourne and Mason, 2017). Indeed, what was common between all projects was the fact that in the initial stages many struggled and were challenged by attempts to engage broadly with the communities they claimed to represent, even if they had aspirations towards doing so, and many projects simply jettisoned the notion of even countenancing making a concerted early effort to build participation.

Amongst the issues that caused challenges, projects in Wales recounted difficulties with access to time (particularly with the vast majority being run by volunteers), finance and the modalities of participation available (including availability of community space to facilitate community engagement, and the enrolment of technology to generate wider involvement), language barriers between native Welsh-speaking and English-speaking populations, and the challenges of reaching out to younger and more elderly members of the community. A number of projects shared their concerns on these issues:

> *So, yeah, it will happen [community engagement] when we get sufficient funding for our engagement activities ... The problem is there's no village hall, there's nowhere to do it (Project Organiser, Hydro, Gwynedd)*
>
> *... we've got to be really careful how we spread the word about this, especially when it comes to having money available, because some people are going to need help even to know about that because they're not all community development-active people, they're just digging their potatoes and surviving off their pension and they aren't going to be using Facebook or coming to community meetings because they don't think it's anything to do with them (Project Organiser, Wind, Pembrokeshire)*
>
> *... when you're typically a small organisation which is a one-trick pony trying to get a planning application together for a wind turbine project you've [got] nothing to offer, it's just another burden on time (Project Organiser, Wind, Pembrokeshire)*
>
> *We're going to have to format different engagement strategies ... You're going to have to need a separate one or run a bilingual one ... because we do have lots of non-Welsh speakers ... and you want to engage with them as well (Project Organiser, Hydro, Gwynedd)*
>
> *... the obstacles because of the poverty in the area I think to a lot of youngsters seem almost insurmountable (Project Organiser, Hydro, Bridgend)*

As the above views expressed by communities included in this study show, the general issue of apathy towards energy-related matters, as well as the practical challenges

associated with facilitating participation, emerged from the context in Wales as decisive factors structuring the ability of project leaders to generate broad participation. Without doubt, it is reasonable to expect facilitating participation across entire communities to present challenges, and the projects involved recounted many of the same issues seen elsewhere in other research (Walker and Devine-Wright, 2008). In addition, it is also clear that the Welsh context exhibits some more unique features that present further challenges for expanding participation, particularly with respect to managing the practicalities and differences exposed by Welsh language-speaking communities (predominantly in North Wales), and the post-industrial legacy in Wales shaped by the retreat of the extractive industries making people cautious given experiences of the past. As a result, projects involved in this study evidenced varying levels of participation between them, but with the majority choosing to wait until after the initial development stages when they had certainty that the projects would be going ahead (a minority across the cohort of projects involved in this study) before making more of a concerted effort to facilitate local participation.

However, whilst significant, this was not a universal trend across the corpus of data, and there was clear evidence of (i) projects being motivated to pursue particular forms of participation considered necessary or desirable relative to the needs of the project, and (ii) outlying cases in which early attempts had been made to prioritise broadening local input. These are important counterpoints to the general trend which reveal further insights into the nature and practicalities associated with participation in community renewable energy in Wales. As one project organiser in Swansea, who had made a sustained early drive to get the local community behind it, recounted:

> *I don't know what they [the participants] want out of it and that's part of the reason ... that we've stopped advertising the membership is that we didn't really feel like we were giving anything back, so it felt like if we're building this membership how do you actually manage that? How do you facilitate their participation when you're not really clear whether the bloody community renewable energy thing's going to happen or not? (Project Organiser, Solar, Swansea)*

Such sentiments were common across the full cohort of projects in the early stages of development involved in this study, and suggests that it could also be detrimental for local interest in community renewable energy to the extent that early involvement potentially engenders further apathy about the energy system by enrolling people into support for community renewable energy projects where there is very little of substance to actually engage with in the initial phases. Indeed, many felt that it was natural for projects to take a more hands-off or passive approach to participation in the initial phases of a project. As one project organiser in Gwynedd noted:

> *To be honest we're so preoccupied with actually getting to the point where we get to the abstraction licence, the leases and so on, we're just still on the technical side of the hydro project at the moment ... [How we will facilitate participation is] sketchy at the moment but that's just the reality of the work (Project Organiser, Hydro, Gwynedd)*

As the foregoing passages convey, community renewable energy development does not easily lend itself to public participation in its early phases when projects are in feasibility and development stages. Moreover, as the quote from the project in Swansea suggests, it is not clear that there is an obvious role for a broad approach to participation early on in the lifecycle of a community renewable energy project—a point echoed by a resident in a local community in the Valleys area of Wales: 'I don't think it is actually necessary to get energy out of South Wales with the enthusiastic cooperation of the locals or their local ownership of it' (Community Member, Hydro, RCT). Notwithstanding such outlying views, it is important to recognise that these early stages are crucial for any project with respect to whether a community renewable energy project will actually be constructed in the long term. As such, diverting resources to building broad participation early on can run contrary to the ultimate project aim of actually getting a community renewable energy project steered through the various hurdles in its early stages necessary to obtain the relevant consents and guarantee that the project will actually be built. Evidence from projects involved in this study thus suggests that expending effort on engaging people and attempting to secure broad participation early on can prove both challenging and detrimental to community renewable energy projects if they are to ultimately realise their aims.

Complicating this issue further is the fact that the overwhelming majority of projects included in this study identified as being run by what generally tended to be a small group of volunteers, down to as few as one or two key individuals. Voluntariness is a significant challenge for projects, and is widely evidenced as such in the extant literature (Parkhill et al, 2015). In this study, the voluntary nature of projects was frequently cited as an issue for projects as a cap on their capacity to progress, develop, and be sustainable over the long-term. As one project that had managed to deliver generating infrastructure on the ground reflected:

> *I think probably the fundamental difficulties in all honesty has been a certain amount of naivety ... into the programme and how long it would take to deliver these projects primarily because it was all reliant on a voluntary committee and voluntary members (Project Organiser, Wind, Powys).*

Indeed, community renewable energy projects in Wales involved in this study typically followed this pattern, with only a very small number led by paid project developers.

Voluntariness presents difficulties for the development of community renewable energy given the complexities involved, and an overarching theme to emerge from the study was the extent to which this poses a real challenge for the successful delivery and sustainability of projects on the ground. A number of projects reflected on these challenges throughout the course of the research:

> *I think the main reason for lack of members is lack of time. Renewable energy projects are an absolute pig to deliver and unless you have a really strong active group, with a range of people with a wide range of skills and interests, and who are the right individuals, who are really good "people" people and want to focus on membership and build that in ... it's just another burden on time. So that's the real barrier is time and resource ... And at the moment I think the risk is that we put too much burden of pressure on community volunteers to deliver projects that are just murderously difficult and depressing (Project Organiser, Wind, Pembrokeshire)*

> *... local community groups are run by volunteers and [in Wales] some of these local community groups are in the most deprived areas. People are passionate about their community but it doesn't necessarily mean they have the skills [to deliver complex and technically challenging projects] (Project Organiser, Hydro, RCT)*

> *Think what barriers are in the way, you know, I could be applying for jobs soon to do something else just to keep money coming in ... [because] we're running low on cash ... [and] if I had known about the amount of work... It's just ridiculous what you let yourself in for and I imagine that's indicative of all community renewable energy groups (Project Organiser, Solar, Swansea)*

Collectively, the issues of apathy, challenges of facilitating participation, and voluntariness encouraged a number of community renewable energy projects involved in this research to focus on what is either desirable or required by necessity in terms of public participation, and the various strategies at the disposal of projects to achieve that. Taken together, these issues echo research in community strategy-making, in which activities perceived as 'obligatory' squeezed out those which were ultimately 'desirable' (Abram and Cowell, 2004). While some projects may choose to go further, the predominant patterns of participation across projects in Wales involved in this research tended to reflect this trend. Many projects thus saw their role with regard to public participation as being focused at a maximum on building a broad coalition of support for the project in the first instance, to ensure that projects were able to be financed and have sufficient backing to be supported through the planning process. As one project organiser in Powys noted:

> *I mean it's just where we are... At the moment we're about raising funds – that's dealing with people who've got funds – and building schemes for which you require skills – so they tend to be professional people or retired people, retired professionals doing it – and supporting voluntary organisations – which tend to be people who are already engaged. Over time then that profile may change but*

> *at the moment that's where we are. I'm being realistic, you know, there's only so many hours in the day (Project Organiser, Hydro, Powys)*

Whilst this passage offers a clear narrative on participation and engagement that ultimately reflects the needs of the project, it also reveals that a necessary consequence of such a needs-based approach to participation is that facilitating broader participation, including with respect to notions of representativeness and inclusivity, is likely to be a second order consideration for projects. Indeed, this approach reflects general patterns of activities undertaken by a significant majority of the projects involved in this study.

5.4 Becoming Inclusive

That community renewable energy projects in their initial stages should choose to focus on prioritising forms of participation that are either desirable or required by necessity is important to the extent that it sheds light on the degree to which community renewable energy projects in Wales are representative of the communities in which they are situated, and for understanding the role and stake of vulnerable groups such as those suffering fuel poverty. To the extent that such a delivery-focused approach to participation residualises issues of representativeness and inclusivity to second order considerations, issues such as fuel poverty are likely to have a lower profile as a focus for community renewable energy projects at their outset. Indeed, this pattern of behaviour was observed widely across the cohort of projects involved in this study, as the primary issue of project finances—as reflected in the foregoing passage from the hydro project in Powys—ascended to the top of the list of priority issues facing projects. Less imminent and existential issues such as socio-economic representativeness were thus frequently pushed to the right to be considered at a future point in time, if indeed at all (see also van Veelen, 2018). As one committee member of a project that had succeeded in delivering generating infrastructure commented:

> *That's the thing about a community project is that something like this it is actually a capital-intensive project which is tapping into people who have got the capital – so it's not a community project for everybody in the community, it is a community project for those who have inherited money, or put by savings, or whatever – [people] who have got a little bit to invest (Project Member, Wind, Powys)*

Indeed, this passage illustrates how the technological and financial dimensions of projects demand an approach to participation in which socio-economic representativeness and issues of local vulnerability are likely to be marginal considerations at the outset. This is problematic for widening access to community renewable energy early on, particularly amongst vulnerable and fuel poor constituents, who lack the resources to participate materially (i.e. with money), and organisers more widely are less interested in people participating purely as 'citizens'.

Community renewable energy projects thus face a challenge to ensure that the needs of projects early on, coupled with the limited capacities of voluntary groups to be able to invest time to secure broad participation and make that work for project and participants alike, do not engender perceptions of elitism that might spread further apathy with respect to the ultimate aims and objectives of community renewable energy projects on the ground. This is important because, as one project organiser from a solar project in South Wales noted:

> *It is a social justice agenda – broadly speaking it's a social justice agenda, it's about social transformation, that's what a lot of the community renewable energy groups buy into ... [But] I do have issues with the redistribution of – unless there's a decent community benefit fund doing really interesting stuff well it's just a weird form of wealth redistribution, isn't it? It's tax avoidance for the wealthy and that's all it is essentially... Who are all these people who are buying all these shares and getting all these tax rebates? It's not people that need the cash, you know, they're pretty well-off ... as opposed to the people who do feel an extra pound on their fuel bill (Project Organiser, Solar, Swansea)*

Thus, whilst the early stages of projects are challenging for community renewable energy projects to adopt a broad approach to participation, this is not to suggest that fuel poverty—and wider issues of social justice—do not feature in the ambitions of community renewable energy projects at all when it comes to questions of participation. However, evidence from this study suggests that community renewable energy projects in their early stages are likely to be more accessible to communities of interest with sufficient financial resources, rather than representative of the socio-economic circumstances in situated communities of place. Community renewable energy projects must therefore be cautious that the narrow approach to participation that the needs of projects in their initial phases potentially engenders, does not tar community renewable energy approaches with the same 'closed' perceptions already associated with existing large-scale energy infrastructure or prevent them from pursuing broader ambitions at a later stage.

This point is even more pertinent for challenging, complex social issues such as fuel poverty; a social welfare problem where, it is important to recall, even explicit national and devolved government policy solutions have struggled to make an impact. Whilst a number of community renewable energy projects involved in this study expressed aspirations towards addressing social justice issues such as fuel poverty to a longer timeframe, this was by no means a universal sentiment and this research identified a range of conflicting perspectives regarding the role that community renewable energy could, and should, play with respect to widening access to and addressing the needs of the fuel poor. Indeed, the vast majority of projects in Wales made little to no links to extending participation to or addressing the needs of the fuel poor, albeit with a handful of outlying exceptions. Central

to this were perceptions that (i) links drawn between community renewable energy and fuel poverty were arbitrary and, closely allied to this point, (ii) that fuel poor communities could not appreciate the overarching rationales associated with community renewable energy, and (iii) challenges associated with identifying the incidence of fuel poverty at a local level. As a number of projects involved in this study noted:

> *I question why this whole issue of fuel poverty has been linked to community renewables. Fuel poverty is essentially... yeah you get fuel poverty in rural areas but not to the same extent that you do in urban areas. Most renewables projects are based in rural areas (Project Organiser, Wind, Powys)*

> *I would find that [expanding participation to the fuel poor] unnecessarily bureaucratic and paternalistic, you know, fuel poverty is an issue but why, just because you're generating electricity do you associate it with fuel poverty, you know, it's only because they both happen to be energy there seems to be this issue that they're connected (Project Organiser, Hydro, Merthyr Tydfil)*

> *For me it's not as compelling... I mean essentially fixing people's homes because they are disadvantaged isn't as compelling ideologically ... It feels like the fuel poverty interventions don't actually try and fix things at their root whereas ... getting people to question where they get their natural resources from and changing their relationship with natural resources, it feels like it could go a lot further ... I can get more enthused about that than patching someone's home who might not live in that home for very long or really care about that home in the first place (Project Organiser, Solar, Swansea)*

These passages portray a tension between, on the one hand, the so-called transformative aspirations associated with community renewable energy raised by a number of projects included in this study and, on the other hand, extending the participatory element of such projects to explicitly include more specific social issues such as fuel poverty. Such views are expressed based on perceptions that links between community renewable energy and fuel poverty are arbitrary, that they are incompatible with idealistic understandings of community renewable energy as synonymous with vague conceptions of social transformation, and even a pejorative sense that the fuel poor ought not to be entitled to participate owing to perceptions that they are disengaged from the broader social and environmental context surrounding community renewable energy.

Such sentiments are compounded by the very real challenge of actually locating the fuel poor in practice, and it is important to recall that even national government schemes such as Warm Home Discount and the Energy Company Obligation have a poor track record when it comes to targeting those most in need. As a participant from the Welsh Government reflected:

... when you are trying to target people [who are fuel poor] it is very difficult to do it in any other way other than means tested benefits because it comes otherwise to how do you identify people on a low income ... There isn't any other data accessible to us ... [and] you can't ask the DWP to give you all the addresses of everybody in Wales who is on a benefit, you can't do it that way round ... [but] DWP has huge amounts of data, the valuation office has lots of data on household type, so if we were looking for particular types of houses, they've got that data but we can't access it (Government Official, Welsh Government)

Identifying the fuel poor to ensure that community renewable energy interventions meaningfully include them is thus challenging (Middlemiss, 2017; Committee on Fuel Poverty, 2018), and evidence across the cohort of projects involved in this study highlights that desires to develop broad approaches to participation that include social justice issues such as fuel poverty are far from universal. For the few projects involved in this study that did express desires to extend their reach to the fuel poor, all were based on anecdotal evidence or perceptions regarding both the extent and depth of fuel poverty within the locality rather than hard evidence. Thus, evidence from this research shows that community renewable energy projects face real challenges with respect to both extending participation to the fuel poor in a meaningful way, as well as managing the delicate balance between projects established in the name of the community with the associated ambitions of the people ultimately responsible for making those projects happen.

However, whilst these challenges require careful navigation to be overcome, such trends with respect to inclusivity and representativeness were not universal across the corpus of data, and important counterpoints were evidenced where (i) already existing socially-focused and fuel poverty projects sought to extend their activities into community renewable energy, (ii) project benefits and fuel poverty benefits overlapped in a co-benefits approach, and (iii) groups saw broadening participation to include the fuel poor as a key future activity. As a number of projects reflected:

So there is totally leaky and inefficient houses and they've got very inefficient heating systems and they've got very expensive fuels ... But they're living in the countryside where there's actually enormous resources for renewables, for self-generation, for reducing the costs – both the environmental and the income costs – for these, and so what we are trying to do through the woodland group and so on is trying to close that circle a bit ... When you're talking about finding solutions to rural fuel poverty you have to solve those problems, you have to close the loop around use of those local resources and you have to make it real (Project Organiser, Hydro, Powys)

We embarked then, in 2011, on a project of installing solar panels on people's houses – we then collect the feed-in tariff and that feed-in tariff goes into our core funding to the sustainability of the organisation while, at the same time, the solar panels are providing some support to those households to alleviate their fuel bills and help with fuel poverty aspects ... so there is a benefit coming

> *through to them from free electricity but we still get the feed- in tariff (Project Organiser, Hydro, Neath Port Talbot)*

As the foregoing passages suggest, some groups included in this study made more substantive links to fuel poverty. However, such cases not only represented a small minority of projects but tended to reflect the genesis of already existing projects set up with social aims, or more enterprising groups that harnessed community renewable energy as a way to benefit the organisation financially whilst extending participation to the fuel poor essentially as a by-product. These scenarios pose questions about the extent to which it is likely that extending participation to the fuel poor is necessarily the primary goal of projects in practice and, where it is, the extent to which such business models are replicable for voluntary community groups compared to the semi-professional and/or charitable outfits with already existing skills, knowledge and expertise when it comes to addressing social justice issues and fuel poverty. What this evidence does show, however, is that a clear route can be traced through from community renewable energy to extending access to the fuel poor if the infrastructure can be situated to deliver energy as a co-benefit (Miyatsuka and Zusman, 2010), which is relevant from an energy justice perspective (Sovacool et al, 2017). However, even such co-benefits approaches to extending participation to the fuel poor are challenging in practice. Whilst this research revealed one such scheme operating this model, there was also evidence of other schemes who had tried and failed to develop similar approaches. As one project organiser in mid-Wales reflected:

> *Well we've tried to do stuff on fuel poverty on the council housing ... [and] we got nowhere, absolutely nowhere. They're [the local council] saying that renewable energies are not part of our brief, there's conflict between the things, they're not geared up to do rent-a-roof or anything like that, and they're not geared up to be creative in funding, so there's no way that the council houses will get the [solar panels], you know... These are people that are genuinely poor and genuinely in fuel poverty ... and, well, it seems to be an opportunity missed (Project Organiser, Hydro, Powys).*

As the above passages suggest, whilst evidence from this study indicates that co-benefits approaches may offer a route to extending participation to the fuel poor, it is also clear that this is a challenging niche solution that is only likely to be of interest to projects with broader aims and objectives related to the alleviation of fuel poverty. As has already been shown, in Wales such groups are in the minority, and broader perceptions which question the extent to which community renewable energy should be used as a tool to address fuel poverty at all indicate that in practice community renewable energy projects are likely to pursue approaches that are less prescriptive with respect to issues of participation, representativeness, and inclusivity.

Indeed, a preference for a more open approach to the meaning of participation in community renewable energy is consistent with views expressed by nearly all the projects involved in this study. In practice, as has already been shown, this means that projects in their initial stages are more likely to focus on generating participation that reflects project needs. However, a further counterpoint to this trend was evident amongst a cohort of projects who saw broadening participation to include the fuel poor as a key future activity. As one project in North Wales noted:

> *But with, you know, with an income of then which would be around £3 million over 20 years would make a huge difference to the village. From fuel poverty point of view it was in the business plan and in the strategy to try and tackle fuel poverty [over the long term] ... it's not going to break anybody's bank or make a huge difference but I think for some of the poorest people there ... by doing that they can be a little bit better (Project Organiser, Wind, Gwynedd)*

What could be defined as more of a strategic approach to project participation over the long term was evident amongst a number of projects included in this study, and reflects the fact that as the challenges and opportunities associated with projects change over time, so too does the potential for projects to become more inclusive. This finding echoes recent research on community renewable energy in Scotland, which emphasised that

> *ideas of inclusivity and the notion of who should be included in decision- making changed after the energy technology was installed. Rather than being characterised by its technological dimensions, it is now characterised by its socio-economic ones instead (van Veelen, 2018: 659).*

This has relevance for this research to the extent that, although not explicitly, it touches upon the same temporal dimensions to community renewable energy evidenced across projects in Wales, by acknowledging the changing character of community renewable energy at different stages of project development. This is particularly relevant to the theme of participation, since projects became more open and inclusive as they moved from development to becoming operational. As such, what the foregoing sections on mobilising participation and becoming inclusive highlight is a clear view, by the very people on the ground delivering projects, of community renewable energy development that presents different challenges and opportunities at different times according to where the project is in its lifecycle and stage of development. The corollary of this is that different phases of community renewable energy development will necessarily be more disposed to being open and participative and, conversely, that particular stages of community renewable energy project development will also naturally be disposed to being distinctly less open and participative. For projects involved in this study, the aspiration for broad participation is something that comes with time, and this temporal dimension to community renewable

energy was a key point of departure for the theme of participation in this research. Whilst this temporal dimension to community renewable energy has occasionally been alluded to in the extant literature (c.f. van Veelen, 2018), rarely does it appear to have been foregrounded so explicitly by projects being researched and, as a result, rarely has it been the focus of explicit study in a community renewable energy context.

5.5 Temporality and Participation

Projects included in this study frequently expressed views framed with reference to temporality and the caveat that notions of participation and inclusivity were indeed important but, with a few exceptions for projects who already had a social focus, in the main to be reserved for a future point in time. Whereas temporal perspectives in relation to energy have been explored in relation to fuels (Partridge et al, 2018), and have been acknowledged as an issue for energy justice (McCauley et al, 2018), there is relatively little research which explores temporal issues as they relate to community renewables (Creamer et al, 2019). In this research, the findings outlined in the foregoing section hint towards important, novel insights in this respect; highlighting the ongoing, temporal character of community renewable energy implicit in the way that patterns of participation in community renewable energy can be correlated with the particular stage of development of a given project.

To what extent this is a feature specific to the Welsh context would benefit from future research, but the evidence suggests that community renewable energy projects in the early stages of development are thus likely to pursue a delivery-focused approach to participation, focusing on engaging communities of interest and more privileged local actors with the ability to contribute the necessary skills or finance to ensure the development of the project. As projects move through these stages and are eventually constructed, scope for a more substantive approach to participation with greater emphasis on local socio-economic circumstances and the needs of communities of place are more likely to emerge (van Veelen, 2018). This suggests that, for the vast majority of cases, issues of participation, inclusivity and representativeness are likely to become more prominent in the later stages of community renewable energy project development after projects are constructed, if they are to feature at all. This is consistent with the findings from this research, where what few projects there were that exhibited an ostensible fuel poverty focus at an early stage tended to do so as a result of already being active in this area or where fuel poverty alleviation was a co-benefit rather than specific aim of the project as a whole.

Such issues of temporality in community renewable energy have rarely been the focus of explicit consideration in the extant literature (Creamer et al, 2019). However, given the clear links between different stages of project development and approaches to participation

amongst the projects involved in this study, examining views framed with reference to temporality expressed by projects in more depth provides an opportunity to understand both the extent and significance of this issue for community renewable energy projects in relation to participation more broadly. In this respect, notions of representativeness and inclusivity are only some of the issues that projects referred to when confronted with the question of participation, nor was it clear that these were necessarily front and centre as a priority for many projects. Indeed, divergences between projects in their early stages and those who already had generating infrastructure and/or had been operating over a longer period of time, reveal differing perspectives on the issues projects most care about. These contrasting views have implications for understanding the changing nature of participation in community renewable energy over time, and projects involved in this study expressed views about community renewable energy and temporality from a range of perspectives. Central to this, as a representative from one of Wales' more established community renewable energy projects noted, is the fact that:

> *... one thing in terms of other communities that they really need to have a sight of is, you know, principally you're looking at delivering and running an energy scheme potentially for 20 to 25 years and you need to have a view on the operation of the scheme and making sure that all the structures, provisions and resources are in place. I know it's difficult but once you've actually got your permissions and your grid offers and you've built your scheme make sure that everything is in place to be able to continue and sustain the organisation in the long-run (Project Organiser, Wind, Powys)*

Inherent in this passage is an important reflection that community renewable energy is not finished when a project is constructed, and that these are long-term schemes with long-term implications for the people, communities and landscapes in which they are situated. Moreover, such views further highlight the ways in which activities viewed by CRE project leaders as 'obligatory' (such as sustaining the business) have the potential to squeeze out activities that are 'desirable' (such as a widespread approach to participation) (Abram and Cowell, 2004). As a further participant from the Energy Saving Trust, who administered the Ynni'r Fro scheme, reflected:

> *... but they've [communities] also got to be able to run the business after they've constructed and it's generating... they still need to have a certain level of business ability to handle the income and, you know, maintain the turbine – all that kind of thing. It's not something that stops and you don't have to think about it again, there's quite a bit that goes to it (Stakeholder Interview, Energy Saving Trust)*

Such views that reflect the challenges of community renewable energy over the long-term stand in contrast to the conventional, idealistic picture of community renewable energy projects in which whole communities come together to set up a scheme, and when that

scheme is built the job is done, and the researchers leave the scene. On the contrary, the foregoing passages reflect the fact that such views underestimate the complexity of community renewable energy projects over the long-term, and suggests that more of a longitudinal approach needs to be taken to community renewable energy as a precursor to understanding the justice-promoting potential of such projects over time. In this respect, the views expressed by participants seem to show how diverse ecologies of participation (Chilvers et al, 2018) in CRE shift, change and yet overlap within single CRE projects over time.

Indeed, the more established projects involved in this study expressed views relevant for beginning to understand the challenges community renewable energy projects face with respect to participation over the long-term. As has already been shown, projects in their initial phases thus tended to exhibit views on participation that foregrounded issues such as skills, finance, and—as a rationalisation of low expectations—the history of energy extraction in Wales. On the other hand, more long-standing projects, and projects that already had generating infrastructure, presented a much more nuanced view on participation that reflected the temporal dimensions of projects inherent in the fundamental fact that community renewable energy schemes are businesses and must be run as such. As a committee member from a project in mid- Wales noted:

> *You've got to run it as a business and I've strongly believed in that right from day one. The community group that are elected by the shareholders are the directors of the company and it's up to them to make sure that it's sustainable. Having your key executive functions like, in terms of wind or hydro you've got a technical person that keeps the wheels turning, you've got a money person that makes sure the bank is up-to-date, and you've got an admin person to make sure that the paperwork is in date ... The business has to have that fat in it and, if it doesn't, it's not a sustainable project (Project Committee Member, Wind, Powys)*

This account emphasises that community renewable energy is not just a vehicle through which to simply enact a particular range of social or environmental objectives. On the contrary, these are businesses that require a range of professional skills and regular input over a long period of time, and hence entail a whole set of long-term challenges and obligations that projects need to manage if they are to be successful, long after the initial challenges of getting projects financed, through planning permissions, and constructed are overcome.

This issue is highly relevant for participation in community renewable energy projects over time and, in line with this long-term perspective, some of the issues projects involved in this study referred to include the long-term problems associated with the heroics of the few, the

challenge of maintaining the 'sustainability of the project', and the difficulties that arise when things go wrong. As the same committee member remarked:

> *... if you put a wind turbine up then [you're] probably looking at, well, hopefully at a 25-year project. And that commitment has got to be there, but the commitment can change ... I've got this strong feeling having worked for a cooperative that cooperatives often generate on the heroics of the few, and you've got to be prepared to let go. The key people should not actually be in place for very long ... So, I think it's something that community renewable energy groups have got to watch is that heroics of the few because you've got to think of succession (Project Committee Member, Wind, Powys)*

This passage acknowledges the considerable amount of work that community renewable energy projects demand over the long term and it is interesting that this idea that the key people at the forefront of driving community renewable energy schemes forward on the ground ought to be refreshed over time is not one that was widely evidenced amongst projects in the earlier stages of development involved in this study. Indeed, such views reflect the experience of more established schemes that the long-term, ongoing demands of projects can become burdensome for the people responsible for delivering them. As another project organiser in South Wales reflected:

> *Success for this project would be me not having to do anything, that would be the long-term project. I'm 52 now and the projects will be there for 20 years, you know, ... [and] I'm just really sad that if I'm not there nothing happens and you want with these projects to get to the stage where you're not there but no-one notices (Project Organiser, Wind, Carmarthenshire)*

These reflections highlight the challenges projects face with participation even at the basic level of the key players, and suggest that a long-term perspective is needed on participation in the core functions of a community renewable energy project if such schemes are to continue to be viable on an ongoing basis, particularly where the need for specialised technical and business skills are concerned. Indeed, the emphasis the above projects placed on 'letting go' of schemes reveals a recognition that there is a need to rejuvenate the core group and ensure 'succession planning' to guard against projects becoming burdensome over the long-term for those at the forefront of delivering them. This is a crucial point given that many community renewable energy projects envisage an operational lifecycle in the region of 20 to 25 years and are run by volunteers, and an important challenge for community renewable energy projects when it comes to participation will be to navigate that longer time-frame successfully. Paradoxically, however, it is unclear that this will be a straightforward challenge for projects to manage even in cases where such projects have wide resources to draw on in terms of participation in practice. As another committee member of a project in mid-Wales remarked:

> *I mean [name omitted] is retiring as treasurer and we are ... absolutely struggling to find someone to take over. I mean nobody from within the membership of 200 people has come forward and we've been saying for the past two AGMs that he's going to retire and nobody has come forward. So what we're going to have to do now is we're actually going to do a press release, we're actually going to go public, ... and actually try and look for a treasurer from outside; they would have to be a shareholder but they can have some of my shares because we are so desperate to get a treasurer (Project Committee Member, Wind, Powys)*

Such experiences emphasise that while community renewable energy projects often generate interest and support from amongst both communities of interest and place, the core functions of managing the project and putting the work in on a day-to-day basis require a level of commitment that only the most ardent project participants are likely to want to get involved with in practice. Moreover, both the technical and business needs associated with such schemes often require highly skilled, professional involvement that is not always straightforwardly available to communities in practice. To the extent that community renewable energy projects need to access the necessary skills and capacities from outside the local community to remain viable over the long-term, local participation and the representativeness of community renewable energy schemes may conversely be diluted, rather than broadened out, over time.

In this respect, long-term challenges such as those outlined above are also evident in reflections from some of the more established projects involved in this study on the nature of sustainability in community renewable energy. Indeed, as recounted in the first empirical chapter, issues of sustainability underpin the motivations of a number of projects across Wales. However, the outward emphasis of some projects on delivering sustainability benefits for the environment or for the locality conversely masks what projects that had been operating over a longer timeframe identified as the 'sustainability of the project'. As one participant from a project in mid-Wales involved in one of the participatory workshops reflected: 'sustainable is about not just [the environmental aspects, but] that it lasts, but that it's designed to, and that everyone's on board and everyone has their part to play and all those things' (Workshop Participant, Hydro, Powys). Such views reflect the experiences of the more established community renewable energy projects involved in this study and an acknowledgment about the fragility of community renewable energy schemes over the long-term. As a project organiser in mid-Wales reflected:

> *although I think we've been prudent in our decisions and we've got a scheme that's going to go forward, it's very necessary obviously to protect the interests of the organisation itself and you don't want [to do anything that might] ... be potentially undermining the whole viability of the ongoing, you know, sustaining that business (Project Organiser, Wind, Powys)*

Such views suggest the need for a more strategic approach to community renewable energy to an extent that few projects involved in this study had seemed to consider, including with respect to issues of participation, securing the necessary skills to ensure the sustainability of community renewable energy projects, and preparing for the problems that projects will inevitably face over a longer period of time. In this respect, more established projects also highlighted that the ongoing nature of community renewable energy brought a range of new risks into play with respect to the infrastructures being created, that small community-based schemes were rarely equipped to manage effectively. As participants in a number of schemes in South and mid-Wales noted:

> *And it's 25 years and I do, you know, sometimes I worry about who's going to maintain this micro-hydro scheme, its all-volunteer led, I mean an income's coming in but some of that income might need to end up going on maintenance and employing somebody to go and unblock the duct and stuff, you know, keep a check on it. That's a massive liability if anything goes wrong (Project Organiser, Hydro, RCT)*

> *... you start with the whole succession of different problems that beset the start of the [project] - the cabin got struck by lightning and all sorts of things ... [and] I got involved at the point basically when everything was sort of stuck, things weren't moving and there was no cash flow, there was no cash flow coming in to sort of address the problems and so it was all relying on voluntary effort (Project Committee Member, Wind, Powys)*

Indeed, these are issues that a simple, idealistic view of community renewable energy does not easily portray, and frequently posed concerns for the established projects involved in this study whose experience of delivering community renewable energy projects on the ground brought home the reality associated with the long-term nature of such schemes. Thus, evidence from community renewable energy projects in Wales suggests that their long-term nature presents a strategic challenge when it comes to driving projects forward to a longer time frame, which may potentially undermine the extent to which such schemes continue to be truly representative of their communities over time.

5.5.1 Temporal challenges for CRE: policy environments and beyond

A final issue facing projects over the long-term, inherent in the challenges (and opportunities) created by the rapidly evolving policy landscape structuring support for community renewable energy in Wales, and across the UK more broadly, was widely recognised across a large majority of the projects involved in this study. The ubiquity of this view compared to some of the other issues already identified is perhaps unsurprising given the extent to which the community renewable energy projects included in this study were reliant on a supportive policy framework for their development. As one project organiser of a community renewable energy project in Monmouthshire noted:

> *every week we get a new change of rules from this government, you know, we just can't plan because every time we put together a plan and go and sort out funding for it by the time we got it ready to go the rules have changed and it no longer works... It's just so often it destroys confidence and makes it so much harder (Project Organiser, Wind, Monmouthshire)*

Indeed, it is no understatement to suggest that the policy environment structuring support for community renewables has completely transformed over the course of this research, with changes to the Renewables Obligation Certificate (ROCs) regime, challenges from the Financial Conduct Authority over whether community renewable energy projects established under the co-operative model are truly bona fide co-operatives, and the feed-in tariff review which ultimately saw subsidies for small scale renewables slashed to the point that community renewable energy is widely considered to be stalling in contrast to its early growth (Rydin and Turcu, 2019; Community Energy England, 2019). As a stakeholder in the Welsh community renewable energy sector noted:

> *So the reduced feed in tariff will pay the finance but nothing else, I mean a little bit but not much, effectively zero, within the margins of the risk of the project very very little, nothing (Stakeholder Interview, The Green Valleys)*

Many projects included in this study thus reflected on the transformation in the policy environment that had changed from being, on the one hand, favourable to community renewable energy development to, on the other hand, barely incentivising further development at all over a very short space of time. Such changes point towards the tensions between policy priorities in different parts of the UK that the community renewable energy sector has been at the mercy of. As a participant from the Energy Saving Trust noted: 'Welsh Government might say that [community renewable energy is] a policy priority but I'm not sure the UK government do along the same lines' (Stakeholder, Energy Saving Trust). These tensions between political priorities have resulted to changes in the structure of support for community renewable energy that make both participation in and the benefits of community renewable energy projects significantly more difficult, if not impossible, to deliver as conceived under the original support mechanisms. Over the long-term, the uncertainties associated with these changes are likely to make it difficult for projects to plan in a strategic sense and pose real, existential challenges to the ongoing development of the sector that suggests that projects must be reflexive, adaptable and open to change over time.

However, to the extent that community renewable energy projects are able to rise to the challenges of being reflexive, adaptable and open to change, the pressures facing the sector both in Wales and across the UK more broadly in terms of political support may over time give rise to alternative business models for community renewable energy. Indeed, amongst the projects and stakeholders involved in this study, there was some evidence that

the turbulent policy environment for community renewables was fostering creativity within the sector as a whole with respect to how to make community renewable energy projects viable over the long-term in a context where support for small-scale renewables is restricted. As a stakeholder in the sector representing Community Energy Wales reflected:

> *One of the big issues at the moment which relates to ... fuel poverty, is that community groups can generate electricity but if you were living in my little community I couldn't sell the energy to you. I have to sell it to an energy company and then you have to buy it back from the energy company, you might be using that same electricity but you can't buy directly off me, which is one of the biggest inhibitors to really using community renewable energy to tackle things like fuel poverty. But if we can start to overcome some of those issues and instead of, you know, we haven't got the feed in tariff any more, but we got our wind turbine and we can sell to you as a customer directly at 12p, then perhaps that makes that scheme financially viable plus you're saving 2p a unit on your electricity (Stakeholder, Community Energy Wales)*

Whilst the ambition from amongst local energy projects to be able to supply energy within the locality is not new (Cowell et al, 2011), the above passage shows that it has recently come into increasing focus as a potential mechanism for sustaining the sector in a hostile policy environment. This point is exemplified by intermediary body Community Energy Wales recently adopting a 'right to local supply' as part of its manifesto (Community Energy Wales, 2015), which would significantly broaden the opportunities for local communities to participate in community renewable energy and offer an alternative and more direct route for community renewable energy schemes to address issues such as fuel poverty. Thus, whilst the genesis of such alternative business models stems from real challenges threatening the continued development of the sector, trends evidenced from amongst projects involved in this research suggest that it is possible that the creativity these challenges are fostering within the sector portend new ways of delivering community renewable energy projects, as well as new ways of addressing issues of participation, representativeness, and inclusivity over the long-term. Such new social relations offer the prospect of engaging communities in new ways.

5.6 Conclusions

This chapter set out to examine how issues of participation and inclusivity unfold in community renewables projects in Wales, including the representativeness of projects within communities on whose behalf they claim to operate. Doing so helps to address gaps in the existing literatures on community renewables regarding specifically *how* participation in community renewables takes place in practice, as well as the ways in which citizen involvement in energy production restructures participation in and facilitates more diverse engagements with the energy system, and with what wider effects. In doing so, important, novel insights into the ongoing, temporal nature of community renewables—and the role of

participation thereto—have been established. Whilst this temporal dimension to community renewable energy has occasionally been alluded to in the extant literature (c.f. van Veelen, 2018), rarely does it appear to have been foregrounded so explicitly by projects being researched and, as a result, rarely has it been the focus of explicit study in a community renewable energy context.

These temporal issues are highly relevant from the perspective of justice in community renewable energy, such as in the sense of highlighting procedural justice challenges for CRE-developments to navigate if they seek ongoing participation from the local community over time, as well as for emphasising tensions between different pillars of justice (such as participation and delivering outcomes) relevant for CRE projects. The ongoing, temporal nature of these issues in the context of community renewables are not well understood in the literature and present an enduring structural challenge for projects to resolve if they are to deliver pro-justice outcomes. Indeed, findings elsewhere in this chapter which suggest that—at least in their early stages—community renewable energy projects are likely to pursue approaches that are less prescriptive with respect to issues of participation, representativeness, and inclusivity are indicative of important temporal tensions in delivering greater justice. In this respect, the issues identified in this chapter seem to emphasise differences in the temporal orderings of activities based on project needs, further insights into which could yield new avenues for addressing and embedding justice in processes of local energy.

More generally, this chapter has shown that mobilising participation in CRE-developments is far from straightforward. In this respect, issues such as the legacy of coal extraction in Wales emerged from the interview transcripts as a key issue for participants on the ground for engendering a sense of apathy regarding the motives that lie behind the emergence of (local) energy infrastructures. Perhaps more problematic, perceptions that vulnerable groups, such as the fuel poor, are somehow not worthy or that links between energy production and vulnerability are arbitrary pose a problem if CRE-projects are to meaningfully extend citizen participation in the energy system. While projects expressed a number of possible strategies for potentially resolving such tensions (such as co-benefits approaches), the findings show that CRE projects experience real issues in reconciling the different dimensions of energy justice in projects in practice.

In the next chapter, the temporal threads identified here are further developed in the context of the outcomes and benefits associated with community renewables projects on the ground.

Main Theme	Description of Theme	Key features
Mobilising participation	Post-industrial legacy of extractive industry and practical issues of facilitating community engagement shape participation in local projects in Wales	Ambivalence towards energy-related issues; comparisons with coal extraction; practical challenges of facilitating engagement (e.g. access to space, technology, language)
Prioritising participation to support project development	Projects prioritise a 'delivery-focused' approach to participation, distinguishing between participation that is either desirable or required	Project leaders less interested in community engaging as 'citizens'; low community involvement and socio-economic representativeness; deliberate strategies of not engaging local community in early stages of projects; focus on participation based on the needs of the project; prioritisation of financial issues; focus on issues considered obligatory
Voluntariness	Projects face a challenge to develop due to the availability of personnel with spare time and the required skills	Absence of paid staff to support project development; projects run by volunteers; absence of required skills
Engaging vulnerable groups	Projects were not more socio-economically representative because of challenges or contradictions inherent in seeking the participation of vulnerable groups	Perceptions that vulnerable groups are not worthy, and that links between energy and vulnerability are arbitrary; projects don't have the tools to identify vulnerable groups; vulnerable groups don't have the material resources to participate in ways projects require
Becoming inclusive	Projects refer to a range of strategies for enrolling communities in their projects	Projects active in other areas in the community have more success in engendering participation; 'co-benefits' of projects increase opportunities for broadening participation; projects suggest a 'broad' approach to the ways in which citizens are enrolled in projects is needed
Temporality and participation	Projects often expressed aspirations to become more inclusive by extending participation after the point projects are developed and energised	Expectation that participation changes at different stages of project development; different temporal orderings of activities based on project needs; emphasis on long-term nature of projects; 'project needs-based' approach to participation (e.g. to seek required skills)

Table 5.1: Chapter 5 findings summary table – Participation in CRE

6 Distributive Outcomes of Community Renewables: Examining the Benefits of Projects in Wales

6.1 Introduction

Despite over a decade of research into community renewables, existing studies have tended to focus on CRE *development* rather than explicitly assessing the outcomes of projects in situ (Berka and Creamer, 2018; Wyse and Hoicka, 2019; Creamer et al, 2019). As a result, there are significant gaps in understanding the equity and social justice outcomes of CRE in practice. Existing energy justice frameworks most often assess the outcomes of energy decisions, projects and associated initiatives through the lens of distributive justice (McCauley et al, 2013; Jenkins et al, 2017), an approach which has a more longstanding tradition in broader environmental justice perspectives (Walker, 2009; Schlosberg, 2004). Distributive justice has long been considered in the context of large-scale energy infrastructure siting, prompting consideration of the provision of monetary benefits to communities as a tool for managing siting conflicts (Cowell et al, 2011). Parallels can thus be made with CRE where, as Berka and Creamer (2018: 3414) note, the production of benefits through local investment of incomes generated by CRE-projects 'appear to play a crucial role in determining the extent to which community renewable energy projects deliver transformative local impacts' on the ground. However, as Wyse and Hoicka (2019: 884) observe, 'there is a lack of empirical research investigating how such benefits actually accrue' in practice (see also Creamer et al, 2019).

This chapter seeks to answer the third research question posed in this research: *How do community renewable energy projects influence distributive fairness both within and beyond the energy sector?* In doing so, it aims to develop a critical understanding of the material impacts of CRE-projects in Wales, considering the outcomes and related distributive effects associated with projects in practice. Following Lacey-Barnacle and Bird (2018), a framing of distributive justice focussing on both locational issues concerning the geographical siting of energy infrastructures, as well as their associated economic and other benefits and burdens, and how they are distributed across society, is therefore deployed as a lens through which to discuss the effects, challenges and opportunities related to CRE-projects in Wales. Such a holistic framing is vital for understanding the role CRE might play in mediating social justice issues more broadly. While it is important to recognise that a

number of the projects included in this research expressed views that they did *not* consider their aims as (re)distributive, this chapter follows Ürge-Vorsatz et al (2014) in considering that specific local interventions carried out by projects generally entail distributive consequences that in some cases outweigh the importance of the primary outcome, regardless of whether individual projects consider such additional benefits to be an explicit objective or not. Indeed, evidence generated from projects included in this research highlight a range of distributive effects that can be traced to specific initiatives delivered through CRE-projects in Wales. However, this chapter also demonstrates the difficulties of assessing the distributive outcomes of projects in their early stages, and suggests that there are a range of challenges and contradictions faced by CRE-projects when it comes to delivering particular distributive justice outcomes in practice. Indeed, chief amongst these views expressed by participants included in this research was significant scepticism when it comes to the ability of CRE to straightforwardly address energy-related social justice issues such as fuel poverty.

However, building on the insights from the previous chapter on participation, it is worth recalling that existing analyses of community and renewable energy tend to be ahistorical, rather than understanding community renewables as an ongoing, temporal process, which may not wholly capture the implications for justice. Drawing on the experiences of multiple projects included in this study, I show that temporal perspectives are equally relevant from the perspective of CRE-project *benefits* as they are for issues relating to participation, and that the benefits associated with CRE-projects can and do change over time in ways that have implications for the distribution of justice. I draw attention to the ways in which projects frequently adopt an inherently more long-term outlook, seeking to build reflexivity into their plans to allow them to be more responsive and resilient to changes and opportunities as they arise, at the same time suggesting an intrinsically longitudinal approach to project benefits and outcomes. In so doing, I advance the literature on the benefits and energy justice implications associated with CRE by demonstrating the co-evolutionary nature of project priorities and local circumstances, which create opportunities for local energy initiatives to engage communities on issues of energy and justice in new ways. Such perspectives are relevant for understanding the extent to which community renewables may contribute to greater energy justice over time, and suggests a key focus for future research seeking to understand the distributive outcomes of CRE-projects in practice.

6.2 Unpacking the benefits of CRE-projects in Wales

There is a long history of research into the locational aspects of distributive justice (Harvey, 1973; Smith, 1994; Soja, 2010). More recently, interest in low carbon transitions and their effects has increased attention on the coincidence of patterns of energy infrastructure siting

with issues of spatial differentiation and uneven development (Bridge et al, 2013), which have relevance for understanding the justice implications of CRE-projects in Wales. Beyond such locational aspects of distributive justice, as set out in Chapter 4, the CRE groups involved in this research exhibited a range of underpinning motivations for undertaking their activities, and the particular rationales associated with individual CRE-projects aids understanding of the types of benefits those projects sought in practice. In addition to understandings of the benefits associated with projects elicited by interview, further evidence was generated through participatory workshops entitled and centred around 'exploring community benefit priorities'. The CRE-project representatives thus included in this study made claims to a heterogeneous range of benefits generated through projects in the past, being currently produced or to come at a future point in time. This distinction between, on the one hand, what projects actually do in practice and, on the other hand, what projects say and aspire to do is an important one to the extent that it serves as a potent tool for examining the mediation of justice 'in the field'. Indeed, whilst this research has uncovered many positive stories about CRE-projects in Wales striving to deliver a broad range of benefits, an overarching theme to emerge is a scepticism amongst participants in this research regarding the ability of CRE broadly conceived to attend to issues of social justice in practice, particularly around fuel poverty and widening access to energy. This finding adds further support to studies conducted with community groups elsewhere (Berka and Creamer, 2018), with the added feature emerging from this research highlighting the co-evolution of benefits with changing local circumstances and patterns of participation over time, as outlined in the previous chapter.

The following sections unpack these issues in more detail as a means of considering the links between patterns of CRE-development and actually existing implications on the ground, including the justice-promoting potential of CRE-projects in practice. The following sections thus start with an overview of the locational aspects of distributive justice pertaining to CRE-projects included in this research, before discussing three of the recurrent themes identified by research participants on the theme of benefits: (i) responding to austerity and the decline of public services, (ii) improving community-based economic opportunities, and (iii) environmentalism and stewardship of local resources.

6.2.1 'Benefit to the people that live in the locality' – Locational aspects of community renewables in Wales

Distributive justice focuses on both locational issues concerning the geographical siting of energy infrastructures, as well as their associated economic and other benefits and burdens, and how they are distributed across society (Lacey-Barnacle and Bird, 2018). Consideration of the locational aspects of distributive justice pertaining to CRE-projects in

Wales is thus important for understanding the extent to which siting decisions coincide with perceptions of relative need, thereby either reifying or challenging already existing patterns of spatial differentiation and uneven development (Bridge et al, 2013). For a study empirically grounded in Wales this point is important: as outlined elsewhere in this thesis, Wales is a highly relevant context within which to explore questions of energy and justice. As such, Wales consistently ranks amongst the most deprived regions of the UK (Abel et al, 2016), and by some accounts is also considered a 'peripheral' nation (Owen et al, 2000) characterised by social, economic and political marginalisation and less power to influence decisions, including from the perspective of low carbon energy transitions (Golubchikov and O'Sullivan, 2020). A starting point for understanding the justice implications of CRE-developments across Wales thus emerges from the coincidence of such projects with already existing patterns of poverty, deprivation and periphery characteristic of the Welsh context more broadly.

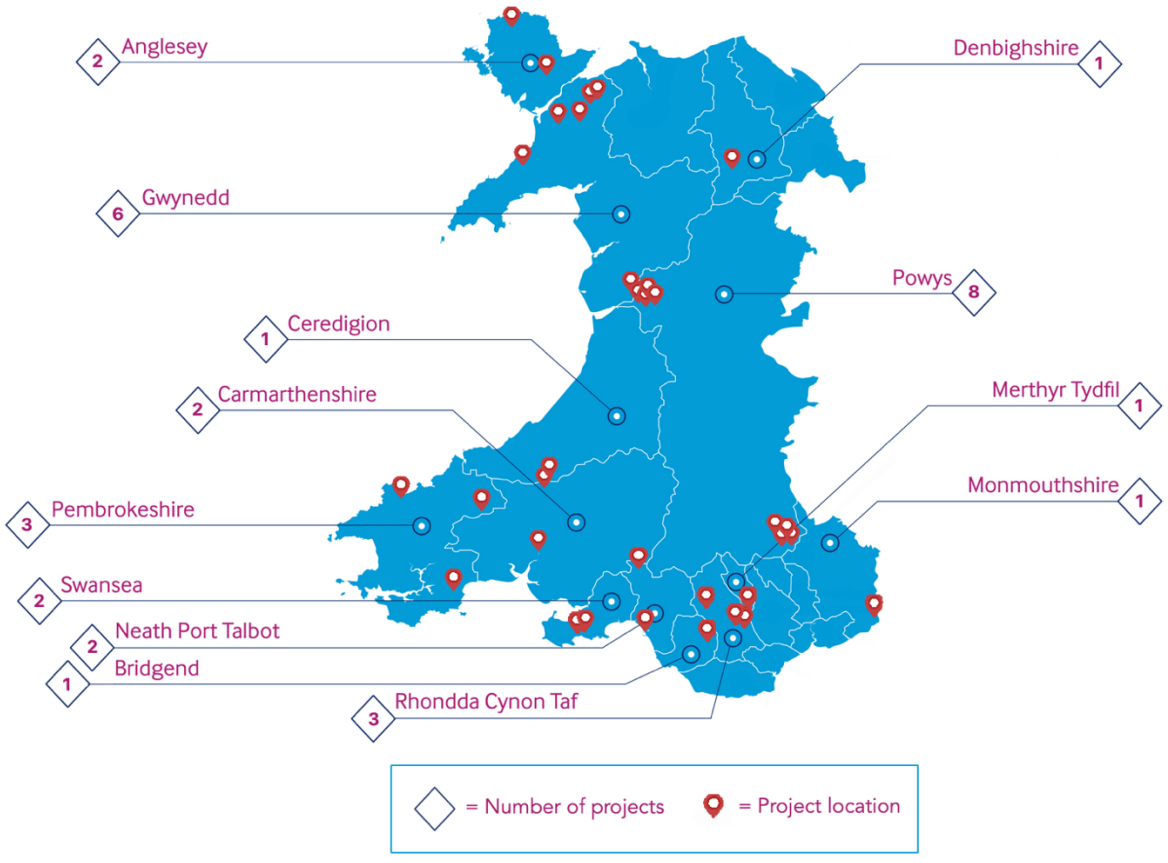

Figure 6.1: Location of CRE-projects involved in the research

As outlined in Chapter 3, the CRE-projects involved in this research represent each of the different parts of Wales—north, south, west and mid—as shown in Figure 6.1. While highlighting the distribution of projects across Wales more generally, a key characteristic to emerge is that the majority of the projects included in this study were situated outside of the

larger urban centres in predominantly rural parts of Wales, some of which are amongst the poorest in the UK. For instance, gross disposable household income on Anglesey and in Gwynedd, which account for roughly a quarter of all the projects included in this research, varies at around 90% and 82% of the UK average (Machura et al, 2019). Similarly, GDP per capita in RCT in the Valleys, which hosts a further three projects, was nearly half of the UK average in 2017 (ONS, 2019). More broadly, that the majority of projects are situated in sparsely populated rural areas often associated with key characteristics of peripherality (Fischer-Tahir and Nauman, 2013), such as inadequate access to services and employment opportunities (Heley et al, 2011; Kitchen, 2012), suggests that many projects included in this research have benefits for challenging patterns of spatial differentiation and uneven development co-located with areas in need.

Interest in locational aspects of distributive justice also emerged in discussions with research participants, where the evidence suggested a particular emphasis on localising the benefits of projects and ensuring access to benefits amongst areas perceived to be in greater need. As the following passages demonstrate:

> *… [it's important that] the profit from the energy generation is retained locally, it's not going to shareholders of a multinational which is often the alternative … so that the profit element is coming back to the community in one form or another (Project Organiser, Wind, Pembrokeshire)*
>
> *We see lots of examples of good work happening but not providing much benefit to the people that live in the locality. That was one of the things that we set out to do and challenge some of that really (Project Organiser, Hydro, RCT)*
>
> *… you've got [a community] which is up the hill and is really one of the poorest communities in North Wales, dominated by a large housing estate… they always feel quite aggrieved that everything goes [elsewhere] so we are really interested in trying to develop something that goes against that model because they feel, they always have done… that nothing ever comes here … because it's in a wider parish that's richer it gets ignored and completely overlooked (Project Organiser, Hydro, Gwynedd)*

The emphasis on ensuring that projects provide 'benefit to the people that live in the locality' across the foregoing interview evidence highlights that locational considerations linked to the siting of CRE-projects are a key priority for participants included in this research in determining where and to whom project benefits ought to be distributed (see also Bristow et al, 2012). Moreover, the passage from the hydro project in Gwynedd provides evidence of projects acting strategically to ensure that local pockets of deprivation are factored into decision-making, ensuring that access to improved social justice outcomes through CRE are more equitably spread at the intra-community scale. In contrast to Yenneti et al (2016), who observed that large-scale low carbon infrastructures were utilised to disenfranchise

places with little socio-economic or political power, such findings show a pattern in Wales whereby local-scale low carbon infrastructure developments, such as CRE-projects, are pursued as mechanisms to improve the lot of the least well-off, while at the same time highlighting the potential for differential distributive justice effects from projects at different scales—an important point from an energy justice perspective considering that local approaches have largely been eschewed to date (Forman, 2017; Lacey-Barnacle and Bird, 2018).

Understanding the prominence of locational considerations both for local decision-making about CRE, and for assessing the coincidence of broader regional patterns of CRE development with underlying socio-economic features characteristic of the Welsh context, are useful for highlighting the convergences between issues of spatial justice and energy justice in practice (Yenneti et al, 2016; Bouzarovski and Simcock, 2017). However, as noted in the introduction to this chapter, recent calls for further examination of the benefits associated with CRE (Berka and Creamer, 2018; Creamer et al, 2019; Wyse and Hoicka, 2019) highlight the need for better empirical evidence at a project-level to move beyond what are perceived as largely 'anecdotal' (Creamer et al, 2019: 4) accounts of projects and their benefits observed within the literature to date. Moreover, while there are undoubtedly wealthy pockets within Wales[30], much of the country is indeed rural, peripheral and statistically poor, suggesting that a holistic understanding of the benefits of CRE-projects ultimately comes down to such issues of benefit distribution at meso- and micro- scales. It is to these issues that the following sections now turn.

6.2.2 Community renewables in a time of austerity

As discussed elsewhere in this thesis, a key feature of the socio-economic landscape at the time at which this research took place was economic austerity in the wake of the financial crisis, beginning in 2008. Without doubt economic austerity came to characterise the context of local public service provision in the UK during the time this study was conducted, with research highlighting that local authority spending per capita reduced by 23.4% between 2009/10 to 2014/15 (Innes and Tetlow, 2015). In some places this has led to perceptions of a spread of austerity urbanism, whereby local authority responses to fiscal constraints imposed in the aftermath of the financial crisis are characterised by moves to shed responsibility for local services (Aldag, 2019) coupled with a renewed focus on the role of obligations of citizens as a principal mechanism for ensuring society functions effectively manifest through the discourse of the 'shared society' (May, 2017). A number of recent studies have sought to examine the relationship between austerity and local

[30] 7% of the Welsh population live in the *least* deprived fifth of areas across the UK (Abel et al, 2016).

government-led and CRE developments more generally (Morris et al, 2017; Lacey-Barnacle and Bird, 2018; Creamer et al, 2019; Tingey and Webb, 2020), whereby the resultant decline in availability of resources to support a broad range of local services, particularly at more local levels of government, has been shown to be an important context both for shaping and understanding local development priorities, including for CRE. Correspondingly, participants representing a range of CRE-projects included in this research highlighted the role such schemes could play in mitigating the local effects of austerity, including examples of taking control of community assets, rejuvenating the high street, providing local services, and providing finance to support local activities.

One of the projects in this category was a micro-hydro project in Merthyr Tydfil, where the scheme had been developed with the sole intention of using the financial benefits for taking over the lease of the local park as a community asset. As the project organiser reflected:

> *What we want is our park in the middle of our villages staying as a safe and inviting place for local people to go to. The issue we have ultimately is at the moment the local authority hasn't got the funding to man the park … you're probably not far short of £80,000 or £90,000 a year to manage that park which is a lot of money for a local authority that's basically bankrupt (Project Organiser, Hydro, Merthyr Tydfil)*

In this way the case in Merthyr Tydfil exhibits some of the key features of an emergent austerity urbanism outlined above, whereby local community assets identified as important to the community are placed at risk, and in so doing are transformed into a site for community activism—in this case for the development of a CRE scheme as a mechanism for generating the finance to ensure continuity of local service provision through greater community control. Similarly, another key example was identified in a woodland restoration project based in Swansea, established to support community control of a local woodland and thereby avoid the sale of council-owned land for development. As an online history maintained by the project reflects:

> *We’re sure you’ve heard the latest news about the sale of the Council’s Civic Centre … This is a reminder of the ongoing threat from development to [the local woodland] ... We’re not against development in principle, and fully understand the need to build more houses and places to work, but we strongly feel that in the process of development, special places like [the local woodland] need to be protected (Website Excerpt, Hydro, Swansea)*

A micro-hydro scheme located within the local woodland estate was established to support the aims of the project, generating sufficient power to reduce the running costs of the community coffee shop, a new woodland visitors centre and the site office, and raising an expected £10,000 per year to support the organisational aims of the restoration trust. Aside

from taking over the lease of the woodland, and in so doing securing it as a community asset for 104 years, documentary analysis of project promotional materials notes additional priorities which include to:

> *conserve and maintain the historic environment, [support] education and training, enhance biodiversity and provide sustainable employment and volunteer opportunities (Website Excerpt, Hydro, Swansea)*

The utilisation of local community- and co-operatively organised energy system interventions as a means of achieving local socio-economic development in such ways has been observed elsewhere (van Veelen, 2017a; Holstenkamp, 2019; O'Neill-Carrillo et al, 2019). The present research shows that similar patterns are widely relevant for the development of CRE-projects in Wales, including in response to the incidence of lack of local authority support for a local library in Crickhowell, the closure of the local school in a case in Pembrokeshire, and the demolition of the local swimming pool in Treherbert. As a participant in the workshop in Treherbert remarked:

> *I remember coming swimming to Treherbert every Saturday morning in the summer, [now] not only have they closed the pool they've actually demolished it, so we can't even hope of it reopening any time soon. I mean it's appalling, you know, that the damage is done [by removing services and facilities] (Workshop Participant, Treherbert).*

The sentiment expressed in the above passage that the erosion of public services wreaks 'damage' within local areas highlights the wider web of spatial, social, and amenity disadvantages that coincide with the loss of local services. Indeed, across the foregoing examples, we see CRE in an austerity context helping communities to retain assets, rather than providing a 'net benefit'. From a justice perspective, the resultant uneven distribution of services, and its associated effects, constitutes a form of uneven development in which some local communities are systematically disadvantaged by the retreat of the state (Soja, 2010; Golubchikov and O'Sullivan, 2020) amounting to perceptions of injustice amongst local inhabitants as conveyed in the excerpt from the workshop participant. Community action coalescing around the development of CRE-projects as a mechanism for enhancing justice outcomes and mitigating injustice locally, by ensuring that local services and the associated benefits they provide are preserved and expanded, was thus a common theme of the research data.

The most obvious principal benefit associated with projects falling into this category is the continuity of local service provision that such CRE development supports; in the hydro project in Merthyr Tydfil providing access and upkeep to a prized local resource in preserving the community park. However, community resources such as a park are

constituted by a heterogeneous set of attributes and characteristics and, as such, provide a diverse array of services and functions to both users and the local area more widely that imply a much more wide-ranging set of benefits beyond that which is implied by mere 'service provision' alone (Plane and Klodawsky, 2013). In this way, the value of a particular asset (such as a park) must be understood in the context of its associated attributes (Morancho, 2003). In the same way, the project organiser of the Merthyr Tydfil hydro project emphasised the centrality of maintaining access to the local park as a key driver for a range of social, cultural and environmental benefits shared amongst the inhabitants of the three villages it serves:

> *our park … is a valuable asset not just from a, you know, walking about and having a good time but also, you know, people go there to relax and people go there to exercise and it has a lot of social advantages … we didn't want to lose what we felt was an important part of the social make-up of the villages now … it has lakes on it, there's a local canoe club use it, the local fishing club use it, there's a football pitch so the football club use it, the rugby club use it so … it's about the social and health benefits of having a park nearby that you can use (Project Organiser, Hydro, Merthyr Tydfil)*

Recent evidence supports the view that green open spaces generate benefits for improved health outcomes (by providing access to improved air quality (Xing and Brimblecombe, 2020) and supporting and encouraging physical activity (McCormack et al, 2020)), for improved social outcomes (by providing opportunities for social interaction and a locus for increased social cohesion and collective identity (Sia et al, 2020)), and for improved economic outcomes (by contributing to economic gains arising from green space accessibility (Du and Zhang, 2020)). That the project organiser in Merthyr Tydfil identified similar characteristics highlights how supporting access to local amenities is often synonymous with engendering a range of social, economic, cultural and environmental benefits, in the case of the park the loss of which would have perceived detrimental impacts for community identity, material wellbeing, social cohesion, and environmental sustainability. The local park in Merthyr Tydfil, local woodlands in Swansea, and the swimming pool in Treherbert emerged as part of a cohort of such amenity-focussed activities (with associated social, health and environmental benefits) supported in this way.

From a justice perspective, these findings emphasise the extent to which geographical disparities in local service provision as a result of austerity are being resisted through the medium of local energy generation, in a way that aims to challenge the loss of benefits associated with wider justice outcomes. Thus, in an austerity context, patterns of CRE development in Wales are partly based on action to redress loss as a result of state retrenchment (see also Catney et al, 2013), challenging what appears with hindsight as a naïve positivity surrounding the CRE agenda set out in DECC's 2014 Community Energy

Strategy. As noted in Chapter 4, a number of projects problematised attempts to utilise CRE-project revenues to shore up declining public services in this way. However, it is clear from the evidence highlighted in the foregoing comments that such views were not ubiquitous, and a range of projects included in this research sought to use CRE-project revenues strategically in this manner as a route to contesting the retreat of the state from key services. As the project organiser of a wind scheme in Pembrokeshire remarked: 'if you want to keep those services and that's what's important to you then you might just have to bite the bullet and do it'.

6.2.3 Improving community-based economic opportunities

Beyond such amenity-focused activities, local services more generally also emerged as a driver for action, and the benefits associated with the economic rejuvenation of local communities left behind as a result of austerity (Lacey-Barnacle and Bird, 2018) or presenting the sort of vulnerabilities and disadvantages typically associated with energy peripheries (Golubchikov and O'Sullivan, 2020; Sullivan et al, 2020) were often highlighted as a key outcome of projects by participants included in this research. As one project organiser of a micro-hydro scheme in Gwynedd reflected:

> *There's been times when grants have been cut [and] … if you come you'll see a lot of shops are closed, a lot of inactivity, so we need some activity back on the high street and services. So in terms of the services we been providing, obviously the police are downstairs so the police have come back to the high street, you've got the clerk [of the council] working here three days a week … [so] the people of [the area] can come in and speak directly to the clerk and therefore have access to their local councillors. There's Citizens Advice, we're working with them, Credit Union as well, the Credit Union is opened two hours per week at the moment … In terms of environmental stuff I worked closely with … the local Housing group in North West Wales and they have a scheme called Wardeiniaid Ynni, Energy Wardens, so there was one energy warden attending weekly just to provide advice on the Warm Home Discount and so on so people could come in and access discounts on energy and fuel … So the hydro project is crucial really because you're creating an income stream to make [the area] more resilient and … look at the local assets - it might not be land but they are buildings and services, so what we can do with those services, and how to keep them, and deliver them locally… We've recently opened a craft shop in partnership with the local arts centre so that's an attempt really to again rejuvenate the high street and get more happening here, so it's a Welsh book shop, it sells crafts on behalf of local artists … and there's an art gallery downstairs (Project Organiser, Hydro, Gwynedd)*

It is clear from the foregoing passage that the income from the local hydro project produced a range of direct and indirect outcomes, with associated benefits, cutting across a variety of attributes commonly associated with metrics for measuring improved social justice gains, and which a simple understanding of 'rejuvenating the high street' conceals. These include

cultural, social and political participation, equal social outcomes, opportunities to achieve economic, livelihood and wellbeing goals (such as through new employment opportunities), and access to social services and environmental goods (Ziervogel et al, 2017; Kim et al, 2018).

A closer analysis of the specific services supported through the hydro scheme in Gwynedd in the foregoing passage helps shed light on the wide ranging nature of the benefits typically engendered through such outcomes. For instance, improving local police presence in an austerity context where police officer strength overall in North Wales fell by 2.8% between 2013 and 2017 (Allen and Audickas, 2020) when this research took place demonstrates the potential impact of innovative community solutions (in this case providing affordable space for a local police presence) for reversing patterns of uneven access to essential services. Similarly, bringing the local council to the high street expands the potential space available for citizens to participate in local governance while meeting preferences for local representation (Lyon, 2015; Saarimaa and Tukiainen, 2016), with prospective benefits to democratic decision-making and community identity. Indeed, the foregoing passage emphasises improved access to a broad range of services as a key outcome of the effort to rejuvenate the local high street, for which evidence in wider literatures points towards an equally wide range of individual and community benefits. In this respect, evidence shows that accessing energy advice services contributes to improved financial outcomes in the context of fuel poverty (Lorenc et al, 2013; Reeves, 2016; Martiskainen et al, 2018) while improving local social cohesion in marginal communities by building trust, facilitating access to entitlements, and increasing control over energy bills (Forster et al, 2019). In addition, partnering with the local arts centre to open a combination Welsh book and crafts shop-cum-art gallery on the high street in support of local artists is indicative of the sort of 'side-activities' that play an important role in diversifying the economic base and providing employment opportunities while strengthening and promoting social vitality within rural communities (Markantoni et al, 2013). By supporting local cultural activities and entrepreneurs, access to improved financial outcomes is potentially facilitated, while enhancing access across the community to local cultural assets such as arts, crafts, and literature thereby providing opportunities for increased local cultural participation and enriched cultural identity which are associated with improved wellbeing, good health and life satisfaction (Soltero, 2019). Thus, as the project organiser of a hydro project in Powys noted:

> *To be quite honest I would want some of the money to go to stuff which I think is, you could argue, is cultural stuff rather than… I hope we're not going to spend all the money on solar panels. I hope we'll be supporting the Eisteddfod or some*

other such… That sort of activity because I think it's part of what community organisations are about (Project Organiser, Hydro, Powys)

Indeed, research evidence suggests that access to arts may contribute significant psychosocial benefits, such as happiness, confidence, self-worth, and mental health (Nashwan et al, 2019). Moreover, such activities may provide the social and emotional stimulus to contribute to increased community cohesion, as research suggests that small-scale economic activities contribute to a better quality of life and enhanced social wellbeing (Markantoni and Van Hoven, 2012).

Links to supporting local trade and entrepreneurship such as in the hydro project in Gwynedd outlined above also emerged as a priority elsewhere in the research data as a mechanism for enhancing economic opportunities at the community-scale. As the project organiser of a hydro project in RCT remarked:

What we've also done is try to change the model, we are interested in grants but, I've known from the very beginning, that to create sustainability it's got to be based around trade and investment and not hand-outs and grants and that was one key driver. There's kind of two separate… So we've got a very entrepreneurial side to this but we've also got a very community-engaged community development [side], but they're not separate … We've got this big idea about the Rhondda Energy Company that we're some way to developing (Project Organiser, Hydro, RCT)

In the above passage, the local micro-hydro project reflects and underpins ambitions for the creation of new economic opportunities through the establishment of local businesses as a mechanism for improving trade and investment, for channelling wealth into the local area, and for ensuring that the (time-limited) economic opportunities provided by CRE-projects are transformed into a sustainable, long-lasting vehicle for providing opportunities to the local area. Thus, in the passage above, 'this big idea about the Rhondda Energy Company' becomes a model through which the economic benefits of reduced energy costs might be spread whilst, at the same time, ensuring that revenues are invested and maintained locally.

The prioritisation of similar local economic benefits can be traced elsewhere in Wales amongst participants included in this research. Another key example was a project based in Neath Port Talbot, outwardly identifying first and foremost as a community development organisation, focused on improving skills, training and job opportunities, and underpinned by finances raised through multiple community solar energy projects contributing approximately £60,000 a year to support local activities. As the project organiser reflected:

We've acquired seven buildings so far that we've refurbished and channelled it into community benefits so… we've got two workshops, one is [an] IT workshop

> *[and] one is a construction workshop … Training opportunities for the unemployed in the area. Job opportunities. Volunteering opportunities … We're taking computers from different organisations when they are at the end of their life, refurbishing them, and putting them back into the community, [and] we help other community groups by providing free IT equipment (Project Organiser, Hydro, Neath Port Talbot)*

Perhaps even more explicitly than the case in Gwynedd, this example highlights the ways in which CRE provides benefits to employment, which are vital for achieving other social goods, including social connections, social mobility, and engaging in positive social relationships (Mabhala and Yohannes, 2019), all of which are relevant from the perspective of greater social justice outcomes more broadly.

From a justice perspective, these findings emphasise that strengthening the local economy in order to fortify the range and vibrancy of community-based economic opportunities is often linked with the production of co-benefits in the form of enhanced social and cultural identity and participation, improved economic outcomes, and increased opportunities for shaping democratic decision-making, in addition to benefits to health, wellbeing, and community cohesion. As such, this research addresses a key gap in the literature on understanding the benefits of CRE (as identified by Creamer et al, 2019) by providing valuable evidence of the activities of CRE-projects for producing a range of opportunities often seen as key contributors to effective social, cultural and political participation and hence improved social justice outcomes. Such approaches have also been evidenced elsewhere in Wales (Haf and Parkill, 2017), albeit through the more narrow lens of strengthening local cultural attributes, and are evidence of the potential potency of CRE (i) as a mechanism for challenging uneven geographies of development and patterns of inequality evident in energy peripheries such as Wales (Golubchikov and O'Sullivan, 2020; O'Sullivan et al, 2020), and (ii) for expanding the potential space available for citizens to achieve improved social justice outcomes.

6.2.4 'What services is the landscape providing for people?' – Environmentalism and stewardship of natural resources

The foregoing sections highlight the use of CRE-projects as a means for achieving local socio-economic development and the preservation and expansion of local services and amenities. However, building on the discussion of project rationales outlined in Chapter 4, across the full cohort of projects included in this research, benefits related to positive environmental outcomes of projects and from their role in supporting greater local self-sufficiency were also identified as significant drivers for action. This links to patterns elsewhere in the literature which highlight the relevance of environmental (Berka and Creamer, 2018) and self-sufficiency benefits (Rezaei and Dowlatabadi, 2016) as rationales

for pursuing CRE. Projects falling into these categories thus conceptualised the benefits stemming from their projects in diverse ways, such as the simple fact of generating clean electricity to support the transition away from fossil fuels in wind projects in Powys and Pembrokeshire, to improvements to local biodiversity and ecology in a solar project in Swansea, and supporting sustainable natural resource management linked to local woodlands underpinned by hydro projects in Powys and RCT. As one project organiser of a wind project in Powys remarked:

> *I think the fundamental fact that we are outputting something like 800MW hours of power to the local grid has to be the most rewarding and the biggest benefit of the schemes themselves … and further low carbon initiatives so, you know, circulation of low energy lightbulbs, environmental officers going round, then obviously looking at energy efficiency in community and public buildings, that sort of thing are real tangible benefits that the scheme is delivering (Project Organiser, Wind, Powys)*

Thus whilst the earlier sections emphasise the role of CRE-projects primarily as a *supporting mechanism* for producing a range of other benefits, evidence elsewhere across the research data illustrates the conceptualisation of benefits in terms of the key functional attribute of such projects to generate and provide clean electricity, thereby addressing climate change issues more broadly. Such environmental considerations emerged as equally important from the perspective of project members in this example, showing that they are a key factor both for project organisers and for generating buy-in across the community. As a participant in the above scheme in Powys reflected:

> *we are now generating electricity from renewable resources that is equivalent to the use by the number of households that are members of the scheme. That, for me, is why I'm in it really, I would like to feel that I'm getting my own electricity from renewable sources (Project Member, Wind, Powys)*

The prioritisation of environmental benefits are further evident in the earlier passage with the additional reference to side-activities delivered through the scheme, organised under the rubric of 'low carbon initiatives', thereby addressing issues linked to energy consumption and reduced carbon footprints, which have been shown to be important for reducing overall energy demand in the context of climate change (Shirani et al, 2013; Trotta et al, 2018; Butler et al, 2018). Indeed, the 'further low carbon initiatives' outlined in the wind project in Powys point more broadly to the environmental benefits associated with reducing energy consumption, that for other participants included in this research was emphasised as the key benefit emerging from such projects. As a member of a solar project based at a local community centre in Monmouthshire remarked:

> *… what I would say is that what is perhaps indicative is that our electricity consumption average overall was down by 12% last year, we actually have downward pressure on energy consumption which has come about … it's just the business of making people aware of what can be done and it does end up with people switching off lights and not leaving the heating on overnight and so on and so forth (Project Member, Solar, Monmouthshire)*

Such evidence highlights the role of CRE in improving the sustainability of everyday life (Shove and Walker, 2010), by creating greater awareness of the impact of 'mundane energy use' (Groves et al, 2017) for the environment and climate change amongst project members, and thereby engendering more sustainable energy consumption practices and improving energy literacy. In practice, such outcomes were achieved by projects providing low-energy lightbulbs (a scheme in Powys) as well as home energy audits and advice (a scheme in Neath Port Talbot). Moreover, fostering links to everyday energy consumption practices was elsewhere seen as an important co-benefit for maximising the environmental impact of CRE-projects in practice, alongside the benefits derived from clean electricity production. As the project organiser of a wind project in Pembrokeshire replied when asked about project benefits:

> *… [it's] an obvious demonstration of renewable energy production and this is why I'm mostly so glad to say wind turbines are so visible because they are demonstrating how clean energy can be produced. If we can make this link … to local consumption that would be, that would raise awareness … the old principle of putting your clothes out to dry when the sun's out is relevant to all this, you use electricity when the wind's blowing when you can (Project Organiser, Wind, Pembrokeshire)*

Beyond the environmental benefits of CRE emphasised by participants included in this research, the reference in the foregoing passage to 'use electricity when the wind's blowing' draws attention to broader issues surrounding natural resource use, that emerged elsewhere in the research data as a key issue at a local level for a range of projects involved in this study, particularly amongst those linked to woodland groups. Indeed, as Shrestha and Ojha (2017: 22) citing Anon (2013) note: 'Concern over equity is "one of the fundamental principles of community involvement in forest management"' thereby highlighting important links between natural resource management and pro-justice outcomes. As the project organiser of a hydro scheme in Treherbert set out:

> *So today, we've got a community project and it's been going for two years now … And energy was talked about in the Heads of the Valleys Woodland Plan so it was a natural sort of progression into micro-hydro and, of course, because of the woodland, wood fuel became of interest as well … We're a woodlands project, it's in the title that the specific services that we were looking at were landscapes, what services is the landscape providing for people, and it turned out that there wasn't much. Natural Resources Wales as it were was actually launched in Treherbert at our community building but when we looked at what*

was being delivered … the community didn't have any of the benefits, anything they had from the woodland they'd just gone and taken, they weren't provided for them in any way (Project Organiser, Hydro, RCT)

In this way the case in Treherbert reflects a concern regarding the disenfranchisement of the local community by formal institutional structures (represented here by Natural Resources Wales, but also by private ownership) in the context of the governance of local natural resources, manifest through a focus on access to services provided by the local woodlands on the outskirts of the community, including its utilisation as a source of wood fuel biomass. Moreover, the emphasis on 'what services is the landscape providing for people' highlights the role CRE-projects can play in facilitating the stewardship of local natural resources more broadly, and the importance of green space accessibility not simply for improving ecological function (Cerra, 2017) but for ensuring that the benefits such resources provide are more equitably spread and support wider pro-justice outcomes. Indeed, another key example was identified in a further woodlands project based in Powys, also underpinned by a micro-hydro scheme, where stewardship of local resources was identified as a prerequisite for addressing local needs and providing access to solutions to energy-related problems such as fuel poverty. As the project organiser reflected:

… they're living in the countryside where there's actually enormous resources for renewables, for self-generation, for reducing the costs, both the environmental and the income costs … and so what we are trying to do through the woodland group and so on is trying to close that circle a bit. I mean we've found that in [our community] one third of the houses … is using wood as a significant part of their fuel mix. Now that's completely unmanaged at the moment … [and] when you're talking about finding solutions to rural fuel poverty, you have to solve those problems, you have to close the loop around use of those local resources and you have to make it real … you know, the management of the asset is in some way linked to what people are doing and how they're thinking about the solutions (Project Organiser, Hydro, Powys)

While there is a long history of research exploring the interface between common pool resources and community-based natural resource management (Ostrom, 1990; 2009), the particular patterns associated with woodland projects outlined above provide evidence of the ways in which rural CRE-projects promote enhanced socio-ecological connectivity by encouraging stewardship of local resources, and suggest that landscape service flows are often shaped in response to local needs in ways that have the potential to enhance access to pro-justice outcomes. Indeed, as a board member of the project in Treherbert went on to discuss:

… the micro-hydro thing will produce money which will employ a worker which will hopefully do something around the land ... You know there's lots of wood up there, if we could use it locally to produce fuel locally, it seems pointless that we should have to go all the way miles away … So it's trying to get people to think

> *differently … [building] in that thinking about the world, nature, the natural resources that are here ... And that's the other bit, you know, those woods have been set up as not belonging to people, they belong to the Forestry Commission and you're not allowed to go up there, as a result you get grass fires up there and things like that. If it's theirs, if they've planted the trees, if they as a school have grown them up and planted things up there and they know that that wood is heating their house then there's a relationship (Project Board Member, Hydro, Treherbert)*

As is clear from the above passage, for the project in Treherbert stewardship of local resources through CRE is linked to the promotion of greater self-sufficiency and self-reliance within rural communities, and where perceptions of broader patterns of community disenfranchisement from local natural resources persist. Like research by Rezaei and Dowlatabadi (2016), who found that ambitions to supply energy under the rubric of self-sufficiency through locally available resources in remote and marginal communities were linked with efforts for greater self-determination, this evidence provides insight into the diverse ways in which CRE offers a mechanism to local areas for 'taking a bit of control' (Project Member, Hydro, Powys). From a justice perspective, such benefits are markers of enriched social, environmental and political participation (Ziergovel et al, 2017) and hence point towards the benefits of CRE for providing access to improved social justice outcomes.

6.3 Challenges and Opportunities for Achieving Distributive Outcomes

While the foregoing sections provide evidence of the core themes expressed by participants included in this study on the issue of CRE-project benefits and pro-justice effects, fieldwork also highlighted a range of challenges and contradictions faced by CRE-projects when it comes to delivering particular distributive justice outcomes in practice. Indeed, this point draws attention to modes of distributive justice *not taken,* chiefly rationalised on the basis of significant scepticism regarding the ability of CRE to straightforwardly attend to energy-related social justice issues such as fuel poverty, beyond the potential solutions linked to local woodland management outlined earlier. Further issues identified highlight the difficulties faced by CRE-project representatives to keep project benefits consistently flowing while, more broadly, this research emphasises the differences between new and more established CRE-projects in terms of the distributive considerations at different stages in the lifecycle of a scheme. The latter point in particular builds on the findings outlined in Chapter 5 which emphasise the temporal aspects of CRE, suggesting that the benefits associated with CRE-projects can and do change over time in ways that have implications for distributive outcomes. To illustrate this, evidence of the ways in which projects frequently adopt an inherently more long-term outlook, seeking to build reflexivity into their plans to allow them to be more responsive and resilient to changes and opportunities as they arise, is discussed.

The final sections of this chapter outline these issues in more detail, addressing (i) challenges and alternative perspectives on achieving distributive outcomes through CRE, and (ii) the relevance of temporal perspectives for CRE-project benefits. In doing so, these sections emphasise how, like transitions more generally (Grin et al, 2010), the benefits related to CRE-projects are continually emergent and bound in time, providing opportunities for engaging communities on issues of energy and justice in new ways.

6.3.1 Challenges and contradictions in the pursuit of distributive justice

Evidence presented in this chapter so far shows CRE-projects providing a range of outcomes and associated benefits. However, whilst the interventions outlined are clearly important for broadening access to pro-justice outcomes at a local level, a key pattern to emerge considering the foregoing sections together is the prioritisation of particular modes of distributive justice over others in the ways in which CRE-projects deliver benefits in practice. In this regard, beyond the intrinsic environmental benefits that renewable energy projects provide, the protection of local services and amenities, creation of local economic opportunities, and emergence of local stewardship functions discussed earlier are primarily based around acting on collective assets and the fabric of buildings. This finding links to observations elsewhere in the literature that CRE-projects have largely failed to deliver benefits in energy terms to date, such as through widening access to affordable energy (Forman, 2017; Berka and Creamer, 2018), as well as illustrating how the clustering of actions around particular modes of distributive justice (collective assets, building fabric) over others (incomes, energy bills) is likely to narrow the range of potential interventions that might be enacted to achieve pro-justice outcomes in practice.

While it is important to recognise that a range of contextual factors may facilitate or constrain environmental behaviour and influence motivations (Steg and Vlek, 2009), whether this prioritisation of particular modes of distributive justice over others is arbitrary or structured is important for understanding the extent to which CRE is ultimately able to address social justice issues such as access to affordable energy. The research data suggested a range of factors in this regard.

6.3.1.1 'Fixing people's homes because they are disadvantaged isn't as compelling' – Scepticism about addressing energy-related social justice issues

Building on the findings in Chapter 5, evidence of substantive action on energy-related problems such as fuel poverty were largely absent across the data while, perhaps more importantly, a range of views highlighting significant scepticism regarding the ability of CRE

to straightforwardly attend to energy-related issues like fuel poverty were expressed by participants. As the project organiser of a wind project in Powys remarked:

> *I question why this whole issue of fuel poverty has been linked to community renewables. Fuel poverty is essentially, yeah you get fuel poverty in rural areas but not to the extent that you do in urban areas. Most renewables projects are based in rural areas … I've never quite been able to understand why this link has been made and I think it just hasn't been thought through … There is fuel poverty but it's not a huge problem (Project Organiser, Wind, Powys)*

It is clear from the above passage that ambivalence towards addressing energy-related issues like fuel poverty through CRE is rationalised on the perception that fuel poverty is primarily an 'urban' problem. Whilst this chapter has already shown the assumption around the rurality of CRE-projects expressed in the above quote to be correct (at least from the perspective of the projects included in this study), on the other hand, evidence shows the perception that fuel poverty is largely an 'urban' problem is mistaken. Indeed, the most recent fuel poverty statistics for Wales highlight that 'households living in rural areas were more likely to be in fuel poverty' (Welsh Government, 2019: 16). This suggests that, at least in part, the prioritisation of particular outcomes, and hence particular modes of distributive justice over others, may rest on mistaken assumptions regarding energy-related problems, and thus the ways in which CRE-projects might address them. At a minimum, it reflects a desire to rationalise other kinds of actions as preferable.

However, it is not clear that redressing such misunderstandings would alone prompt greater efforts to improve pro-justice outcomes from an energy-related perspective, as ambivalence about addressing energy-related issues such as fuel poverty were also expressed in other ways by participants included in this research. As the following quotes from project organisers in Merthyr Tydfil, Swansea and Neath Port Talbot convey:

> *Fuel poverty is an issue but why, just because you're generating electricity do you associate it with fuel poverty, you know, it's only because they both happen to be energy there seems to be this issue that they're connected … I mean fuel poverty, how would you benefit fuel poverty from generating electricity? You can't resell people cheaper electricity because that would be illegal so you could give them grants to upgrade their insulation I suppose and if you wanted to set up a project to do that that's fine but that's not what we wanted to do (Project Organiser, Hydro, Merthyr Tydfil)*

> *If we came up with a target to reduce fuel poverty … what would that mean, how would that translate … would that mean that we'd end up funding external wall insulation on every house, you know, well that [doesn't] make sense because there's other funds, ECO and other schemes, that will probably fund those measures anyway (Project Organiser, Wind, Neath Port Talbot)*

> *I mean essentially fixing people's homes because they are disadvantaged isn't as compelling … It feels like the fuel poverty interventions don't actually try and fix things at their root (Project Organiser, Solar, Swansea)*

It is clear from the interview data above that, in contrast to the rationalisation put forward by the project in Powys, the prioritisation (or not) of energy-related issues such as fuel poverty through CRE-projects are also based on value-judgments made by project organisers about the quality of the distributive *actions* (as distinct from *outcomes*) that CRE unlocks as a mechanism for achieving a desired aim when determining what objectives to pursue. Thus, for improving access to affordable energy, the suggestion that 'fixing people's homes because they are disadvantaged isn't as compelling' reveals a discrepancy in the prioritisation of building fabric measures in *collective* assets outlined earlier compared to *individual* homes, where the interventions might be needed but the benefits are unable to be collectively experienced, highlighting a preference amongst CRE-project representatives for modes of distributive justice that act on collective or community assets. Indeed, this finding reflects the observations of a stakeholder working in the CRE sector in Wales:

> *it is quite difficult to find a way of getting these projects to actually provide much assistance in terms of fuel poverty … because it's not really part of the benefits that are easy to extract from this type of scheme … it brings money into the area to be spent but not necessarily to be spent in the hands of the poorest in the community (Stakeholder Interview, Sharenergy)*

Such considerations are problematic if CRE-projects are to extend access to affordable energy such as in the case of fuel poverty where, aside from low incomes and high fuel costs, the key cause is building fabric issues such as low levels of energy efficiency (Boardman, 2010; Middlemiss, 2017; Gillard et al, 2017) manifest in *non-collective* assets. Given the dearth of evidence across the research data for the notion that CRE-projects might make simple cash transfer payments to improve local incomes, the above passages suggest that action to address high fuel costs must follow modes of distributive justice that can be collectively shared by local communities at large, irrespective of need. Indeed, the need to produce outcomes that are demonstrably relevant to the whole community can be seen to trump the willingness and feasibility of project leaders to address other inequalities within communities.

6.3.1.2 'The holy grail is being able to sell electricity' – Barriers to providing access to affordable energy

This evidence that access to affordable energy through CRE-projects must be shaped through action to bring about collective benefits more broadly is important in the context of the findings in Chapter 5 regarding the ways in which new business models for CRE might

create opportunities for greater participation. In this respect, Berka and Creamer (2018) highlight 'direct supply' of electricity from CRE-projects to local communities could potentially be one of the key ways in which the benefits of providing access to affordable energy might be facilitated through community-scale renewables. However, as Berka and Creamer (2018: 3410) go on to note: 'there are very few examples of CRE projects supplying electricity directly to the local community'. Interestingly, such aspirations to provide energy locally emerged as a key theme among respondents in this research (see also Forman, 2017). As the project organiser of a wind project in Carmarthenshire noted:

> *… [in] my wildest dreams, [to address] fuel poverty … I think the holy grail is being able to sell electricity, I think that would be a game changer and I think if we can sell electricity cheaper and cleaner than the current grid situation we could take on a vast percentage of ... [the local] population (Project Organiser, Wind, Carmarthenshire)*

In this respect, aspirations to supply energy locally mobilise modes of distributive justice simultaneously able to satisfy the need to deliver broader collective benefits (by supplying energy to the whole community), while at the same time potentially engendering pro-justice outcomes at a household level through the provision of affordable energy in the home. While this proposition therefore suggests a promising route to addressing energy-related issues such as fuel poverty, the ability of projects to provide access to affordable energy in such ways in practice is challenging within the context of the regulatory regime governing energy supply in the UK. As the following quotes from project organisers in Swansea and Denbighshire highlight:

> *Why we can't generate electricity and sell it to someone two doors down for less than is available from a coal-fired power station… The regulatory regime is just acting against you at the moment. But that's where a lot of the innovation is going to come, it's exciting times in that sense (Project Organiser, Solar, Swansea)*

> *There is a legislative barrier against any of the schemes actually selling electricity directly to any of their members or any individuals, electricity in the main has to be fed into the grid and that means that if there is anyone in fuel poverty … we can't influence the price they pay for electricity (Project Organiser, Hydro, Denbighshire)*

Indeed, the barriers to local supply options in terms of regulations and administrative costs (Forman, 2017; Berka and Creamer, 2018) for small CRE-projects run by groups of volunteers suggest, as outlined in the passages above, that projects face significant difficulties in providing access to affordable energy as a means of promoting pro-justice outcomes in the context of energy-related issues such as fuel poverty. In this respect, whilst the UK energy market regulator Ofgem has created a pathway for distributed generators to

supply energy through 'Licence Lite' provisions (Ofgem, 2015), the additional complexities such arrangements pose for small groups in terms of finances and group capacities are significant barriers for communities attempting to deliver already technically challenging projects (Malhotra, 2006; Parkhill et al, 2015). Given that the ability to supply energy locally currently appears to offer one of the only modes of distributive justice potentially able to address energy-related issues at a household scale without intervening directly in the home, while at the same time providing collective benefits to the community at large, reducing regulatory and administrative barriers to local supply options will be a significant factor if CRE-projects are to provide improved access to pro-justice outcomes for energy-related issues more broadly (see also Creamer et al, 2019). Indeed, despite widespread aspirations to supply energy locally, such barriers were often raised as arguments for not prioritising actions on fuel poverty across the cohort of projects included in this study.

6.3.1.3 'There's been a bit of a hiatus there' – Keeping the benefits flowing

Beyond the challenges associated with the prioritisation of particular modes of distributive justice over others, the fact that the Ynni'r Fro programme included both new and more established CRE-projects provided a useful contrast between, on the one hand, projects in their initial phases and, on the other hand, more long-standing schemes and projects with generating infrastructure, thereby allowing insight into the distributive aspects at different stages in the lifecycle of a CRE-project to emerge. This temporal dimension has been largely absent from CRE-literatures which have focused overwhelmingly on project development and dynamics of 'social acceptance' at the point where projects are developed and seek consent (Berka and Creamer, 2018; Windemer, 2019), which may not wholly capture the implications for justice. Most significant amongst these issues was evidence highlighting the challenges associated with ensuring the consistent flow of CRE-project benefits beyond the point at which projects are energised. As participants in an established wind project in Powys noted:

> *What's happened is there's been a bit of a hiatus there … The CRE fund that's at the centre of this is supposedly steered by a group of people … however, that fund has not actually been used, it's been accumulating, and that steering group is actually due to meet before too long to actually look ahead as to what is there to do (Project Committee Member, Wind, Powys)*

> *I'll be honest with you, the idea with the CRE fund was that there would be a steering group and the steering group itself was supposed to be composed and would then look at the potential disbursement of the fund. There have been some difficulties … of actually co-ordinating that steering group and starting to drop down the benefits itself … there was definitely some initial success and some of those actions were achieved and then we fell into this kind of watershed period … and it's fair to say that although the funds have been provided and sit within a ring-fence … we're just now on*

> *the cusp effectively of reconvening the steering group towards re-establishing the objectives and starting to get that money out there as best as we possibly can (Project Organiser, Wind, Powys)*

The above passages suggest that, much like the wind powering the turbines in question, that the benefits associated with CRE-projects themselves are prone to intermittency, potentially falling into abeyance in the absence of careful stewardship. In this respect, the passages highlight the composite nature of CRE as a mechanism for enhancing justice outcomes, to the extent that project participants with expertise in setting up and managing energy projects need not necessarily have useful knowledge to apply to the spending of revenues to best long-term effect.

Indeed, the wider literature provides evidence that participation in CRE-projects can facilitate the development of knowledge and skills across a range of areas (Callaghan and Williams, 2014; Martiskainen, 2016; Bere et al, 2015; 2017), whilst at the same time showing that the absence of particular skills and competencies can obstruct the delivery of CRE-project outcomes (Rogers et al, 2012; Park, 2012; Ruggiero et al, 2014). The latter point in particular is relevant to the example in Powys, however, the reflections contained in the above quotes suggest that a combination of more than just skills and knowledge are at play when it comes to the creation of outcomes. Three observations are critical: firstly, in the first passage, that the CRE fund was '*supposedly* steered by a group of people' (emphasis added) suggests that, whilst there might have been an intention to set up a steering group, the board were aware that no such group of people had in fact been assembled, perhaps suggesting that project benefits were a 'nice to have' extra rather than an essential element that require building in to project delivery. Secondly, in the second passage, the difficulties encountered in 'co-ordinating that steering group and starting to drop down the benefits' suggests a need for projects to plan for and build in resilience to ensure that key activities do not fall by the wayside. Thirdly, the suggestion that there was a 'watershed period', during which previous activities tailed off, highlights the challenge of maintaining momentum in long-term projects often comprised of volunteers (see also Parkhill et al, 2015). In this respect, the reliance of most CRE-projects on small numbers of voluntary members, often from small communities, makes evolving the personnel to fit the changing needs very difficult. While the challenges of ensuring that the right people with the right skills are in the right place at the right time are well documented in CRE literatures (Walker et al, 2010; Seyfang et al, 2013; Martiskainen, 2016), the above points emphasise the need for careful planning and resilience for the life of a CRE-project *after the point at which it is built.* Amongst other things, this is an area in which intermediary organisations could potentially play a key supporting role (Lacey-Barnacle and Bird, 2018). Furthermore,

the problems associated with the potential intermittency of benefits outlined above point towards the changing nature of CRE-project benefits more broadly.

6.3.2 'You don't want the money being spent on something that's completely irrelevant' – Temporality and CRE-project benefits

The need for CRE-project participants to consider the life of a project after the point at which it is built is a crucial one. Linked to this, while the foregoing section provides evidence that this can be a challenge for projects, existing studies in CRE (Berka and Creamer, 2018) and renewable energy (Windemer, 2019) more generally are largely focussed primarily on the point of project *development.* For CRE, this includes the associated social and financial outcomes and configurations which support project development, highlighting that what happens after CRE-projects are actually constructed is poorly understood. Indeed, findings in Chapter 5 in relation to participation in CRE already set down a marker regarding the temporal characteristics of CRE-projects, highlighting the need to understand CRE as an ongoing process rather than through engagements at discrete points in time. These earlier findings also bear relevance for understanding the benefits of CRE where, as Forman (2017: 655) states, and has been expanded on in Creamer et al (2019), 'the challenge of temporal approaches is especially relevant to CRE, given that research in this area is ultimately in its infancy considered against the lifespan of the energy infrastructures created'. In this respect, this research revealed a range of perspectives highlighting how temporal issues are equally relevant for distributive aspects of CRE, and hence pro-justice outcomes, as they are for issues relating to participation; issues which are not currently well understood in CRE literatures. The final section of this chapter thus highlights the ways in which temporal aspects of CRE-project benefits were considered by participants in this research. Whilst this chapter has already shown that project benefits *can* change over time, views expressed by participants in this research suggests that indeed they *must* change over time to maximise the pro-justice outcomes of CRE in practice.

Participants included in this research highlighted the need for careful attention to the potentially changing needs of areas over time, as shown by the project organisers in Neath Port Talbot and Pembrokeshire:

> *things will change, you know, bus services have got less and fuel prices have gone up and, you know, the price of solar panels have gone down and just, yeah, there's going to be something different every year … So I think that, yeah, it's important to remain open to change but also make sure everyone knows that we are so that we don't appear to be doing a U-turn (Project Organiser, Wind, Pembrokeshire)*

> *I think we probably would do some sort of study … before we start spending money on particular activities in the local area to look at what's changed and what we think the current needs are and how [the project] is best placed to respond to that … I think we would need to look at it sort of strategically (Project Organiser, Wind, Neath Port Talbot)*

It is clear from the above that, in the same way that the circumstances of daily life manifest above by references to bus services and fuel prices change more generally, participants included in this research envisaged the need for reflexivity to changes in local circumstances over time in terms of the outcomes and benefits provided by CRE-projects in practice. Indeed, the reference to 'make sure everyone knows we are [open to change]' goes further in emphasising a reciprocal relationship between distributive and procedural justice in that the legitimacy to evolve the project requires transparency and engagement with the community. In so doing, it highlights the ways in which project organisers can influence local participation in such schemes by suggesting how communities might shape the outcomes of projects over time, also providing further weight to the findings in Chapter 5. Moreover, the active links made in the wind project in Neath Port Talbot between 'spending money' and 'looking at it strategically' highlights the need for a long-term view of the ways in which resources are operationalised to best long-term effect, implying an expectation amongst project organisers that local needs and priorities, and thus project outcomes and benefits, would evolve over time.

This need for strategic planning for 'spending money' is particularly important for CRE given the particular characteristics of project financing common across the sector as a whole (Braunholtz-Speight et al, 2020), and has an important influence on the potential justice outcomes associated with CRE over time. As the following project organiser of a different wind project in Pembrokeshire reflected:

> *These projects are, it's very interesting, the profile of the profits, okay because what happens is you borrow a huge amount of money on day one and then you spend years paying it off and then you have loads of spare profit … I'm predicting at the moment over 20 years it's £2.8 million [in this project], but if you just divide that by 20 years it doesn't reflect the fact that you've got 15k in year one and then we've got a jump up in year 4 to 25k and then that wraps up to 100k in year eight … this is also a really important point about … social justice and wider geographic areas being involved in projects (Project Organiser, Wind, Pembrokeshire)*

It is clear from the above passage that the revenue profile in CRE schemes itself infers a natural temporal character to the outcomes and benefits associated with CRE-projects, regardless of the extent to which projects are focused on the here and now in practice. Thus, from the perspective of 'social justice and wider geographic areas being involved in projects' referred to above, large increases in the scale of revenues over time suggests that

the most significant impacts of CRE are yet to come. In this respect, whilst there is currently a gap in understandings of CRE-project benefits (Berka and Creamer, 2018), the foregoing evidence suggests that tightly defining project outputs and benefits at an early stage is likely to be both undesirable and arbitrarily restrictive in practice. Indeed, taken as a whole, the above passages highlight a need for a long-term, strategic approach to CRE-project benefits (see also Cowell et al, 2011), alongside reflexivity to respond to changes in local needs and evolving patterns of participation in such projects, which have the potential to shape project outcomes and community benefits in new and unexpected ways over time. As the following excerpt from the project organiser of a hydro scheme in Gwynedd reflects:

> *I would like to see at least some of the revenue be put aside so we actually do that every five years or so and that you would be flexible to change because it's inevitable, isn't it, that over the term of a 25 year project, like a typical hydro scheme is, then if I go back 25 years and start looking at what the community was like it was pretty different and I'm sure their priorities and their wishes for community development would change. And the least I'd like to do that is every 10 years, and ideally you would do it every five or six, so that you can just change the parameters and the focus of the spending of your revenue. I would like to see at least some of the revenue put aside so that we can actually carry on doing that and not get stuck in a rut because that's the worst thing that could happen isn't it. If it's still going in 40 years' time then you don't want the money being spent on something that's completely irrelevant do you? I think that's important (Project Organiser, Hydro, Gwynedd)*

This temporal dimension to the benefit flows would seem to further amplify connexions between distributive and procedural justice, in order to construct and maintain legitimacy over time.

6.4 Conclusion: From community renewables to community benefits

This chapter set out to develop a critical understanding of the material impacts of community renewables projects in Wales, considering the outcomes and related distributive effects associated with projects on the ground. These are important issues in the sense that project outcomes effect the equity and social justice implications of CRE in practice. As set out above, these issues remain poorly understood across community renewables literatures (Berka and Creamer, 2018; Wyse and Hoicka, 2019; Creamer et al, 2019), despite over ten years of research into community-scale renewables. The evidence shown here has been instructive in this regard, and yields important, novel insights in developing understandings of these issues.

The protection of local services and amenities, creating local economic opportunities, and the provision of environmental benefits and local stewardship functions emerged as important themes when assessing the benefits sought from or stemming from the projects

included in this research. In addition, it is also clear that the material impacts of austerity have played an important role in aligning the focus of projects in Wales with attempts to ensure that the emerging benefits are maintained locally, emphasising the prioritisation of locational aspects of distributive justice amongst research participants. This finding chimes with research just across the border from Wales in Bristol, England, where Lacey-Barnacle and Bird (2018) found that the emergence of a civic energy sector was intrinsically linked with efforts to ensure that the localities in which such projects were based were able to capture the economic benefits of such development. However, going further than Lacey-Barnacle and Bird (2018), the above findings pinpoint the *specific, tangible* ways in which projects provided improved outcomes, providing greater insight into what broad headings such as 'sustaining the vitality of the local economy' (Lacey-Barnacle and Bird, 2018: 76) actually mean for communities in practice.

Indeed, by looking behind the broad headings, this research responds directly to calls for research to 'take greater account of questions of social justice, to better understand what CRE does, for whom, and in what contexts' (Creamer et al, 2019: 5), highlighting local issues and considerations across Wales—beyond simply raising capital—as key outcomes of projects. In this respect, income streams stemming from community renewables projects served as an enabler of a broad range of benefits by challenging patterns of uneven development in rural parts of Wales (Golubchikov and O'Sullivan, 2020; O'Sullivan et al, 2020), as well as the loss of vital local public services conventionally administered by local authorities faced with years of reductions in spending power (Tingey and Webb, 2020), and for providing a pathway to greater self-sufficiency and social equity through supporting a more symbiotic relationship with local natural resources (Rezaei and Dowlatabadi, 2016; Shrestha and Ojha, 2017). Given the challenging economic circumstances prevalent in the case study site of Wales (Henderson, 2019; O'Sullivan et al, 2020), evidence emerging from this research shows the ways in which local communities have sought to deploy CRE-developments as mechanisms for contesting wider patterns of regional and economic decline. In so doing, they have sought to reinstate the broader social, health-related, cultural, economic and environmental co-benefits eroded through patterns of austerity that are fundamental for underwriting wider local access to pro-justice outcomes.

However, whilst this chapter shows the diverse ways in which community renewables has been used to try to expand the potential space available for citizens and communities to achieve a range of improved social justice outcomes, future research could seek to establish the participation of local communities in the opportunities established, or that their participation is both equitable and effective, as a route to further exploring the justice impacts CRE conveys. Indeed, outwith the immediate focus of this research, there is always

the further question for justice—whether the ultimate effects of pro-justice interventions are equally consumed, or consumed in relation to need. While the foregoing sections provide tentative evidence for such effects (for instance in the form of employment opportunities), the above points lend backing to Creamer et al's (2019) call for further longitudinal research into community renewables, specifically to explore CRE-project *benefits* over time. As this research shows, such gaps are likely to be attributable to challenges in establishing such evidence, as opposed to an indication of lack of effect. Moreover, the evidence outlined earlier that CRE-project participants prioritise modes of distributive justice that infer collective, rather than individual, benefits presents an enduring structural constraint for the realisation of pro-justice outcomes in relation to energy-related issues such as fuel poverty.

As a final reflection, this chapter builds on the findings in Chapter 5, highlighting the temporal characteristics of community renewables which emphasise the necessity of considering CRE not as a fixed, coherent construct but, instead, as an ongoing process. Indeed, whilst contributing important, novel insights into the benefits associated with community renewables projects in the here and now, this chapter also shows how the benefits of community renewables might shift and change (or, indeed, cease) over time in response to changing local needs, changing capacities, and changing modes of participation. In this sense, this chapter demonstrates the co-evolutionary nature of project priorities and local circumstances, and suggests that CRE-project benefits are continually emergent. While undoubtedly presenting a challenge for project participants to navigate in practice, the long-term, open-ended nature of CRE-project benefits equally presents an opportunity for local energy initiatives to engage communities on issues of energy and justice in new ways over time.

Main Theme	Description of Theme	Key features
Addressing impacts of austerity	Disparities in local service provision as a result of austerity are being resisted through the medium of local energy generation	Benefits expressed in terms of retaining local services for community use; examples include a community park or local woodland
Improving local economic opportunities	Strengthening the local economy in order to fortify the range and vibrancy of community-based economic opportunities	Benefits expressed in terms of enhancing local services and economic rejuvenation; examples include supporting local shops, establishing businesses, retaining wealth locally
Environmentalism and natural resource stewardship	Addressing climate change, improving the local environment, and contesting access to local natural resources	Benefits expressed in terms of pro-environmental outcomes and greater self-sufficiency/self-reliance; examples include woodland stewardship, improved biodiversity, generating clean electricity

Ambivalence about addressing fuel poverty	'Fixing people's homes because they are disadvantaged isn't as compelling' – Projects frequently do not prioritise actions to address energy-related issues such as fuel poverty	Perceptions that fuel poverty is not a rural problem; desire to act on collective rather than non-collective assets; value-judgments regarding 'actions' rather than 'outcomes'
Inability to widen access to energy locally	'The holy grail is being able to sell electricity' – energy market regulations make it difficult to supply energy and address fuel poverty	Desire to supply and utilise locally generated energy in the local community; perception that energy affordability could be influenced through local supply
Tensions between process and outcome dimensions	'There's been a bit of a hiatus there' – challenges inherent in reconciling different pillars of energy justice within individual projects	Challenges in evolving project personnel to achieve desired outcomes; legitimacy to evolve projects requires transparency and engagement
Temporal nature of outcomes and benefits of community renewables	Community renewables is an ongoing, temporal process and its associated outcomes and benefits change over time	Strategic and reflexive approach to project benefits after the point projects are developed; project outcomes/benefits evolving; co-evolutionary nature of project priorities and local circumstances

Table 6.1: Chapter 6 findings summary table – CRE Benefits

7 Discussion, Conclusions and Research Contributions

7.1 Introduction

This thesis has sought to examine and explain the emergence of community renewables in Wales through the Ynni'r Fro programme as a device for exploring the role of CRE in negotiating greater social justice both within and beyond the energy sector in a just transition to renewable, low-carbon energy. Specifically, I have engaged in detail with the rationales and meanings attached to CRE within local communities the length and breadth of Wales, developing important, novel insights into the benefits associated with community renewables projects in the here and now as well as *over time*. In this respect, taking a critical perspective on the view that CRE is 'complete' once a project is operational, I have examined the processes through which communities come to enact CRE in practice and demonstrated the value of taking a longitudinal perspective on the challenges, opportunities and justice-promoting potential associated with CRE. Indeed, I have shown that the ongoing, temporal nature of CRE as context is highly relevant for issues of process and participation, as well as for what those projects actually do in practice vis-a-vis project outcomes, benefits and distributive justice—both before and after the point at which projects are energised. In so doing, I have demonstrated that CRE both shapes and is shaped by the local communities in which such projects are situated over time. These findings have implications for critically understanding the dynamic links between the material infrastructures of CRE, and the people and places in which they are based.

This thesis creates a foundation on which future research in energy geographies might consider questions of justice in local energy initiatives. Indeed, I have been critical of approaches to 'energy justice' that privilege elite actors and reinforce a preference for centralised energy infrastructures (McCauley et al, 2013; Jenkins et al, 2016) which risks obscuring actions on the ground in 'the localised, particular places where … power and injustice are known, experienced and resisted' (Schlosberg, 2004: 534). I have shown the value in attending to the diverse and situated social relations CRE schemes help configure; CRE provides new opportunities for addressing social justice issues within and beyond the energy system and for generating pressure for changes (such as demands for local supply) that could have far-reaching consequences for the future of energy supply. The social and technical relations that CRE open up have the potential to be transformative, helping to define, enable and enact the needs and desires of local communities in ways that broaden participation in the energy system. How CRE and other community-based initiatives shape

and mediate social justice issues is a topic of wide relevance in the quest for a just energy transition.

The following sections of this thesis offer a brief overview of the study before drawing together the key themes and findings of this research in the context of the research questions set out in the introduction and methodology chapters. Here, I set out the main contributions this thesis makes, the wider significance of these findings and contributions in relation to the field, and how these shape future research directions and agendas.

7.2 Research Overview

This research sought to explore the role that community renewables projects play in contributing to greater social justice in energy systems, through a cross-sectoral analysis of the CRE sector in Wales. I positioned this research in the broader context of 'energy justice' and 'energy transitions', using insights from both to critically unpack the ways in which CRE might contribute to these aims. In so doing, I explored the rationales associated with CRE, as well as issues relating to participation and benefits distribution, synthesising the critical insights gained in order to offer reflections on the transformative potential of CRE in practice.

This research employed a broadly interpretive and constructivist approach, with an intensive-extensive research design (Sayer, 1992) aiding a thorough picture of the CRE sector in Wales. I conducted 51 in-depth, semi-structured interviews comprising 26 CRE projects (developing 33 separate schemes), 9 project members, and 16 intermediaries. In addition, I deployed an innovative, participatory workshop based on the Ketso method (Furlong and Tippett, 2013; Tippett, 2013; Wengel et al, 2019) and inspired by participatory action research approaches (Kemmis and McTaggart, 2005) with three specific CRE projects. The workshops involved structured discussions with host communities on distributive outcomes of projects in order to assist in the design of community benefit strategies for projects due to be energised.

Coding was primarily theoretically driven, reflecting the interest in issues of distributive, procedural, and recognition justice, facilitating analysis and allowing synergies to emerge between transcripts in relation to the core themes of the energy justice literature and existing energy justice frameworks. On the one hand, examination addressed whether or not community renewables enhanced energy justice from the standpoint of distribution, revealing both the complexity involved in such processes and differential approaches to doing so. On the other hand, examination focussed on the ways in which participation in

CRE-developments unfolds and the form of such interactions, with implications for procedural and recognition justice.

7.3 Research Findings

The findings of this research inform perspectives on community renewables and energy justice. I have demonstrated that the CRE sector in Wales is characterised by a wide range of aims and objectives, extending outwards from typical environmental rationales and homing in on the tangible things communities need in practice. I illustrate the challenges CRE projects face in generating a broad approach to participation, and show that participation in CRE is likely to change over time with projects being more or less open to different forms of participation at different stages of development. I show the diverse benefits associated with community renewables, and highlight the challenges projects face in ensuring the consistent delivery of benefits as well as for their even distribution. I demonstrate how expectations around the benefits of CRE-projects present an enduring structural constraint for the realisation of pro-justice outcomes in relation to energy-related issues such as fuel poverty, but show that the benefits of projects are likely to shift and alter over time through important, novel insights into the ongoing, temporal nature of CRE-projects beyond the project development and planning stages. Taking these issues together, I suggest that CRE has clear implications for social justice within and beyond the energy sector, while showing there can be problems reconciling the various dimensions of energy justice within single projects in practice. These findings challenge the main theoretical perspectives on energy justice—which envisage change happening primarily as a *top-down* process enacted mainly by policy-makers—highlighting the clear need to integrate *bottom-up* perspectives within energy justice theory and to develop a sustained empirical tradition of understandings of energy justice *in the wild*. In the sections that follow, I consider each of these issues in turn.

7.3.1 Understanding the drivers of community renewables

My first research question—*How can the motivations of the community renewable energy sector in Wales be understood? How do these drivers help understand the energy justice implications of community renewables?*—sought to examine the key rationales underpinning the emergence of the CRE sector in Wales across a range of scales. Such issues matter for justice because they configure the scope and trajectory of potential outcomes. Here I was interested in addressing gaps within existing literatures on CRE in a Welsh context and energy justice, contributing new knowledge and understandings to the field of energy geography. Specifically, I wanted to unpack the quality and character of the emerging Welsh CRE sector by engaging in depth with the motivations, aims and objectives

projects claimed to be pursuing, and by exploring the intersections of these motivations with issues of justice. In thinking through these drivers, I sought to understand the extent to which CRE could be described as a mechanism for revealing and addressing social justice in energy systems from the bottom-up.

Utilising data primarily from in-depth semi-structured interviews with CRE project leaders, I presented a cross-sectoral segmentation of project specific rationales relevant to the CRE-developments involved. In doing so, I was able to relate the experience with community renewable energy in Wales to wider UK and international trends, an underexplored issue in extant literatures. I demonstrated that, at least from the perspective of the schemes involved in this study, development of the CRE sector in Wales is shaped by a heterogeneous range of motivations; represented in a typology of 'environmental', 'just sustainabilities', 'cultural regeneration' and 'poverty-driven' approaches. These findings reflect the view that CRE often serves a purpose reaching far beyond the conventional environmental motivations one might expect to see in projects of this kind, and chimes with research conducted in other national contexts (Becker and Kunze, 2014; Bauwens, 2016; van Veelen, 2017a) suggesting that CRE is far from a homogeneous category. Indeed, issues of justice are enrolled and played out through CRE in diverse ways, and CRE emerged as being as much about producing solutions to local issues as about producing local energy.

In interrogating the motivations of CRE projects in Wales, this research offers new understandings and enhances academic insights into CRE, and the socio-spatial factors that lead to the pursuance of projects in situ. In particular, rationales expressed in terms of CRE as 'culture' and 'poverty-driven' are not widely evidenced elsewhere in the extant literature. Indeed, a recent systematic review of rationales and impacts revealed a paucity of evidence for CRE projects actively and meaningfully supporting such aims (Berka and Creamer, 2018). Here I have demonstrated how cultural rationales can come to characterise CRE development in positive ways and even serve as a form of place-protective action (Devine-Wright, 2009), contributing towards sustaining local languages, creating sources of tangible cultural capital, and thereby providing a means through which communities are able to take control in the face of socio-economic decline (as in the case of Wales). From an energy transitions perspective, this research thus demonstrates the ways in which CRE as culture provides useful perspectives for understanding how 'identity, belonging, purpose, and sense of community underlie niche growth and the evolution of goals and priorities over time' (Seyfang and Haxeltine, 2012: 396) which are equally relevant to help engender the required socio-cultural acceptance for CRE to gain traction (Kemp et al, 1998; Geels, 2019).

This research is the first to explicitly link CRE with culture and issues of energy justice (Forman, 2017), what is a small but growing aspect of CRE research. Indeed, Haf and Parkhill (2017) also found culture to be an important driver of CRE projects (interestingly, this research was also partly based in Wales, which seems to triangulate the finding presented here), suggesting that involvement in local energy initiatives provided 'opportunities for communities to come together and create social bonds that can bolster local cultural activities and sustain local attributes such as language use' (Haf and Parkhill, 2017: 110). However, there is a risk that understandings of CRE as culture become bound up too much with romanticised notions of what 'culture' entails, as in Haf and Parkhill's (2017: 106) case: 'Emotions towards place … [which] included a strong bond with the history of the people … literature … artists and photographers … religious leaders … and the local dialect of a language'. This thesis paints a more nuanced picture of the links between CRE and culture, where cultural rationales for pursuing CRE projects find their expression both in the positive, romantic sense that Haf and Parkhill (2017) imply, but also in pejorative discourses of insiders versus outsiders (Walker et al, 2010) whereby CRE is expressed as a strategy to resist and contest patterns of cultural assimilation and local difference.

Thus, whilst this study shows that rationales for CRE in Wales can be wide-ranging, unique to the field and exhibit potential for wide-ranging justice affects, the varying perspectives surrounding the deployment of cultural rationales for CRE development suggests there is scope for the potential outcomes of a small number of projects to be located at the very limits of justice in the sense of conceptualising justice within a very small, exclusive sector of community members. This research thus demonstrates the need for a critical perspective on the assumption that the emerging evidence of cultural rationales for CRE presented here and in the extant literature represent a univocally positive narrative for addressing justice issues, showing how outwardly positive rationalisations for CRE may mask more exclusionary aims. In this respect, cultural motivations for CRE evident in this research highlight how 'strong internal identity formation and community building might equally be an inhibiting factor to wider groups of participants who do not wish to adopt the identities offered by participation' (Seyfang and Haxeltine, 2012: 396).

When considering the relationship between CRE and energy justice then, this research raises important questions such as energy justice for whom, on whose terms, and under what conditions. It helps to show that bottom-up perspectives on energy justice are highly relevant for revealing the ways in which social justice in energy systems is contested and negotiated, rather than bestowed by policy-makers armed with checklists of energy justice principles in a top-down approach (McCauley et al, 2013; Jenkins et al, 2016; Sovacool and

Dworkin, 2015). This is not to say that top-down approaches should not complement bottom-up approaches, but shows the need for integrating bottom-up perspectives within existing energy justice frameworks and for developing a sustained empirical tradition of understandings of energy justice *in the wild*. Both perspectives are needed as complementary strategies, and so that insights from the places and spaces of energy transition might be integrated into broad (energy) policy approaches and vice versa. Taken together, such a 'multi-scalar' approach to energy justice (Forman, 2017; Lacey-Barnacle and Bird, 2018) may help advance understandings of how a just transition may be affected, such as by enabling greater interrogation of niche-regime relationships (Strachan et al, 2015). In this respect, bringing the artefacts of sociotechnical regimes (top-down approaches) into closer dialogue with niche innovations (bottom-up) may yield important insights for social justice within and beyond the energy sector; providing scholars a new way to engage critically with the opportunities and challenges of unlocking a just transition to renewable, low-carbon energy.

7.3.2 Understanding participation in community renewables

My second research question—*How does participation in community renewable energy take place: who is involved, at what times, and why? How can the implications for procedural aspects of energy justice be understood?*—sought to understand how issues of procedure, participation and inclusivity unfold within CRE projects. Indeed, this 'process' dimension of CRE is widely referenced as a precursor for the development of local energy initiatives that are ostensibly by and for local people (Walker and Devine-Wright, 2008; Hoffman et al, 2013), while ensuring procedural justice is a central tenet of energy justice frameworks (McCauley et al, 2013). Here I was interested in examining the extent to which issues of participation and inclusivity were enrolled in CRE projects in Wales, including the representativeness of projects within communities on whose behalf they claim to operate. This process dimension to CRE is important as it sheds light on the extent and entitlement of local people to take part and benefit from CRE development. Furthermore, issues of representativeness and inclusivity are crucial to understanding the role and stake of citizens of communities (of place) as a whole as well as vulnerable groups in CRE-developments, which were of particular interest in this study owing to the focus on justice and energy-related issues such as fuel poverty. Specifically, I wanted to gain a critical understanding of the ways in which citizen involvement in energy production restructures participation in and facilitates more diverse engagements with the energy system, and with what wider effects.

Having shown that CRE projects in Wales identify with a broad range of rationales and motivations, and the potential intersections with issues of justice, I examined the processes

by which CRE projects come to take place. I was keen to maintain an open perspective on participation and not to simply fall into the 'local trap' (Marvin and Guy, 1997; Purcell, 2006), positioning CRE as an unquestionably positive phenomenon and conflating characterisations of 'community' with wide participation and representativeness. After Chilvers and Longhurst (2016), I was questioning of the notion that just because an approach is labelled 'participative'—or for the community—that it necessarily is. The constitutive practices underpinning the making of meaning in CRE thus require more careful scrutiny in order to 'account for the partiality of framings involved and significant exclusions in terms of actors, visions, and so on' (Chilvers and Longhurst, 2016: 603) rather than being simply understood in relation to pre-given categories or normative principles. The main energy justice frameworks present a problem in this respect, with their prescriptive lists and top-down approach which may not wholly capture the implications for justice. Instead, my approach here has served to critically unpack the process dimensions of CRE in Wales, and demonstrate the challenges, tensions and trade-offs involved in broadening local input in CRE schemes. This framing not only addresses a gap in the literature (Jenkins et al, 2020) by providing a *participatory* (rather than the more narrow *procedural*) bottom-up perspective on energy justice at the end of the wire, it also starts to bring energy justice literatures into dialogue with constructivist perspectives on participation (Stirling, 2008; Chilvers and Kearnes, 2016) which—especially for community renewables—is widely underexplored in energy justice literatures to date.

My arguments problematise the extent to which projects are truly representative of the local communities within which they are situated and have shown that CRE projects prioritise a 'delivery-focused' approach to participation which structures who can get involved in CRE projects, at what times, and in what capacities. Projects in their early stages thus tended not to make efforts to ensure broad local participation—some even went further and sought to mask their activities early on—and there was evidence that CRE project leaders were less interested in members of the local community participating as 'citizens'. This suggested a puzzle attached to the issue of ongoing participation in CRE as a *temporal process*, which rarely seems to have been foregrounded so explicitly in CRE research in other contexts. Such 'temporal' aspects of CRE—in this case the ways in which projects shift and change over time including with respect to whose engagement is sought—are not currently well understood in the extant literature (Forman, 2017), even though their potential has been implied and alluded to (Walker et al, 2007; van Veelen, 2018; Berka and Creamer, 2018). Indeed, I have suggested how understanding CRE as an ongoing process beyond the project development and planning stages opens up new perspectives on addressing issues of participation, representativeness, and inclusivity in CRE projects over time. Such new

social relations offer the prospect of engaging communities on issues of energy and justice in new ways.

In revealing the ongoing character of CRE as expressed by projects included in this study, I have contributed new understandings and enhanced academic knowledge on the nature of CRE projects and the scope they exhibit for addressing issues of justice more-or-less directly over time. These findings demonstrate that research in the field of CRE and energy justice might be further enriched by directing attention to the temporal aspects of our energy systems. Indeed, existing research on CRE, where the 'process and outcome' framework (Walker and Devine-Wright, 2008) continues to be influential, does not currently offer a clear perspective on the nature of participation in CRE as an ongoing, temporal process (see also Creamer et al, 2019). Whilst this framework is undoubtedly instructive for thinking about the design of CRE projects in general terms, the perspective on participation that it presents is fairly flat and only takes us so far from the standpoint of conceptualising participation (or, indeed, outcomes) in CRE beyond the point projects become operational. This is a crucial gap considering that, once established, most renewables projects envisage an operational lifecycle of somewhere on average in the region of 20 to 25 years (Windemer, 2019). Thus, whilst the model has been used extensively as a reference point to explain and understand the development of renewable energy at community scale, alongside acquiring traction at policy-scale between policymakers in the development of shared ownership models (Goodkoep and Devine-Wright, 2016), understanding the ongoing nature of CRE requires a different framework for evaluation. In this view, the 'process' dimension to CRE is more open-ended and thus demands a more constructivist account of participation as a multifaceted, ongoing, and evolving process. Such an understanding demands a more detailed examination of the modalities of participation that CRE engenders, as an aide to establishing the justice promoting potential of CRE over time.

Conceiving of participation in such terms is underpinned by attempts to move beyond conventional understandings of public participation as discrete, event-based, and undertaken at fixed moments by an external 'public'. This dominant perspective is described by Chilvers and Kearnes (2016: 4) as 'residual realist' to the extent that it takes for granted participating subjects and modalities of engagement by actively residualising the inherent diversity of 'energy publics' and modes of participating on the ground. Such an understanding has resonances in the context of CRE, whereby the public are reproduced as active citizens 'arranged into categories of "the local" and "the community"' (Walker and Cass, 2007: 464) united around developing small scale renewables outside of the formal spaces of the energy system at large (Walker and Cass, 2007; Chilvers et al, 2015). Whilst such a vision is arguably a fairly accurate (albeit crude) depiction of what CRE looks like in

practice, it also assumes that CRE is finished once a project becomes operational and thus fails to offer an adequate explanation of what comes after other than kilowatts. Moreover, by obscuring and oversimplifying the motives underpinning CRE development within and between particular projects, a 'residual realist' perspective plays down the potential for a much broader array of effects than a more detailed understanding of participation in such initiatives might suggest. Indeed, as Marres (2012: 2, emphasis in original) highlights: 'Rather than seeking to increase people's *knowledge* about environmental issues, these initiatives [such as CRE] focus on *action and impact*'—making the ongoing nature of CRE, and the (changing) collectives of participation through which it is underpinned, an important site for tracing the wider effects and justice-promoting potential of CRE within and beyond the energy sector over time. Broadly, my work would thus have much to offer important new strands in constructivist conceptions of participation, such as through understanding the heterogeneous nature of CRE over time and for tracing the shifting ecologies of participation (Chilvers et al, 2018) of which they are comprised.

Translating these theoretical reflections to the findings in this thesis, a more constructivist approach to participation more effectively accommodates perspectives exhibited by projects during this research in Wales where concern over the ongoing nature of CRE, the sustainability of supporting business models, and the need for succession planning to build resilience against 'burn out' of (mostly voluntary) project members and ensure the continuity of projects over time was voiced. A constructivist approach to participation in CRE is also more reflexive to regime and landscape changes around such projects; such as the fast-paced and turbulent policy environment for support for renewables that has been a feature throughout the course of this research in Wales and the UK more broadly (Mirzania et al, 2019). Such a view accommodates a more open perspective on the meaning of CRE as an ongoing phenomenon, acknowledging the potential for changes in participatory configurations underpinning (ongoing) project development alongside the fluid and evolving nature of CRE projects and their associated aims and objectives. Indeed, the contrasting views on what projects most care about depending on their stage of development discussed in Chapter 5, seem to show how diverse ecologies of participation (Chilvers et al, 2018) shift, change and yet overlap within single CRE projects over time.

From an energy justice perspective, the ongoing perspectives on participation in CRE that this research highlights presents a challenge for thinking about procedural justice in energy systems. Indeed, whilst the triumvirate approach of energy justice (McCauley et al, 2013) emphasises a procedural justice element as a core component for achieving comprehensive justice gains, rarely in the extant literature does this actually amount to more than consulting affected publics on energy decisions—with Jenkins et al (2016: 178) even

going so far as to state that 'effective participation does not necessarily mean physical involvement in decision-making'. Whilst such a view may be sufficient to claim that principles of procedural justice have been foregrounded in energy decision-making processes, this perspective undoubtedly serves to reify the perception of the public as the passive consumers of a centralised energy system that elsewhere has been recognised as increasingly problematic both from the standpoint of realising greater energy justice (Forman, 2017; Lacey-Barnacle and Bird, 2018; Chilvers et al, 2018) and for empowering wider social agency to effect energy system interventions (Stirling, 2008; Chilvers et al, 2018). Indeed, an implicit focus on how energy justice is negotiated from within the confines of the incumbent energy system by privileged actors 'forecloses wider appreciation of the diverse sites at which social actors are *already and continuously engaged* in sustainable energy transitions' (Chilvers and Longhurst, 2016: 588, emphasis in original) with broader implications for energy system change and energy justice. This thesis demonstrates the need for integrating (constructivist) participatory approaches within existing conceptualisations of energy justice in order to more fully trace and understand the wider justice effects of energy system interventions across a range of scales over time.

7.3.3 Understanding the benefits of community renewables

My third research question—*How do community renewable energy projects influence distributive fairness both within and beyond the energy sector?*—sought to understand the benefits of CRE-projects in places, and the extent to which such developments have aimed to address energy-related issues such as fuel poverty. These are important issues in the sense that project outcomes effect the equity and social justice implications of CRE in practice. In doing so, I sought to consider the outcomes and related distributive effects associated with projects in practice, taking a critical perspective on the implications of project benefits and outcomes in situ. This approach followed Ürge-Vorsatz et al (2014) in considering that local interventions carried out by projects generally entail distributive consequences which often outweigh the importance of the primary outcome, regardless of whether individual projects consider such additional benefits to be an explicit objective or not. Crucially, despite over a decade of research into CRE, existing studies have tended to focus on CRE *development* rather than explicitly assessing the outcomes of projects in practice (Berka and Creamer, 2018; Creamer at al, 2019). As such, there are significant gaps in understanding the impacts of CRE projects locally and cumulatively. Here I was interested in developing a critical understanding of the material impacts of projects in places, and the extent to which pre-defined project ambitions (such as those discussed under the first research question) were actually realised in practice. Indeed, distributive justice is one of the key tenets of energy justice frameworks (McCauley et al, 2013) and a

central consideration for understanding the role CRE might play in shaping social justice both within and beyond the energy sector as part of a just transition to renewable, low-carbon energy.

Despite substantive, in-depth engagement with 26 CRE representatives developing 33 separate schemes across Wales, only a handful of the projects that received support through the Ynni'r Fro programme had been in development for a substantial period of time, and even less already had generating infrastructure at the time this research took place. This partly reflects the immature nature of the CRE sector in Wales (and across the UK more broadly), whereby YF sought to catalyse the sector and kick-start investment in CRE. However, this was not wholly problematic from the standpoint of meaningfully assessing the impacts of projects as a whole, as it allowed projects at different stages to be compared side-by-side. Indeed, the contrast between, on the one hand, projects in their initial phases (which comprised the vast majority of those supported by YF and involved in this research) and, on the other hand, more long-standing schemes and projects with generating infrastructure, enabled a range of perspectives on the distributive aspects and issues that project leaders cared about at different stages in the lifecycle of a CRE project to emerge. These important, novel insights would not have been so pronounced had CRE-projects in the field been roughly at equivalent stages of development. Key findings in this respect are (i) understandings of CRE-project benefits as more than just raising capital into communities, and (ii) the temporal characteristics of community renewables which emphasise the necessity of considering CRE not as a fixed, coherent construct but, instead, as an ongoing process.

Taking the first of these, this research has shown CRE-projects in Wales acting on the protection of local services and amenities, creating local economic opportunities, and the provision of environmental benefits and local stewardship functions. Such interventions are highly relevant for broadening access to pro-justice outcomes at a local level and portend a range of related 'co-benefits' (Miyatsuka and Zusman, 2010). From the evidence presented in Chapter 6, these include potentially enhanced social and cultural identity and participation, improved economic outcomes, increased opportunities for shaping democratic decision-making, as well as benefits to health, wellbeing, and community cohesion. From this standpoint, developing an enriched understanding of the key outcomes and benefits associated with CRE-development through projects in Wales simultaneously unlocks avenues to examine the associated effects and co-benefits of these initial outcomes. Indeed, co-benefits are equally acknowledged as a relevant but poorly understood aspect of energy justice (Sovacool et al, 2017). Moreover, by providing evidence of the specific, tangible ways in which projects improved outcomes, these findings

do much to breakdown trends in some places in the literatures which identify the benefits of CRE, and other local approaches, at a level of abstraction assembled under broad headings (Lacey-Barnacle and Bird, 2018). There is a need to push past such approaches and develop more detailed understandings of the benefits and outcomes community renewables projects imply in order to ultimately understand the traction and salience of CRE-developments for improving social justice within and beyond the energy sector. The findings presented in this thesis provide a foundation for this work.

While the issues described above highlight the diverse outcomes associated with CRE-developments in practice, views expressed by respondents also shed light on the challenges faced by CRE projects when it comes to addressing energy-related issues such as fuel poverty. Indeed, as discussed in the chapter on participation, many participants saw no straightforward read-across from CRE to addressing fuel poverty, and expressed frustrations in understanding why such links were being made at all. As such, evidence for CRE projects actively seeking to address issues of local fuel poverty was scant across the cohort of projects included in this study. This is a stark contrast to suggestions in the literature that fuel poverty tends to be high-up the list of issues for CRE-projects to address (Berka and Creamer, 2018), but may be a reflection of the fact that many developments in this research were still in development. Moreover, from a distributive perspective, it is not clear that there is a straightforward mechanism by which CRE projects can mitigate against energy-related issues such as fuel poverty in practice, other than—as one project organiser of a wind project in Swansea suggested—investing substantial incomes generated through energy projects into energy efficiency.

Indeed, the findings presented here show how expectations around the benefits of CRE-projects present an enduring structural constraint for the realisation of pro-justice outcomes in relation to energy-related issues such as fuel poverty. In this respect, CRE-project participants overwhelmingly prioritise modes of distributive justice that infer collective, rather than individual, benefits. This finding links to observations elsewhere in the literature that CRE-developments have largely failed to deliver benefits in energy terms to date, such as through widening access to affordable energy (Forman, 2017; Berka and Creamer, 2018), and poses challenges for solutions such as domestic energy retrofit which have been identified elsewhere in the literature as a promising avenue for addressing fuel poverty (Gillard et al, 2017). Indeed, the clustering of actions around particular modes of distributive justice (collective assets) over others (incomes, energy bills) is likely to narrow the range of potential interventions that might be enacted to achieve pro-justice outcomes in practice.

In this respect, entitlement to cheaper energy across local communities through renewables development is a long-standing aspiration (Cowell et al, 2011), and Berka and Creamer (2018) highlight that 'access to affordable energy' is amongst one of the most desired but least well-evidenced characteristics of CRE-developments in practice. As such, it was no surprise to find that projects in Wales expressed similar views, and supplying cheaper energy locally—the 'holy grail' (Project Organiser, Wind, Carmarthenshire) of CRE—was thus widely cited by participants included in this research as amongst the most promising mechanisms through which CRE could most effectively address energy-related issues such as fuel poverty. However, securing access to affordable energy through local energy initiatives is fraught with challenges for small, locally-based CRE projects run by groups of volunteers (Parkhill et al, 2015) as the rules governing the regulation of energy supply in the UK are not favourable to small-scale generation (Forman, 2017; Berka and Creamer, 2018). I have shown that such distributional barriers were often raised as arguments for not prioritising actions on energy-related issues such as fuel poverty.

As a counterpoint to this finding, this research also shows that CRE project leaders are likely to become more enthused about addressing energy-related issues such as fuel poverty when the mechanism for doing so is based on approaches that also contest the entrenched systems of energy supply typical of the large-scale, centralised energy infrastructures found in the UK (Hodson and Marvin, 2013). Such willingness to address fuel poverty under some conditions (such as supplying energy locally), but not under others (such as addressing energy efficiency in the home), suggests that project leaders make value-judgments about the quality of the distributive *actions* (as distinct from *outcomes*) that CRE unlocks as a mechanism for achieving a desired aim when determining what objectives to prioritise. This might be interpreted as an interest by project leaders in pursuing (i) more transformative, ideological actions, (ii) actions that address root causes rather than symptoms, or (iii) actions that also serve the wider interests of the community and project. More broadly, my work would thus have much to offer important new strands in CRE research such as understanding the complex trade-offs involved in decision-making for CRE and mapping the distributive outcomes of projects over time.

Indeed, from a justice perspective, these findings raise questions about the terms on which justice is negotiated in the context of CRE, whose visions are ultimately prioritised when it comes to outcomes, and the timescales and mechanisms through which projects are able to deliver local benefits in practice. In this respect, the pursuit of particular outcomes have been shown to produce or foreclose different options and processes in CRE-developments (van Veelen, 2018). These issues highlight tensions between key pillars of the triumvirate of tenets of energy justice (McCauley et al, 2013; Jenkins et al, 2016) and the energy justice

decision-making tool (Sovacool and Dworkin, 2015) that are not wholly captured in evaluative applications of such frameworks, and highlight the contested nature of energy justice *in the wild*. Thus, after Creamer et al (2019: 3—emphasis in original), there 'is a need to explore the nuances of this co-dependency *between* process and outcome in CRE'. In this respect, evidence emerging from this research, which shows problems for CRE-developments with 'keeping the benefits flowing', emphasise challenges in reconciling competing and overlapping aspects of justice in order to ensure that benefits are delivered evenly across space and time, if the justice-promoting potential of CRE projects is to be fully realised in practice.

However, building on the understandings of developed in Chapters 4 and 5, where CRE is conceptualised as an ongoing, temporal process beyond the project development and planning stages, this research shows scope for the profile and delivery of benefits to change over time as participation in projects evolves and new priorities develop, particularly as projects pay back their initial capital costs and returns ramp up. These findings chime with emerging relational perspectives on CRE (Creamer et al, 2017; van Veelen, 2018) as helping to 'open up alternative possibilities' (van Veelen, 2018: 119) as new social, economic or political opportunities are constructed. Such perspectives are highly relevant for energy justice in the context of CRE. Indeed, the evidence presented here shows how the benefits of community renewables might shift and change (or, indeed, cease) over time in response to changing local needs, changing capacities, and changing modes of participation. In this way, this research highlights the co-evolutionary nature of project benefits with changing local circumstances and patterns of participation over time, which create opportunities for local energy initiatives to engage communities on issues of energy and justice in new ways. This research thus responds to calls for understanding 'What material changes has CRE produced, and to what consequence? Is there evidence that CRE can meaningfully contribute to just energy transitions, and in what contexts and under what conditions?' (Creamer et al, 2019: 5). The findings presented here yield important, novel insights into the nature of CRE-project benefits, as well as their implications for justice within and beyond the energy sector; driving forward understandings of the outcomes of CRE-developments not as fixed and immutable in space and time, but as an emergent, constantly-unfolding process. This approach stands in contrast to most CRE-literature which is focused overwhelmingly on renewables development and dynamics of 'social acceptance' at the point where projects are established and seek consent (Berka and Creamer, 2018; Windemer, 2019), which may not wholly capture the implications for justice.

This thesis presents a different way of thinking about CRE-project benefits and for looking at the performative effect of community renewables, pushing forward understandings of the

material changes CRE produces. Indeed, the long-term, open-ended nature of CRE-project benefits presents an opportunity for local energy initiatives to engage communities on issues of energy and justice in new ways over time.

7.3.4 Understanding the transformative potential of community renewables

My final research question—*How does community renewables shape the future for local communities and the energy system alike? How can community renewables research better influence understandings of energy justice?*—seeks to tie together key themes identified from amongst the foregoing three questions, using them to discuss the transformative potential of CRE for improving social justice within and beyond the energy sector. Here I was keen to address a gap in the literature with respect to understanding the cumulative effects of CRE and the role that it might play in a more progressive energy future (Walker et al, 2007; Creamer at al, 2019). In addition, this section seeks to discuss the findings of this research in the context of energy justice, exploring its implications for broader theoretical approaches to energy justice questions. In thinking through these issues, I offer critical reflections on this research and the associated implications for energy justice in practice. In this respect, my arguments under the first three research questions are suggestive of two key findings relevant to the transformative potential of CRE. As such, I suggest that CRE exhibits significant potential for transformative impacts as a consequence of (i) the outcomes and benefits (as well as associated co-benefits) identified as emerging from CRE-developments in Wales, and (ii) the temporal nature of CRE which this research has clearly demonstrated, and which is an under-researched aspect of existing literatures on community renewables.

Taking the first of these, as outlined in Chapter 6, I have shown that there are a range of specific, tangible outcomes and benefits associated with CRE-developments that are relevant from the perspective of improved social justice within and beyond the energy sector. As greater evidence of the implications of such benefits is developed, these understandings may be highly relevant for examining the impacts of CRE as a niche innovation (Seyfang et al, 2014), for engendering the socio-cultural acceptance that is necessary for niches to break through into the mainstream (Kemp et al, 1998; Geels, 2019), and hence for CRE to gain traction as part of a just transition to renewable, low-carbon energy. In this sense, after Creamer et al (2019: 5), CRE-developments ‘embody important principles and lessons for low carbon transitions processes in general’, as well as the role of principles of justice, equity and fairness in their making, an issue which is underexplored in literatures to date (Sareen and Haarstad, 2018; Jenkins et al, 2018). This issue is even more pertinent in view of the use of CRE-developments as a mechanism to contest patterns

of austerity, as well as regional and economic decline, characteristic of the sort of landscape pressures that create 'windows of opportunity' for alternatives to break through (Geels, 2019). Establishing whether CRE constitutes a niche or not was not the intent of this research, and there is other research which suggests that an emerging CRE niche is evident (Seyfang et al, 2014). This research nonetheless shows, however, that CRE provides a useful lens through which to address interactions between the scales of the multi-level perspective (Strachan et al, 2015), which could potentially provide further lessons on the scope for CRE (or other alternatives) to open up space for envisaging alternate, more just spatial, social and economic relations within and beyond the energy system.

In addition, I have shown the ways in which the diverse ecologies of participation (Chilvers et al, 2018) that underpin CRE schemes in particular places shift, change, and overlap within individual projects over time, and that different stages of project development engender different forms of participation. It is arguable that because of the immature nature of the CRE sector in the UK, certainly in Wales, there is yet to be a first major shift towards modalities of participation that primarily support the delivery of local CRE *benefits* as opposed to the delivery of local CRE *infrastructures*. This certainly would help to explain tendencies within the literature to focus on renewables development and dynamics of 'social acceptance' at the point where projects are established and seek consent (Berka and Creamer, 2018; Windemer, 2019), which may not wholly capture the implications for justice. However, as key patterns of participation underpinning projects change over time, this research has shown that so too will the *objects* of participation (Chilvers and Kearnes, 2016; Chilvers et al, 2018) manifest in terms of the benefits those projects are likely to deliver.

In this respect, this research has shown that project benefits *can* change over time (such as through the ceasing of benefit-related activity), as well as highlighting the ways in which CRE-project representatives frequently stressed the need for a long-term, strategic approach to outcomes and benefits (see also Cowell et al, 2011) to enable adaptation to change in the exogenous environment, as well as reflexivity to respond to shifting local needs and evolving patterns of participation from an endogenous perspective. Indeed, over the lifetime of a given CRE project, such changes to underlying participatory configurations—and thus approaches to benefits and local impacts—are likely to coincide with greater project incomes as the early capital outlay required to initially develop schemes is gradually paid off, creating greater impetus for more transformative local impacts to emerge from projects. These considerations have the potential to shape project outcomes and community benefits in new and unexpected ways over time, which would provide a fruitful avenue for future longitudinal research in CRE (see also Creamer et al, 2019). However, given the nascent status of much CRE development in the UK, this research

suggests that CRE has not yet reached that critical stage of development necessary to unlock more significant transformative potential. In spite of this, taken together these points show that my work has much to offer in developing important new strands of research which seek to understand the implications, and energy justice effects, of CRE *over time*.

As a counterpoint to these findings, this research suggests that in contrast to the potential of CRE projects to contribute to greater energy justice over time, in practical terms projects often face difficulties reconciling the various dimensions of energy justice within particular projects. Evidence from projects in Wales suggested that CRE project leaders were less interested in local communities participating as 'citizens', while questions were raised over whose visions for communities were prioritised within projects in practice. Moreover, I have shown that CRE largely fails to extend access to affordable energy, and is unlikely to make a significant impact on energy-related issues such as fuel poverty while current regulatory frameworks persist in the UK. These issues demonstrate the problems associated with widening access to and extending energy justice in energy terms through CRE under present conditions, and highlights that (whether by design or default) CRE is often about much more than energy in practice. As a participant in one of my participatory workshops succinctly put it, CRE 'isn't just about energy, it isn't just about electricity, it isn't just about climate change, it's about taking… taking a bit of control' (Project Member, Hydro, Powys). Thus it is important to recall how addressing energy-related issues such as fuel poverty is just one of many ways in which projects may contribute to greater social justice within and beyond the energy system. In this respect, this research suggests that CRE exhibits significant potential to address and contribute to issues of justice. However, a critical perspective is necessary for understanding how and whether this is achieved in practice. Indeed, this research demonstrates that energy justice is never finished, and that there are unlikely to be simple solutions to the challenge of creating greater social justice in energy systems.

Reflecting on the relevance of these findings for theoretical perspectives on energy justice, the diversity of outcomes presented here pose a challenge for key energy justice frameworks, which tend to focus on outcomes and processes *in and for energy alone* (Heffron and McCauley, 2014). Indeed, by prioritising energy policy and systems, key energy justice frameworks are revealed as intellectually impoverished to understand and capture issues *beyond the energy system* as potential drivers or outcomes of energy-related issues and actions. This is problematic given the intertwined nature of energy and everyday life (Sovacool, 2014) and raises questions about the relevance of efforts to demarcate energy justice as a distinct sphere of research (Heffron and McCauley, 2017; Jenkins, 2018). Calls to address the 'co-benefits' of energy interventions (Sovacool et al, 2017)

potentially offer a pathway to understand the relevance of issues beyond the energy system as *outcomes* of energy justice interventions, but would do little to help understand such issues as 'co-*drivers'* as well. This research has shown that issues beyond the energy system (vis-à-vis the segmentation presented in Chapter 4, and outcomes delivered in Chapter 6) are entirely relevant in this respect and a key feature of a bottom-up perspective on the issues. As such, this thesis presents compelling evidence of the need to recognise and develop detailed understandings of the ways in which exogenous factors beyond the energy system are implicated in demands for greater energy justice as a way to develop a more holistic understanding of the meaning of justice beyond key energy justice frameworks.

7.4 Participatory Approaches to CRE Research

It would be remiss to conclude these sections on findings without briefly reflecting on the methodological contributions that this study makes. Indeed, Sovacool (2014) has suggested that expanding the repertoire of methods used for researching energy-related questions can enrich the field while revealing new perspectives on the social dimensions of our energy systems. Here I was keen to find a way to research CRE that was mutually supportive and beneficial, helping communities in a small way to achieve their objectives while simultaneously providing crucial insights into the issues of participation and benefits distribution associated with CRE projects that were important for this research. I was also keen to utilise methods that could help support the aim of this study to research the transformative effects of CRE. As such, I was drawn to explore Participatory Action Research (Kemmis and McTaggart, 2005) methods and designed an innovative participatory workshop based on Ketso (Tippett, 2013; Furlong and Tippett, 2013; Wengel et al, 2019), encouraging participants to think more broadly about the diversity of potential justice affects portended by their projects and to help develop concrete strategies for realising them[31]. Although there have been initial strides in the application of participatory approaches in the context of CRE (Hobson, et al, 2016; Lucas et al, 2017; Forman, 2017; Lacey-Barnacle and Bird, 2018) since, there is still a call for greater application of such methods particularly from the perspective of energy justice (Jenkins et al, 2020).

My research shows that participatory action research approaches and methods can be of great value in researching energy-related questions, particularly where they pertain to issues of justice and participation. As one participant of a workshop in mid-Wales subsequently reflected:

[31] In this view, these exercises could themselves be construed as miniature interventions to enact energy justice, raising interesting questions with respect to the role and responsibilities of academics in promoting normative social science.

> *I have to say as well, the fact that you were there as an independent arbitrator … was fantastic. We would never have been able to hold that meeting between ourselves. The fact that you were there and people listened to you and treated you and your colleague with some respect was ideal. It wouldn't have worked otherwise … They wouldn't have gone. They wouldn't have turned up. They wouldn't have come along because you've been the enemy (Workshop Participant, Hydro, Powys)*

This passage shows that the strength of Ketso—and participatory action research more broadly—as an approach really comes into its own with respect to questions of participation, inclusivity, and representativeness, while my presence as a 'neutral actor' helped to create a safe space for broad participation even in communities where energy projects have proven divisive (as shown in the above quote). In addition, the participatory workshops proved useful for providing a 'multi-voiced' perspective on CRE projects, which are underexplored in current literatures (Creamer et al, 2019). In this respect, the process encouraged a wide range of views, and provided a neutral space for all participants to have a say. As my notes following a number of workshops reflect:

> *As an inclusive model for constructing participative research, the Ketso session showed itself to be an effective tool for eliciting the opinions of even hard to reach groups. One participant, who was long-term unemployed, approached me at the end of the session and remarked that 'For people like me who don't normally say much it was nice to be included and have an input' (Personal Notes, Participatory Workshop, 19/10/15 – Hydro, Powys)*

> *There was a really nice mix of stakeholders involved, reflecting a diversity of members of the … community, and it was especially fantastic to have a couple of visitors to the studio on the morning decide to take part (Personal Notes, Participatory Workshop, 08/08/15 – Hydro, RCT)*

As these passages show, my work suggests there is much to be gained from utilising innovative participatory methods to research questions of energy and justice. Such methods are often more interesting and accessible for community-based research and, as I have shown, can facilitate the emergence of a broad and nuanced perspective of the issues. My research also demonstrates that carefully designed participatory approaches can help CRE projects to meet their aims, as well as contributing to more transformative, unintended local impacts, as the following quote from a participant in a mid-Wales hydro project reflected:

> *We've got, interestingly, because we all got together [at the participatory workshop], we've got an election for a community councillor, I think for the first time ever … But we have been so sick to death of new councillors being co-opted … [that] we went round and got enough signatures to hold an election, we only needed ten and we got thirty, just to make sure! … So later this month we've got an election. We're very excited about this. So that's a good thing (Workshop Participant, Hydro, Powys)*

I hope that the success of the methodological innovations I have tested through this study will inspire other researchers in the geographies of energy and justice to go on to use similar participatory action research-inspired approaches in their research.

7.5 Limitations and Opportunities for Future Research

This thesis makes important contributions to research on CRE, energy justice, and the changing nature of our energy systems more broadly. In doing so, this thesis expands and extends significant debates in the sub-discipline of energy geographies about social justice across a range of energy types, picking up calls for greater critical exploration of our energy infrastructures and the questions of justice that they raise (Walker and Cass, 2007; Walker and Devine-Wright, 2008; Sovacool and Dworkin, 2014; Jenkins et al, 2016). As such, the story of this thesis is of an energy system in flux, where more open and participatory approaches to energy are being tested in the margins of our large-scale, centralised energy infrastructures, and which portend a range of possibilities built around the new social relations implied by local approaches to energy production. Indeed, the contribution this research makes towards understanding the ongoing nature of CRE, and the concomitant temporal questions of justice that arise, suggests new ways of engaging communities in our energy systems and a wide range of potential effects. This thesis challenges researchers to suspend their expectations regarding local approaches to energy production and questions of justice, and opens up new avenues for researchers to explore and think more critically about the co-production and co-evolution of energy and equity at meso- and micro-scales over time.

However, despite many positive aspects to this research, there are also a number of limitations it is important to acknowledge. Such limitations can broadly be categorised as geographical, material and temporal and suggest a range of areas where there are opportunities to build a more holistic future research agenda into the interrelations between local approaches to energy and questions of justice. Taking the geographic first, this study is delimited by the specific geographies pertaining to Wales and the UK more broadly. Of course, such boundedness is a limitation facing most empirical research, and Wales is a good candidate for researching CRE in the context of justice in view of its history of energy extraction, abundant natural resources, and high incidence of fuel poverty. But, while there are sound practical and methodological reasons underpinning this focus, a different geographical context (in the developing world for instance) would undoubtedly raise different questions of energy and justice to grapple with in the field. Consider, for example, what ‘CRE’ might mean and what associated questions of justice might arise from a geographic context reliant on traditional energy practices (take Munro et al’s (2017) account

of fuelwood gathering and localised charcoal production in Sierra Leone for instance) rather than the large-scale centralised energy infrastructures circumscribing access to energy in Wales. But the broader point remains that interrelated questions of energy and of justice are inherently shaped by their underlying physical, social, and cultural geographies of place.

Relatedly, such geographic limitations that there are give emphasis to the material and temporal constraints that are features of the situated places in which CRE projects are pursued. A key issue structuring the context and the projects available to be researched in this study was thus the policy environment promoting CRE at the time the research took place. While it is true that the Ynni'r Fro programme attempted to inculcate and foster a fledgling CRE sector in Wales with a view to addressing issues of justice, this is as much a constraint as it is an opportunity for research by virtue of the emphasis on community scale renewables and electricity generation rather than alternative energy forms and novel approaches to addressing issues such as fuel poverty. In this regard, an early idea that had been explored as a potential candidate for research was collective purchasing of energy by communities, however, such activities were simply not supported through the Ynni'r Fro programme.

Such constraints are particularly relevant when it comes to the issue of fuel poverty, which has historically been couched in terms of 'affordable warmth' and often manifests around concerns about 'cold homes' (Boardman, 2010; Walker and Day, 2012). Indeed, the emphasis on 'warmth' and therefore 'heat' highlights a key feature of fuel poverty as an issue that a focus on community scale renewables and electricity generation is not necessarily well-suited to addressing. The three most commonly cited drivers of fuel poverty are low incomes, high fuel bills, and energy inefficient homes (Boardman, 2010; Middlemiss, 2017). Thus to the extent that electricity remains amongst the largest costs that make up the average consumer energy bill, there is still an important argument for focusing on community renewables. However, the lack of emphasis on heating technologies in Ynni'r Fro (along with a dearth of evidence around projects making material improvements to people's homes) directly affected the extent to which a clear emphasis on 'affordable warmth' could be achieved in practice, and which the successor to the Ynni'r Fro programme subsequently sought to address by taking a more expansive view of the sorts of renewable energies that could be supported.

More generally, the fact Ynni'r Fro was a first of its kind scheme highlights the immature nature of the CRE sector in Wales at the time at which this research took place. This was not wholly problematic as Wales has a number of more long-standing schemes that were also involved in the Ynni'r Fro programme. Indeed, this dynamic thus provided a useful

medium through which to uncover and understand the temporal questions of justice that CRE raises, a feature of CRE schemes that are not currently well understood (Forman, 2017) and might not have been so prominent were it not for the stark difference between projects in their earliest stages and more developed schemes. However, it also constrained the extent to which this research has been able to comprehensively examine the justice outcomes associated with CRE in Wales, as opposed to the things that this emergent CRE sector *might* do if all the projects involved in this study are constructed and energised over time. Indeed, the wider issue of temporality more broadly serves as both constraint and opportunity in equal measure. The whole policy environment structuring support for community renewables, not just in Wales but across the UK, has radically changed over the course of this research and the feed-in tariff came to and end in March 2019. Given the dependence of many projects involved in this study on the feed-in tariff, research undertaken at a different time, or in a different context with alternative support arrangements, may provide an altogether different view of the co-evolution of CRE and issues of justice. However, these are areas where further research is required.

Indeed, while the foregoing limitations discussed highlight some of the constraints faced in undertaking this research, it is conversely true that in equal measure they point towards potential future opportunities to build on and further explore the links between CRE and issues of justice in other situations, locations, contexts, and at other times. Taking the constraints inherent in focusing on a specific programme of policy support as a starting point, there is scope for future research to examine a broader range of technologies beyond electricity, and specifically to bring heat at community scale under greater consideration. In the context of fuel poverty, such an emphasis would provide opportunities for exploring the notion of 'affordable warmth' at a local level, alongside the role and entitlement of local communities of place to benefit and participate. A growing number of studies have sought to examine the role of heat in the context of energy transitions and fuel poverty (Owen at al, 2013; Webb, 2015; Donaldson and Lord, 2018; Rodríguez et al, 2018; Vitéz and Lavrijssen, 2020) but there is limited empirical examination of community-based interventions from an explicit justice perspective. District heating has, for instance, been suggested as providing opportunities to address fuel poverty (Hawkey, 2012; Webb, 2015; Soltero et al, 2018), however it is not clear that there are simple opportunities for communities to participate and benefit. Indeed, now that the UK government in Westminster has described the decarbonisation of heat as one of the most difficult long-term challenges it faces in meeting its climate change targets (BEIS, 2017), there would be value in research that more thoroughly examines these links.

Beyond this, the long-term nature of the challenge of decarbonising heat harks back to the findings of this research which highlighted the ongoing, temporal nature of CRE. While a number of studies have alluded to the long-term effects of CRE schemes (Walker et al, 2007; van Veelen, 2018; Berka and Creamer, 2018; Creamer et al, 2019), rarely have they been the focus of in-depth empirical examination, particularly from a justice perspective. In part this reflects the relatively recent nature of CRE (certainly in the UK) in that there are simply not a vast majority of schemes that have been around generating energy for a very long time. This thesis makes an important contribution to shedding light on and unpacking this nuance, while providing a foundation for understanding the ongoing nature of CRE and its associated effects in more depth. Future research should examine how ongoing patterns of participation and benefits distribution in CRE projects intersect with the justice-promoting potential of local energy initiatives over time and enable new ways of engaging communities in issues of energy and justice. Indeed, given that renewables *development* has often been the main focus in the extant literature (Berka and Creamer, 2018; Windemer, 2019) this is one of the most promising directions in which CRE research can usefully develop in the future.

From a methodological perspective, a turn towards the ongoing implications of CRE for local communities and the energy system more broadly opens the door for extending the use of underutilised and innovative data gathering techniques and approaches to energy research. As Sovacool (2014) has previously suggested, expanding the repertoire of methods used for researching energy-related questions can enrich the field and reveal new perspectives on the social dimensions of our energy systems. This thesis makes an important contribution in this respect, by testing an action research-inspired approach and innovative participatory methods with local communities, but there is undoubtedly scope to go further. For example, a logical extension to the study in the future would be a more fully focussed action research approach that seeks to untangle and support the co-constitution of CRE projects and equity objectives in local contexts. In addition, the ongoing nature of CRE presents a key opportunity for future research to develop a longitudinal perspective on CRE projects and the temporal questions of justice that arise. It would undoubtedly be informative to go back to the communities involved in this research in ten years and test the extent to which they have realised the ambitions they set out, and examine how the materialities of the local energy infrastructures being developed at the time this research took place shape access to energy and pro-justice outcomes over time.

Indeed, in contemporary societies we live highly energy-dependent lives whether we know it or appreciate it (Thompson and Barton, 1994; Kollmuss and Agyeman, 2002). From flicking the switch to commence the flow of energy to power the computer that I used to

finish writing this thesis (after all, what University would accept a hand-written thesis in the 21st century?), to the stark and undesirable choice between heating or eating it is reported that many people face (Beatty et al, 2009; Snell et al, 2018), energy matters. It structures our opportunities and contributes to our basic needs and, in so doing, is both an enabler of and a prerequisite to greater social justice in the modern age. As this thesis shows, community renewables shape new opportunities for engaging and addressing the temporal questions of justice that our energy dependence provokes.

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Appendix 1: Extensive Phase Interview Schedule

Introduction

- Respondent's role and background, history/length of involvement with and interest in energy/community work? Involved with any other projects now/historically?

Project

- Could you give me a bit about the background to the project and the rationales for setting it up? When was the project established? *(informally, legally – history of each)* What were the most influential factors for establishing the project? *(instrumental, ideological, emotional, social)* How big is the project? *(installations, membership, geography)*
- Would you say that there's anything special about your project in comparison to other projects? How do you/will you measure the success of the project? *(breadth/depth of engagement, penetration into locality, delivering benefits, non-tangible outcomes)*
- How important was it for you to do something locally? When you think about what you want to achieve with the project what is it that you think about? What is the ideal or the vision? How do you feel about the progress being made towards that?
- Can you tell me about the structure of the project? *(prompts as below)*
    - Legal status: What? Why chosen? How does it help? Any requirements? Any problems?
    - Board: Who? Where from? Local? Why chosen?
    - Employees: How many employees does the company have? What are their roles?
    - Finance: How has the project been financed? What sources of funding? How easy has it been to access? Do you think there is enough funding available? Have you explored private sector involvement or the inclusion of a development partner?
- Can you tell me about the sites that the project has identified? How did you come across them? How did you negotiate access to them? What specific challenges have you experienced with respect to the sites? Has there been any tension at the sites with respect to the development and the local community? How much effort goes into managing and maintaining relationships at the site?
- What is the current status of the project? What are the immediate plans for the future? Do you feel like their will need to be compromise along the way? Why? What have been the most significant barriers to envisaging your plans? *(grid, land, finance, expertise, knowledge … anything else?)* What would make them easier to realise? How aware would you say you were of the challenges before getting started? Would that have made a difference to your approach?
- Reflecting on your experiences, what would you say are the most important resources and capacities required to develop a project? Is there anything you would change about how support is structured to meet those capacities? Who would need to do it? If success/organisation is predicated on the basis of existing capacity, do you think that makes community energy exclusive at all? *(disadvantaged groups, socio-economic status)*

Participation in the Project – Project Membership

- Where do the membership come from? How was that advertised? Demographics? What sorts of people would you say are getting involved? Are they involved with other projects? How satisfied are you that you've reached everyone that you need to reach?
- Thinking about how the project communicates with its members, what engagement strategies do you use? What are the forums for that? Are they successful? Why? Has engagement been reciprocal? Why? How important is a two-way engagement for the project?
- Can you explain what understanding you have of members' motivations for getting involved? Do they have any expectations of the project? What do you think their aspirations are for the project? Have environmental arguments attracted much support locally? In what ways are members involved in the decision-making processes? *(formal/informal)*
- Is there anything that you would change or do differently with respect to the membership?

Project Aspirations

- Thinking about the project aspirations, how did you arrive at the aims and objectives? How much of it was the result of a collaborative process between all the stakeholders? *(you, board, local communities,*

members) How do you aim to ensure that people are involved and that everyone's voices are represented? *(what mechanisms are there at present)*

- Off-script but what do you think of when you think about community with respect to the project? What is your sense of people really engaging with the substance of what CE means or does a project need to be able to provide local benefits in order to get traction? *(pragmatism v ideology)*
- How much thought has been given to the inclusion of aims supporting the reduction of social inequalities within the project? *(broadly conceived, locally conceived)* Do you think those are responsible aims or do you think it's more important that projects have the freedom to be able to spend revenues/potential revenues how they like? How would you feel if requirements were brought in with respect to revenues being spent in specific ways? How important is it that projects are able to make a difference locally and decide on their own terms how they want to make an impact? If at all, how central would you say social justice rationales have been to the project? *(fairness, reducing inequalities, widening access – is it embedded? is it a matter of interpretation?)*

Distribution of Benefits

- What do you see the benefits of the project as being for the members and for the wider community? How do you aim to ensure that the benefits you see stemming from the project reach the community? *(eg. side-projects, self-consumption, dividends, reinvest in community)*
- Do you think what you're project is setting out to do reflects what is needed here? *(make sure they answer the question and don't go global)* How do you know? How will you know if you meet your aims – what is your benchmark for success? Do you have monitoring processes in place? How will you ensure that the project is attentive to changes over time in terms of what is needed in the locality?

Future Research

- Looking to do some more in depth research with a select few groups – spend some time with them on the project and at events and interview some of the members – is this something you would be interested in being involved with? What would be the best way of going about contacting your members in order to speak with them?

Appendix 2: Intensive Phase Interview Schedule

Personal History of Involvement and Participation *(Individual Biographical & Contextual Info)*

- How did you get involved with the project? How long have you been involved? Are you involved with any other groups in the locality that do similar things? *(interpret broadly – energy, community work)* What groups? What motivates you to get involved with these groups?
- Why did you decide to get involved with this particular project? *(ideological, pragmatic, community)* What was your primary motivation to start? What's been your motivation to keep going? What does being part of the project mean to you? Is there anything that you don't agree with about the project/is problematic for you in any way?
- Can you describe what, if any, importance you attach to energy in your day-to-day life? Do you think critically at all about the way that you use energy or how much energy you use? Have you ever given thought to how the price of energy affects you in your personal life?
- How important is the emphasis on energy within the project to you personally? Would you say that energy is something that has motivated you to become involved? If applicable: What would inspire you to want to do more about energy in the community?

Extent of Participation

- How well-informed do you feel about all the different aspects of the project? In what ways is that information communicated? *(formal/informal networks)* Reflecting on your role and the times you've been involved, how would you assess your participation in the project? *(active contributor or passive recipient)* Is there anything in particular you see yourself as bringing to the project? In what ways have you been able to take part? What sorts of other things does the project do? *(attentiveness to overarching aims of project, not just what they can take part in)*
- Thinking about the activities the project does, who decides what those activities are? Do you think the activities that take place are the right activities? What would you do differently? Do you think there are enough opportunities for getting involved? What are the challenges for you in terms of being involved? Is there anything that would make it easier for you to take part? *(interested in depth of participation)*
- Are there a lot of people who get involved or is does it tend to be a few? Do you think it's better if there are more people involved? *(value of having more people involved – justice implications)* Is there anyone/groups that you can think of that the project doesn't reach? If the project got bigger do you think that would cause any problems or be better? Why? Do you think the project is exclusive in any way? *(inclusivity and recognition)*
- Do you feel that your contribution is valued within the project? How do you know? Thinking about how decisions are made, do you feel like you have power? Are there enough opportunities for you to have an input in terms of making sure that your opinion is heard? If you have ideas do you feel happy to put them forward? How would you do that? *(structuration of access)*
- Do you think there are any particular challenges with respect to getting people involved in projects like this? *(do we assume that this is the kind of thing people want to get involved in – presents challenges for scaling up)* Is there anything that you would do differently if you were in a leading/organising role?
- How aware are you of the involvement of any other groups/organisations within advancing the projects aims? How happy would you be with respect to the involvement of organisations from outside the community in helping to achieve its aims? *(eg. government, private developers – interested in breadth of participation)* Why? Would you have any particular apprehensions about the involvement of specific interests? *(tensions in involvement of communities of interest vs. place)*

Distributing Benefits *(challenging to ask in interview about benefits on projects that aren't live)*

- What do you get out of being involved in the project that you wouldn't otherwise get? Tangible benefits? Other benefits? *(eg. emotional, sense of purpose, social)* Do you think that what you get out of being part of the project are the same things that the project leaders think you get out of being part of it?
- Thinking about the benefits that come from the project, who decides where they go or how they get spent/would be spent? Do you know how those decisions are made? Is there anything you think the project should be doing in the locality that it isn't? Do you feel that your voice is adequately represented in that process? Is there anything that you think needs to be done differently with respect to decisions about how any profits are spent?
- Do you think the aims of the project represent the needs of the people in the locality? How would you spend the money to benefit the community if the decision was yours? Do you have any specific

expectations with respect to what you want out of the project? To what extent are those realised in practice? Is there anything you think the project should be doing in the locality that it isn't? *(bottom-up, needs-based approach vs imposed priorities)*

- Do you think that projects like the one you're involved in should be able to spend their revenues however they like? How would you feel if requirements were brought in with respect to revenues being spent in specific ways? What if that requirement was helping the poor and reducing social inequality generally? In the locality? Is this something that you feel is a focus in your own project or needs to be made more of? Why?

Project Aspirations/Inclusivity of Social Justice Issues

- How do you understand the role of the project? Is it just an 'environmental' thing?
- What is your personal vision and aspirations for the project? What does being part of the project mean to you?
- How well do you think what the project aims to do match up with your own aspirations? Is it representative or are there differences? Does the project need to be more representative with respect to what its members want? If so, how do you think this could be achieved? *(tensions between declared aims and member visions)*
- How important to you is the fact that the project is 'local' in nature and seeks to deliver local benefits for you being involved? Would you have the same interest in other projects with similar aims that didn't have that local connection? *(thinking about justice as being formatted spatially)* Do you think it would be more difficult for similar projects that didn't have that sense of connection to place? How important would you say the broader issues that the project speaks to are for you? Or is it more about what tangible benefits the project can bring? *(the vision rather than how the vision is interpreted spatially)*

Appendix 3: Participant Information Sheet

Participant Information Sheet – Group/Policymaker Interviews

Study Title and Principal Researchers

Building Community Resilience:

The Role for Community Energy Projects in Sustainable Place Making

Principal researchers:

- Alister Forman – FormanAK@cardiff.ac.uk
- Dr Richard Cowell – CowellRJ@cardiff.ac.uk
- Dr Alexandra Franklin – FranklinA1@cardiff.ac.uk

As part of an ongoing programme of doctoral research into the theme of sustainable communities, you are being invited to take part in the above research study. Before you decide whether or not to take part, it is important for you to understand why the research is being carried out and what it will involve. Please take time to read the following information carefully.

What is the purpose of the study?

This study considers the relationship between fuel poverty and community energy initiatives broadly defined. It will seek to understand the ways in which different types of community energy projects meet the needs of the fuel poor. The project will think about how social justice is implicated in localised forms of energy production and management and aims to assess what needs to happen to make sure that the benefits and burdens of future energy systems are fairly organised and shared across society. The study has a specific focus on fuel poverty and community energy in Wales – where fuel poverty rates are the highest within mainland UK – and seeks to understand the experiences and responses relevant to both urban and rural fuel poverty characteristic of the Welsh context.

What is involved?

The research will be carried out by the doctoral candidate Alister Forman. If you agree to take part, you will be asked to respond to various questions around the themes of fuel poverty and community energy in an interview conducted by the doctoral candidate. There is no requirement for you to answer any questions that you are not comfortable with or do not wish to answer. It is expected that interviews will take between 45 minutes and an hour. Following interview, you may be invited to participate in follow-on activities or subsequent interviews in which case you shall be contacted directly.

Why have I been chosen?

You have been invited to participate owing to your experience and involvement relevant to the questions and issues under consideration. Your participation in the study will be as part of a larger sample including relevant community groups and organisations, policy makers and intermediaries in the context of both fuel poverty and community energy in Wales.

Do I have to take part?

It is your choice whether or not to take part in the research. If you do decide to participate, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you can withdraw at any time and you do not need to give a reason.

Will my taking part in this study be kept confidential?

With your permission, an audio recording of the interview will be made. Correspondence will be retained for the purposes of substantiating your involvement in the study and for analysis relevant to the questions under consideration. Your name and any details identifying you will be kept confidential to the researcher and supervisors unless otherwise negotiated by prior written/email consent. In published materials, any information that may reveal who you are will not be written about.

What will happen to the results of the research study?

The information gathered throughout the study will be used to help form conclusions on the relationships between community energy and fuel poverty and how social justice works within energy systems. The information gathered may be subject to subsequent analysis to inform future studies. The results of the study will be written and submitted in the form of a doctoral thesis as part of a PhD in Human Geography at Cardiff University; and a summary of key findings submitted to Welsh Government. The results of the study may be submitted to academic journals for publication, used for academic conferences and seminars and may be published and utilised by Welsh Government to inform future policy goals. If you wish to have access to the results of the study, this can be arranged by contacting the researcher. A transcript of your interview can be provided by request.

Who is organising and funding the research?

The doctoral candidate responsible for conducting the research in the study is Alister Forman. The study is supervised by Dr Richard Cowell and Dr Alexandra Franklin. All researchers are based at Cardiff University and are affiliated with its Sustainable Places Research Institute.

The study is funded by an Economic and Social Research Council (ESRC) award (50%), a Welsh Government grant (40%) and Cardiff University (10%).

Who has reviewed the study?

The project has been approved by the School of Planning and Geography Research Ethics Committee at Cardiff University.

Contact for Further Information

If you have any questions about the research or what is involved please contact Alister Forman at FormanAK@cardiff.ac.uk. You can also contact the supervisory team who are Dr Richard Cowell at CowellRJ@cardiff.ac.uk and Dr Alexandra Franklin at FranklinA1@cardiff.ac.uk.

If you would like to raise any concerns about how any aspect of this research has been conducted please contact the School Research Ethics Committee chair for Planning and Geography, Dr Gareth Enticott, on EnticottG@cardiff.ac.uk or phone 02920 876 243.

Thank you for reading this information sheet and for considering participating in the study; your contribution is greatly valued.

Appendix 4: Research Agreement

Research Agreement

Building Community Resilience:
The Role for Community Energy Projects in Sustainable Place Making

This agreement and the provisions contained herein form the basis of a co-operative research collaboration between the Welsh Government and the research student Alister Forman in affiliation with the Sustainable Places Research Institute, Cardiff University.

1. THE RESEARCH AGREEMENT

1.1. Free, Prior and Informed Consent. The aim of this agreement is to ensure that both Parties enter into this collaboration with informed consent, agree about the nature of the research collaboration, and are supportive of the research collaboration.

1.2. Negotiation of Agreement. All aspects of this document are open to negotiation prior to being affirmed by the Parties, after which time it will be considered requisite to the pursuance of the research programme.

1.3. Changes to Agreement. Changes may be permitted, under the direction of any or all of the co-supervisors, to ensure that the programme meets the requirements and expectations pertaining to the award of a PhD from Cardiff University.

1.4. Primacy of Academic Aims. Collaborator acknowledges that the primary mission of University is education and the advancement of knowledge; and, consequently, the study will be performed in a manner best suited to carry out that mission. All collaborative undertakings between the Parties must ultimately yield to the requirements and expectations pertaining to the award of a PhD from Cardiff University. Both Parties will provide all reasonable and timely cooperation necessary to meet this objective.

2. SPECIFIED PERSONNEL

2.1. The Researcher. The study will be carried out by Alister Forman, who is a PhD candidate based within Cardiff School of Planning and Geography and the Sustainable Places Research Institute at Cardiff University. The researcher will be subject to Cardiff University rules governing research ethics and governance, throughout and beyond the period specified by the University and School Research Ethics Committees (UREC/SREC), for the conduct of the given study.

2.2. University Principal Investigator. The study will be co-supervised by Dr Alex Franklin, Dr Richard Cowell and Dr Leanne Cullen-Unsworth of Cardiff University.

2.3. Collaborator's Principal Investigator. The Welsh Government's collaboration pursuant to this agreement will be under the direction of Joanne Amesbury, Kate Hearnden and Kathryn Evans.

3. RESEARCH PROGRAMME

3.1. Research Aims. The research aims and questions will be refined and formalised by the researcher, in time for submission to Cardiff University for approval, within three months of the commencement of the programme. The researcher will provide Collaborator a copy of the Research Proposal at the time it is submitted to the University and the Collaborator will provide comments, if any, within 7 days. These outputs should cohere to prior agreements between the Parties on the overarching themes and direction

of the study and will be informed by ongoing discussions between the Parties and co-supervisors at Cardiff University.

3.2. Case Studies. Suitable case studies, focussing empirically on Wales, will be identified relative to the specific aims of the study. The identification of relevant case studies will be informed by ongoing discussions between the Parties and co-supervisors at Cardiff University.

3.3. Outcomes of the Research Programme. Notwithstanding extraneous circumstances, within a three year timeframe the research project aims to:

o Submit results to Cardiff University in the form of a PhD thesis meeting the requirements and expectations pertaining to the award of a PhD from Cardiff University;

o Work with the collaborator to identify their aims and aspirations for the project and discuss issues they may wish to highlight;

o Address other suggestions the collaborator may have within the timeframe;

o Shape greater critical engagement with the possibilities of community-led initiatives and renewable energy in specific settings through working collaboratively with specific projects;

o Contribute to understandings of how and in what respects community-led initiatives and renewable energy projects can be more effectively supported at a policy level and how these issues feed into other policy debates;

o Emphasise the role and significance of bottom-up approaches as they relate to the (re)negotiation of security and resilience at multiple scales both in Wales and beyond;

3.4. Ethical Approval.Prior to the commencement of any research fieldwork phase, the appropriate ethical approval shall be sought from Cardiff University and normal expectations regarding research involving human participants met.

4. CONFIDENTIAL/SENSITIIVE INFORMATION AND PRIVACY

4.1. There will be no confidential or restricted information included in any report or research product.

4.2. The collaborators agree to advise the Researcher and/or Principal Investigators if an issue is sensitive and identify appropriate ways of dealing with it.

4.3. All research partners will use all reasonable care to limit the exchange of confidential information and to prevent the unauthorised use, dissemination or publication of any such knowledge.

4.4. Research participants will be able to elect:

o Whether their names may be used in the research including in any communications with the collaborators unless their name is a matter of public record in relation to a particular issue; and

o Whether any record of their dealings with the Researcher is provided to the collaborator.

5. INTELLECTUAL PROPERTY AND RESEARCH OUTPUTS

The Parties agree that:

o The Researcher, Principal Investigators and Cardiff University may distribute the final thesis as they wish including revised outputs for publication;

o Information, data and other material generated during the course of the study may be used to inform the production of publications including books, journal articles and web-based articles and blogs but will exclude sensitive information that the collaborator does not want to be made public;

o All research partners may speak about the research in seminars, conferences, workshops and lectures but will not release sensitive information that either party does not want to be made public;

o Any outputs relating to the study by either party will be provided to the remaining parties;

o All research partners will be acknowledged in all subsequent research outputs. Any use of a party's name in this way shall be limited to statements of fact and shall not imply endorsement of products or services.

6. STORAGE OF INFORMATION

The Researcher agrees to keep information collected in the course of the research partnership under the terms and conditions supplied and agreed to by the UREC/SREC at Cardiff University and, where applicable, in line with DPA 1998. All documentation relating to ethical approval will be made available to the research partners or other associated parties on request.

7. DISPUTE RESOLUTION

If any dispute arises in connection with this Agreement, the Parties will negotiate in good faith using their best endeavours to resolve the dispute.

Comments on or concerns with the research process can be made in the first instance to:

o Dr Alex Franklin: Sustainable Places Research Institute, Cardiff University, 33 Park Place, Cardiff, CF10 3BA. Tel: +44(0)29 2087 9271. Email: FranklinA1@cardiff.ac.uk

o Dr Richard Cowell: Cardiff School of Planning and Geography, Cardiff University, Glamorgan Building Room 2.74, King Edward VII Avenue, Cardiff, Wales, CF10 3WA. Tel: +44(0)29 2087 6684. Email: CowellRJ@cardiff.ac.uk

For further information about the ethical conduct of the research please contact:

o Dr Gareth Enticott: Chair, School Research Ethics Committee, Cardiff School of Planning and Geography, Cardiff University, Glamorgan Building Room 2.94, King Edward VII Avenue, Cardiff, Wales. CF10 3WA. Tel: +44(0)29 2087 6243. Email: EnticottG@cardiff.ac.uk

Should there be a dispute which cannot be settled in approaching the above, the Parties agree that any dispute arising during the course of this agreement will be dealt with as follows:

o The party claiming that there is a dispute will send to the other a notice setting out the nature of the dispute;

o The parties will try to resolve the dispute by direct negotiation, including by referring the matter to persons who may have authority to intervene and direct some form of resolution;

o If the parties are unable to resolve their differences, then a person who is acceptable to both parties may be appointed as arbitrator. Any arbitration will be conducted in accordance with procedures agreed beforehand by both parties. Both parties agree to abide by the arbitrator's decision.

8. DISSEMINATION OF THIS AGREEMENT

This agreement can be made available to any party who is participating in the research study.

I acknowledge that I have read this Agreement in its entirety and, having had the opportunity to discuss and negotiate it as I feel necessary, will use reasonable efforts to uphold my obligations and responsibilities set forth herein.

Appendix 5: Ketso Workshop Guide

Workshop Plan – Exploring Community Benefit Priorities

This workshop is designed to help a group consider key issues with respect to community benefit using the Ketso toolkit. It includes stages to explore what we mean by community benefit, how it might be improved and how it relates to different priorities. The workshop will explore what is good about the area, its existing assets, as well as the problems, and to think through what could be done differently and how community energy may help to meet some of these priorities.

It includes the following issues to be discussed by the group (in the form of branches on the Ketso felt):

- **Community Benefit**
- **Locality**
- **Poverty**
- **Environment**
- **Community**
- **Energy**
- **Blank** – for ideas that emerge from discussion / cross cutting ideas

Overview Workshop Plan – 'Community Benefit' Priorities (1 hour 45 minutes)				
	Stage of Workshop	*Adjustment*	**Ketso tool**	**Duration**
1	**Introductions**			10
2	**What works well at the moment? What have we already got that is good? Top two each.**			10
3	**Key words – What does community benefit mean to you? Top two ideas.**			10
4	**Identifying Priorities**			10
5	**Future possibilities – what else would you like to see and do? Top two each.**			15
6	**Comfort break – seeing other people's ideas**			10
7	**Key challenges. Top two each.**			10
8	**Solutions to challenges. Top two each.**			15
9	**Identifying Priorities**			10
10	**Summing up**			5

Workshop plan adapted from Community Planning Conference 2010, Renfrewshire.

For more information about Ketso, see www.ketso.com

1 Introduction 10 minutes

The aims of the workshop are:

- We will go through a series of stages to gather your ideas and perspectives about **priorities for how the community can benefit from community energy**, to inform future plans and developments.
- To engage with community members and find out what matters in the area.
- To learn about existing assets – what makes the place special?
- To consider alternatives and options
- To develop key points for action

About Ketso

- Ketso is a hands-on kit for creative groupwork, and we will be using this kit today to capture and share our ideas.
- Ketso means action in Lesotho, Southern Africa, where it was invented.
- It's really easy to use.
- There are **different coloured leaves** for different kinds of ideas which we'll explain as we go along - write on coloured side of the leaf.
- Write or draw one idea per leaf.
- Use the **special pens** provided so the leaves can be cleaned and re-used.
- Ketso is about working together and having good discussions, but it's more than that. It is also about giving everyone an opportunity to think for themselves and come up with their own ideas. So we will alternate between individual thinking time and group discussion. We call this **'think then share'**. It really helps to keep everyone involved and to get more creative thinking going than a simple discussion would.

Workshop process overview:

- We are going to consider how we each understand community benefit.
- We are going to look at what is good in the area, and what assets we already have.
- Then we will consider creative options for the future.
- Then we will think of the challenges and problems we are facing.
- Then we will think of ways of overcoming the challenges.
- We will be prioritising ideas later, so for the moment, please get all the ideas on the table without trying to judge them.
- Each stage will take about 10 minutes. I will be using **a bell** for timekeeping. The first ring will be asking groups to wrap up and finish off what they are doing and the second ring will ask all the participants to stop what they are doing and listen to next
- instructions.
- Each time we go on to a new stage, you will be spending a few minutes to write ideas down on your own, then after that time, you will share them with your group. Having this time on your own to develop ideas allows everyone some time to think and put forward ideas that may not be obvious or come out if the group starts by discussing ideas first.
- At any point, if you have a thought, grab a leaf and capture it so we can share it later.

What will happen to the outcomes?

- Photos to be taken of all the workspaces – so please **write or draw clearly** so we can see what the idea was.
- These will be then transformed into a report which will be circulated to participants.
- Key messages will be considered by the community planning partners and fed into their relevant action plans and policies.

Ask participants to introduce themselves briefly to each other at their tables (name and organisation if applicable)

2 What works well at the moment? What have we already got that is good? — 10 minutes

- Ketsos are on the table, pre-prepared with branches and *folded over* (centrepiece needs to be moved so they fold).
- Now we're going to think about the assets that we have.
- Write or draw one idea per leaf, use the pens provided.
- We have different colour leaves for the different stages of the workshop. We'll start with **brown leaves.** Write on the coloured side.
- Open felts after participants have had brief time to write some ideas on their own.
- After opening the felt, briefly describe the different branches and explain that the **blank branch** is used for cross cutting/emergent themes which will emerge as a result of the discussion where all those ideas which don't fall under those specified can be placed
- Point the leaves at appropriate branches where they seem to fit. If similar ideas come up, point the leaves at each other to create a cluster. You can move the leaves around and discuss what the branches mean.
- Read out and put down the leaves one at a time, going around the table to share your ideas and give everyone a turn.
- If there's still time, encourage people to add more ideas to the felt, going around the tables and encouraging participants to write and add more ideas – perhaps pointing out branches that don't have much on them and suggesting that participants can use the branches to see if they can think of more ideas in that area.
- Towards the end of this session put comment cards on the table for the group to use in the next stage.

3 Key Words – What does community benefit mean to you? — 10 minutes

- For the next activity we are going to use the **comment cards.** Write on the blank side.
- We are wanting to consider various stakeholder interpretations of 'community benefit' in order to explore and set the scene for the variety of ways in which different groups and people approach the idea.
- Ask the question and ask participants to write their own ideas, *without sharing at first*, onto the brown leaves.
- So the first question you are being asked to consider is **what does community benefit mean to you?** To think about this you may like to consider: Who should benefit? How should benefits be allocated? Who gets to decide? What does the process look like? Should there be an overarching organising principle?
- Read out and put down the comment cards one at a time, going around the table to share your ideas and give everyone a turn. Show the participants how to cluster the leaves around the 'community benefit' branch and encourage others to do the same – joining up similar ideas and noting divergences.

4 Identifying Priorities — 10 minutes

- Ask each person to take 1 exclamation icon from the icon pad.

- Without discussing the ideas in the group, **place your icon next to those interpretations on the comment cards** that strike you personally as particularly important.
- After you have done this, discuss the priorities, and as a group decide the top 3 from the ticked ones. Use the **blank icon tiles** to signify the final group choices.
- Keep these priorities in mind throughout the remainder of the session – so that they **inform** how you think about the other issues we are going to consider. This will be particularly important when we start to think about future priorities for action and solutions to challenges.

5 Future possibilities – what else would you like to see and do? 15 minutes

- Using **green leaves**, come up with some ideas and possibilities for the future, what else would you like to see (this is like the shoots of new ideas that grow in the brown soil of what we already have).
- Be as creative and open as possible, no right or wrong answers at this stage.
- Again, start with time on own to develop ideas, then share them with the group and place on the workspace where they seem to fit best. (Think then Share)
- Towards the end of this session, you may like to go around and suggest to the groups that they try to create clusters from the ideas and make it clear what ideas are related to each other, as another table is about to come and have a look at their ideas. If there are lots of blank leaves scattered on the felt you may wish they tidy them up a bit so the others can see their ideas.

6 Comfort break – seeing other people's ideas (if applicable) 10 minutes

- You will now take a 10 minute comfort break, during which you will have an opportunity to see other groups' workspaces.
- Please don't move the other group's ideas around, or remove them, but you can 'borrow' ideas and write them down on leaves to bring back to your own table.
- Towards the end of the break put grey leaves on the table for the group to use in the next stage.
- Put evaluation forms on the table in preparation for asking participants to complete at the end of the session.

7 Key challenges 10 minutes

- Using **grey leaves** (2 per each participant) consider what are the problems or challenges in the area, and what are the key barriers to achieving the ideas being developed here?
- Take a few minutes on your own, to develop the ideas, and in a few moments you can share ideas.
- Consider the most critical or significant blocks or challenges.
- You can come up with barriers to some of the specific new ideas you have developed on green leaves or those developed by other participants.
- Towards the end of this session put yellow leaves on the table for the group to use in the next stage.

8 Solutions to challenges — 15 minutes

- We don't like to leave problems without solutions.
- This exercise is to get you to think creatively of ways to overcome some of the challenges you have been discussing.
- Take a few **yellow leaves** and see if you can develop ideas for solutions to the problems identified in the previous stage.
- Encourage people to take some time on their own to develop the solutions before sharing them.
- Make sure to point the solution at the grey leaf problem that it refers to.
- Towards the end of this session put icon pads and oval shapes on the table for the group to use in the next stage.

9 Identifying key messages — 10 minutes

- Ask each person to take 1 tick icon from the icon pad.
- Without discussing the ideas in the group, **place your icon next to those solutions on yellow leaves** that strike you personally as particularly important.
- After you have done this, discuss the priorities, and as a group decide the top 3 from the ticked ones.
- When you have decided on 3 priorities, write each out in large writing on an **oval shape** provided by the facilitator.
- Key messages will be used to bring your ideas into the planning and development process in the form of a headline report.

10 Summing up — 5 minutes

- Facilitator says a few words of thanks and reminds the participants what will happen to the ideas.
- Not only key messages but all the data will be typed up will be developed into a report which will then presented to the community planning partners.
- Facilitator asks participants to complete the evaluation forms provided by the staff members during the comfort break.

Appendix 6: Ketso Output Sheets

Ketso Workshop Results Simple Template

Introduction

This is a simple template for recording the results of a Ketso workshop. Simply fill in the information about your workshop in the tables below. There are three tables:

- **Workshop Information** is for recording key information about the workshop
- **Legend** is to record the 'meanings' given to the leaves for this workshop.
- **Workshop Results** is for recording participants' ideas developed in the workshop (what is written on the leaves).

You can type in the focus of the workshop, the themes from the branch, and then record the ideas from the leaves. If you have more than one felt workspace, you can copy and paste a new table for each workspace, or you can collate all of the ideas into one table.

There is also a more advanced template in a spreadsheet, which allows for recording of icons and clusters of leaves, sorting data from many workspaces and workshops and more detailed analysis. This is available from www.ketso.com.

Workshop Information	
Title:	[redacted]
Date:	08 Aug 15
Location:	[redacted]
Facilitator:	AF
Host:	[redacted]
Number of participants:	6
Information about participants:	N/A

Legend	
Brown — What works well?	Grey — Key Challenges
Green — Future possibilities	Yellow — Solutions and Goals
Comment card — Organising Principles for Community Benefit	Key community benefit priority
Key Take Home Messages	Action points

Workshop Results

Exploring Community Benefit Priorities – Treherbert	
COMMUNITY	
Brown	Grey
• Growing groups and getting together • Community cohesion • Community spirit (x 2) • Music and drama • Talented project fixers and propagators	• Lack of community voice and decision making • Internal proprietary projectism (selfishness) • Raising peoples' confidence • Fatalism • No vision for young people and their future
Green	Yellow
• Following model of Spanish town with famous mayor (becoming an exemplar community)	• More empowering projects for all ages • Education about resilience and sustainability in all areas for all ages • Self-reliant groups • Exploiting early successes to advertise and inform further successes • Engagement with communities
Key Take Home Messages	**Key Community Benefit Priority**
• More empowering projects for all ages • Engagement with communities	• N/A
ENERGY	
Brown	Grey
• Energy production (cf. Cwm Clydach)	• N/A •
Green	Yellow
• Sustainable, clean energy • Local energy production from wood, wind and water • Hydro-electric power	• N/A •
Key Take Home Messages	**Key Community Benefit Priority**
• N/A •	• N/A •

Exploring Community Benefit Priorities – Treherbert	
ENVIRONMENT	
Brown	Grey
• N/A	• N/A
Green	Yellow
• Clean energy • Promote biodiversity • Access improved for disabled consumers of (local) walks • Sustainable, resilient, functional community and environment – local food production and energy • Engage community in protecting local assets (contingency plans)	• N/A •
Key Take Home Messages	**Key Community Benefit Priority**
• Access improved for disabled consumers of (local) walks	• N/A
LOCALITY	
Brown	Grey
• Scenery	• Road access • Rainfall
Green	Yellow
• N/A •	• Extension of railway to Blaenrhondda – road improvements – funicular railway (improving access for tourism) • Visitor centre – Dutch Barns – Biodiome etc.
Key Take Home Messages	**Key Community Benefit Priority**
• Visitor centre – Dutch Barns – Biodome etc.	• N/A
EXTERNALITIES/BUILDING POWER	
Brown	Grey
• N/A	• Government red tape and big business • Gaining ownership of assets (legally) • NRW/WG enabling community to use natural resources (lack of

Exploring Community Benefit Priorities – Treherbert	
	ability)
Green	Yellow
• N/A •	• 'Rhondda Citizens' network •
Key Take Home Messages	**Key Community Benefit Priority**
• N/A •	• N/A •
POVERTY	
Brown	Grey
• Green/environmental tourism (cf. Afan Argoed) •	• Funding • Scale of the employment problem is huge
Green	Yellow
• Tourism and catering group linked business • Research into feasibility of green tourism centre • Green tourism – low impact energy hub example • Establishing 'culture of coding' in the Rhondda (cf. Silicon Valley)	• Linking wonderful ideas to harsh reality – how do we make it happen? • Providing moral support through networks eg. Interlink RCT
Key Take Home Messages	**Key Community Benefit Priority**
• Green tourism – low impact energy hub example • Establish 'culture of coding' in the Rhondda (cf. Silicon Valley)	• N/A
COMMUNITY BENEFIT PRIORITIES	
Brown	Grey
• N/A	• N/A
Green	Yellow
• N/A	• N/A
Comment card **Organising Principles for Community Benefit**	**Key Community Benefit Priority**
• Sustainable jobs • Jobs • Local ownership • Creating jobs in Treherbert • Financial – jobs and funds for the community to use	• Sustainable jobs (x2) • Local ownership (x4)

Ketso Workshop Results Simple Template

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There is also a more advanced template in a spreadsheet, which allows for recording of icons and clusters of leaves, sorting data from many workspaces and workshops and more detailed analysis. This is available from www.ketso.com.

Workshop Information	
Title:	[redacted]
Date:	02 DEC 15
Location:	[redacted]
Facilitator:	AF
Host:	[redacted]
Number of participants:	4
Information about participants:	N/A

Legend	
Brown What works well?	Grey Key Challenges
Green Future possibilities	Yellow Solutions and Goals
Comment card Organising Principles for Community Benefit	Key community benefit priority
Key Take Home Messages	Action points

Workshop Results

Exploring Community Benefit Priorities – Llanberis	
COMMUNITY	
Brown	Grey
• People used to working together • A community which still has community spirit • Dysfunctional community (opportunities to bring together)	• Community cohesion • Communication with different community sectors • Promoting wider community awareness and involvement
Green	Yellow
• Instigation of other groups working on other areas • Aim at all age groups equally – environment awareness eg. trees	• Talk to others about community engagement • Organise more awareness events to coincide with launch of share issue • Be seen, be open, be trusted, be strong • People are problems – small mindedness – publicity/marketing • Have representatives from each community in on the sharing
Key Take Home Messages	**Key Community Benefit Priority**
• Talk to others about community engagement • Organise more awareness events to coincide with launch of share issue • Be seen, be open, be trusted, be strong	• N/A
ENERGY	
Brown	Grey
• Grid capacity • Rivers – low and high heads	• N/A
Green	Yellow
• Energy local projects brings groups together • PV • Heat pumps • More generation of electricity or heat	• N/A •
Key Take Home Messages	**Key Community Benefit Priority**

Centrepiece Exploring Community Benefit Priorities – Llanberis	
• N/A •	• N/A •
ENVIRONMENT	
Brown	Grey
• Water/gradient • Natural resources eg. Suitable rivers to be developed for hydro schemes • Assets – natural resources	• N/A
Green	Yellow
• N/A •	• N/A •
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A
LOCALITY	
Brown	Grey
• N/A	• Landowners
Green	Yellow
• Education • Stronger links and relevance of schools to the community • Employment specific learning eg. Outdoor rec.	• Tie the local authority into the schemes
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A
EXTERNALITIES	
Brown	Grey
• N/A	• Regulation and experience • Working within government constraints and moving goalposts • Lack of expertise – council not 'enablers' but 'blockers' • Cost of 'legals' – no Senedd structure or guidance
Green	Yellow
• N/A •	• Welsh Govt to produce clear, step by step guidelines for community groups, local authorities and NRW

Exploring Community Benefit Priorities – Llanberis	
Key Take Home Messages	**Key Community Benefit Priority**
• Welsh Govt to produce clear, step by step guidelines for community groups, local authorities and NRW	• N/A •
POVERTY	
Brown	Grey
• N/A	• N/A
Green	Yellow
• Greater focus on energy/fuel poverty	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A
COMMUNITY BENEFIT PRIORITIES	
Comment card **Organising Principles for Community Benefit**	**Key Community Benefit Priority**
• Employment • Fuel poverty • Sustainable development • General – anything that supports resilience in communities • How? Income from hydro schemes to be transferred to a separate charity in order to be distributed • Anything that gives 'feel good' factors eg. Money -> environment • Who should benefit? Need to produce clear guidelines re. energy conservation/poverty and employment • Anything that adds to cohesion in the community	• Anything that adds cohesion in the community (x 2) (STAR) • Fuel poverty (x 1) • Employment (x 1)
ACTION POINTS	
Priorities for Action	
• New members? For next steps ie. 'breaking out'… • New tasks: publicity, websites etc, social media, raise awareness for share issue £££	

Ketso Workshop Results Simple Template

Introduction

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Workshop Information	
Title:	[redacted]
Date:	19 Oct 15
Location:	[redacted]
Facilitator:	AF
Host:	[redacted]
Number of participants:	8 (+1 observer from PLACE)
Information about participants:	Representative of a range of community stakeholders and core[redacted]

Legend	
Brown What works well?	Grey Key Challenges
Green Future possibilities	Yellow Solutions and Goals
Comment card Organising Principles for Community Benefit	Key community benefit priority
Key Take Home Messages	Action points

Workshop Results

Exploring Community Benefit Priorities – Treherbert

COMMUNITY

Brown	Green
• Momentum • Active/Developing groups • People/Groups wanting to work together • People wishing to enhance quality of life • People with ideas and vision • [redacted] • Track record • LGV • School • People • Large number of vibrant organisations • Existing organisations • Small community • Community size • Strength of local business • School	• Village moot • Identify common goals • Working together • Develop working relationships • More use of land/space for community benefit eg. places/buildings • Removal of prejudices/suspicion and greater understanding
Grey	**Yellow**
• N/A	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• Working together **(x 2)** • Village moot • Momentum	• N/A

ENERGY

Brown	Green
• Access to Sustainable energy • Potential for sustainable funds over next 20 years	• N/A
Grey	**Yellow**
• N/A	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A

Exploring Community Benefit Priorities – Treherbert

ENVIRONMENT

Brown	Green
• Natural environment • Foundation of sustainable projects	• Community land ownership • Increased habitat creation • Keep going to become carbon negative
Grey	**Yellow**
• N/A	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A

LOCALITY

Brown	Green
• Location **(x 2)** • Tourism influx • Environment	• Local transport/travel solutions – low impact, flexible, green • Identity • Empowerment not control – policy change • Project development • Community project – community hall • Communtiy hub – to be proud of for whole community • Business within the 'hub' (shops)
Grey	**Yellow**
• N/A	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A

POVERTY

Brown	Green
• N/A	• N/A
Grey	**Yellow**
• N/A	• N/A
Key Take Home Messages	**Key Community Benefit Priority**
• N/A	• N/A

Exploring Community Benefit Priorities – Treherbert

KEY CHALLENGES

Brown	Green
• N/A	• N/A
Grey	**Yellow**
• Place/land • Apathy • Trust! • Shortage of leadership • Fear/Apathy • Prejudice and suspicion • Getting information across to <u>all</u> • Baggage – brought by previous experience/efforts/challenges	• Keep delivering • Look outwards not inwards • Open your mind • Something different (new ideas) • Acceptance! Through involvement and dialogue! • Identify things of <u>mutual benefit</u> to aim for, talk about and do • Mass involvement in community development plan • A convention of all groups in the community hall
Key Take Home Messages	**Key Community Benefit Priority**
• Mass involvement in community development plan **(x 3)**	• N/A

COMMUNITY BENEFIT PRIORITIES

Brown	Grey
• N/A	• N/A
Green	**Yellow**
• N/A	• N/A
Comment card **Organising Principles for Community Benefit**	
• Engagement • Sustainability • Creation of potential for more renewables • Providing community cohesion project (community hub) • Environment • Well-being • Community projects that link groups • Education	• Information about sustainable energy in the locality • Relieve loneliness • Involvement of people • Drive diversity of people involved in things • Develop more sustainable organisations • Energy production locally (renewables) • Sustainable development • Links between local groups
Key Community Benefit Priority	
• Involvement of people • Education	• Providing community cohesion project (community hub) **(x 6)**

Appendix 7: Schedule of Interviewees

Involvement in CRE	Organisation	Date of Interview	Identifier
Stakeholder	SWEA	12/11/14	E1
Project Leader	CRE Project	10/12/14	G1
Stakeholder	BBNPA	10/12/14	E19
Stakeholder	Energy Saving Trust	20/12/14	E2
Project Leader	CRE Project	08/01/15	G2
Project Member	CRE Project	02/03/15	M1
Project Leader	CRE Project	24/03/15	G3
Project Leader	CRE Project	26/03/15	G4
Project Leader	CRE Project	26/03/15	G5
Project Leader	CRE Project	27/03/15	G6
Project Leader	CRE Project	31/03/15	G7
Project Leader	CRE Project	01/04/15	G8
Project Leader	CRE Project	01/04/15	G9
Project Leader	CRE Project	09/04/15	G10
Project Leader	CRE Project	21/04/14	G11
Project Leader	CRE Project	21/04/15	G12
Project Leader	CRE Project	23/04/15	G13
Stakeholder	Sharenergy	23/04/15	E5
Stakeholder	Interlink RCT	05/05/15	E6
Project Leader	CRE Project	22/05/15	G15
Project Leader	CRE Project	30/06/15	G16
Project Board Member	CRE Project	01/07/15	G17
Stakeholder	Ecodyfi	01/07/15	E8
Project Leader	CRE Project	17/07/15	G18
Project Leader	CRE Project	17/07/15	G19
Project Leader	CRE Project	03/08/15	G20
Project Member	CRE Project	05/08/15	M2
Stakeholder	Independent Consultant	17/08/15	E9
Project Leader	CRE Project	17/08/15	G21
Ketso Follow-up	Interlink RCT	18/08/15	M3

Project Leader	CRE Project	18/08/15	G22
Ketso Follow-up	Community Resident	20/08/15	M4
Project Leader	CRE Project	21/08/15	G23
Project Leader	CRE Project	27/08/15	G24
Stakeholder	Community Energy Wales	28/08/15	E10
Project Leader	CRE Project	31/08/15	G25
Project Leader	CRE Project	02/09/15	G26
Ketso Follow-up	CRE Project	09/09/15	M5
Project Leader	CRE Project	23/09/15	G27
Project Board Member	CRE Project	23/09/15	M6
Stakeholder	Welsh Government	29/09/15	E11
Stakeholder	Warm Wales	13/10/15	E12
Stakeholder	North Wales Energy Advice Centre	16/10/15	E13
Stakeholder	Speakeasy Advice Centre	20/10/15	E14
Stakeholder	Cardiff Council	21/10/15	E15
Stakeholder	Welsh Government	27/10/15	E16
Ketso Follow-up	CRE Project	04/11/15	M7
Ketso Follow-up	CRE Project	04/11/15	M8
Ketso Follow-up	CRE Project	04/11/15	M9
Stakeholder	National Energy Action	19/11/15	E17
Stakeholder	The Green Valleys	19/11/15	E18