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Harnessing Social Innovation for Energy Justice: A Business Model Perspective

'EXPLORING THE ENERGY JUSTICE NEXUS' Special Edition in Energy Policy

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Abstract: This paper uses a business model framework to discuss how principles of energy justice - in particular, equitable distribution of costs and benefits, affordability, due process and greater participation in decision-making - can be embedded in business model innovations for energy, through social innovation. The paper discusses four cases at different scales (local, subnational, regional and global) to highlight opportunities for introducing principles of energy justice into the core of business models of companies. By doing so, the paper offers a critical perspective on the potential of business model innovation to be guided through a more broadly defined understanding of value enhanced by concepts of energy justice. The discussion of the four case studies— the Carbon Cooperative, Robin Hood Energy, RenEsco, and the Yansa Community Interest Company—highlights the importance of creating supportive wider environments for social and business model innovations, such as the development of skills, knowledge and social capital, through interventions coming from multiple levels and focused on different aspects of energy generation, supply and use (i.e. finance and technical implementation). Going against the grain of current policy, the study implies a shift away from upscaling innovations by taking them to the national scale, and towards creating supportive conditions for more local deals in different geographic locations.

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1. Introduction

During the 1850s in the United States, when the debate over whether Christianity justified slavery reached its peak, then Illinois Congressperson (and later President) Abraham Lincoln was reputed to place a silver dollar on top of the Bible and to say during debates that “no [person] can see the word of justice when it’s covered by a silver dollar.” His point was that as long as people have a vast economic stake in existing infrastructure, no matter how immoral it may be, they will tend to support it. But does such a remark hold true today? Is business incompatible with social justice?

To be sure, the generation and supply of energy has become veiled in complexity, technocratic language and piecemeal economic regulation (Kuzemko, 2016), while energy usage is often concealed by concerns of household privacy and business competitiveness (McKenna et al, 2012), leading to poor recognition justice for consumers and citizens. At the same time there is a growing number of social innovation initiatives (like UK’s Transition Towns Movement, the International Network Of Sustainable Energy (INFORSE) and community energy projects [Seyfang and Haxeltine, 2012]) built around creating new linkages and bringing together diverse and new actors, and with them a range of environmental, social and ethical values (Avelino et al, 2015; Pisano et al, 2015; Seyfang et al, 2013).

Energy services are also experiencing a period of increased interest in their business model innovation by regulators and government (see Ofgem, 2015; Cabinet Office, 2016), and municipal and local organisations and enterprises (such as Bristol Energy; Bristol Energy Cooperative; Robin Hood Energy in Nottingham) with social values (such as justice, cohesion and community development) becoming part of the business model of energy generation, supply and use (Hall and Roelich, 2016; Roelich and Bale, 2014); as well as values such as environmental protection, moving from the periphery to the core

of energy business models (for examples on low carbon infrastructure see Foxon et al, 2015; Hiteva et al, 2017). This indicates an opportunity for business model innovation inclusive of principles of energy justice. The paper also aims to show how a “new story” (Magretta, 2002) about energy just business models can be developed, a theme that has so far remained peripheral in the energy justice literature summarized by Sovacool and Dworkin (2014, 2015).

To facilitate this fusing of the justice and business literatures, the paper identifies a number of areas where energy justice can inspire innovation practices of value creation and capture, and vice versa, areas where harnessing the power of private actors can catalyze improvements in justice. In exploring opportunities to bring together business model innovation and energy justice thinking, this paper builds on two extensions: one extending the concept of energy justice to cover the whole system of the energy supply; and the other expanding the range of values in a business model that are considered valuable to create, capture and monetize, directly or indirectly. The former extension is referred to as a whole system approach to energy justice advocated by Jenkins et al., (2014) and has the ability to engage with all components of the energy supply chain, from start to sink. It opens up all components of the energy supply chain as potential areas for business model innovation and spaces for recognition justice through innovative practices and interventions. Of relevance here is also McCauley et al’s (2013: 2) interpretation of energy justice as aiming “to provide all individuals, across all areas, with safe, affordable and sustainable energy” as it implies certain normativity with regards to the environmental impact of the energy system, and not just any energy, at any cost to humans and the environment. Foxon et al, (2015) found that the extension of the range of values considered in business models can be traced to social drivers (such as need to regenerate housing stock and mitigating fuel poverty) and environmental drivers (mainly reducing carbon emissions). These drivers are interconnected and

potentially complementary, and can open up new revenue streams and value capture opportunities to new actors and society (these are discussed in more details in sections 2 and 3).

Our motivation behind the paper is a recognition that one of the biggest challenges facing the energy justice agenda is translating the normative concept to an 'operational' one that can be understood and implemented in policy and business. This paper presents an exploration of how it might be possible to do so, therefore pushing the agenda forward in a business context. Taking a social innovation approach, it uses case studies from four different scales to illustrate how energy justice might be integrated into business models. In essence, it begins to translate academic theory into practical action. Whilst the success of such an approach may, of course, be limited in businesses where energy justice is not the bottom line, we offer the paper as an important first step towards this goal.

More specifically, this paper uses a business model framework to discuss how principles of energy justice, in particular, equitable distribution of costs and benefits, affordability, due process and greater participation for users in decision-making can be embedded in the business model innovations for energy, through social innovation. By doing so, the paper contributes to the discussion of how to bridge the gap between business values and activities, and social values like energy justice. Although business model innovations in the context of sustainability have been discussed (see Foxon et al, 2015; Roelich and Bale, 2014) and the role of bottom-up (grassroots) social innovations in sustainability and energy transitions have also been studied (Seyfang et al, 2013; Hargreaves et al, 2013), so far there has been no discussion linking concrete aspects of energy justice with empirical examples of mechanisms for creating, capturing and monetizing value from energy services. The novelty of this approach is in proposing a practical way of bringing together the business model innovation literature with literature

on energy justice that speaks to policy and business. By doing so, the paper highlights the role of social innovation (the innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organizations whose primary purposes are social, as defined by Mulgan et al, 2007) in helping to translate or bridge between the two.

By bringing together these concepts, the paper also contributes to an important and growing discussion on the social direction of business model innovation, and the means for delivering sustainable infrastructure (Corfee-Morlot et al, 2016). The delivery of sustainable infrastructure requires additional steps through all (upstream and downstream) phases of project development, which include greater willingness and ability to reconceptualize to ensure that environmental, social and governance considerations are taken into account. Thus, sustainable infrastructure creates opportunities for promoting procedural justice (by broadening participation in infrastructure governance with the inclusion of residents; non-governmental organizations and other civil society actors), through representational and participatory processes over time and space (Shi et al, 2016). This implies a stronger focus on social and environmental justice, on a par with concerns with effectiveness, cost, productivity and competitiveness. Sustainable infrastructure seems to offer a timely opportunity of expanding social and environmental values, and bring a focus on justice in infrastructure, by adopting a system-like approach (including upstream and downstream activities), which resonates with the whole system approach to energy justice. However, these expansions over time and space can provide more opportunities for justice-driven interventions, as well as increase the number and severity of conflicts between alternative values and traditional business model rationales such as competitiveness and the need to be profitable. This potential for exacerbating tensions between the two rationales necessitates a closer interrogation of the mechanisms through which principles of energy justice can be embedded in

business models for infrastructure, in the context of concrete empirical case studies. This paper attempts just that.

The paper is structured as follows. The energy justice and business model frameworks are described before tensions and complexities of considering the two frameworks together are detailed. These dynamics are illustrated by four case studies: The Carbon Cooperative, Robin Hood Energy, RenEsco, and the Yansa Community Interest Company. The paper lastly considers the policy implications and relevance of bringing energy justice, social innovation and business models together in the four case studies.

2. Research Methods

Our core method is a qualitative, comparative, case study approach drawn from a synthesis of peer-reviewed literature as well as current reports and documents related to our four business models explained below. These cases have been selected, based on the authors' knowledge, on dimensions such as their budget (i.e., they all have funding in the order of multiple millions of dollars), operational status (i.e., they all operate currently), scope (they all focus on aspects related to the provision of energy services or supply) and legal character (they all operate as distinct, legally recognized entities). The resulting sample of cases was expected to share enough background conditions to be considered a homogenous population, while still exhibiting considerable variation in governance characteristics. Put another way, they were meant to be illustrative rather than representative cases. Our research method corresponds to what has been called interpretive (Lijphart, 1971: 691) or disciplined-configurative (Eckstein, 1973: 99–104) case studies.

The paper proceeds to discuss four case studies of energy services businesses—entities with either a corporate or company charter—at different scales and locations, extending from the insightful discussion of scale offered by Cash and Moser (2000). For the purposes of this paper, scale is a heuristic used to describe specific geographically bounded level at which particular phenomenon is recognizable (ibid. p.110). A “local” scale energy business is illustrated by the case of the Carbon Co-op in Manchester, UK. The case of Robin Hood Energy in Nottingham, UK illustrates a growing type of “subnational” scale initiatives involving participation of local municipalities. The case of Dutch private ESCO and social entrepreneur company operating in the Eastern European housing market illustrates innovative business model initiatives at the regional scale between “national” and “global”. And the case of NGO Yansa illustrates such arrangements at the “global” scale. The four cases emphasize different opportunities for introducing principles of energy justice into the core business models of companies.

3. Energy Justice and Business Model Innovation

Drawing from earlier work (Sovacool, et al. 2016) as well as other articles in this Special Issue (Jenkins et al. 2017; Sovacool et al. 2017), we treat “energy justice” as a global energy system that fairly disseminates both the benefits and costs of energy services, responsive to ever-shifting future imbalances and one that contributes to more representative and impartial energy decision-making. It involves balancing how the hazards and externalities of the energy system are disseminated throughout society (costs); and how access to modern energy systems and services is also distributed (benefits).

Furthermore, it advocates ensuring that energy decision-making respects due process and representation (procedures); and that the most vulnerable or disenfranchised are not harmed in interventions, even those aiming to enhance justice (recognition).

This conceptualization of energy justice demands that we provide meaningful involvement and access to the energy decision-making process. It ensures the availability of information about energy, a condition of participation and informed consent. It subscribes to the notion of participatory governance as a mechanism of fostering comprehensive stakeholder inclusion and transparency as it seeks to represent minorities in decision-making, at all stages of the energy process, from agenda setting and formulation to siting and evaluation. It requires us to provide access to legal processes for challenging violations of energy rights. Our conceptualization denies any such limits to where energy justice ought to apply, such as community boundaries to the scope of responsibilities, which instead hold regardless of space and time, apply across cultures, and ahead to future generations.

To operationalize the somewhat lofty moral elements of energy justice as intimated above, Table 1 presents an energy justice framework based on eight principles that can be applied readily to real-world problems. This framework provides a mechanism that can begin to achieve a more just and equitable balance of all the competing aims in energy policy and ensure that the trade-offs that are made in the energy sector are inherently more just and equitable in their societal outcomes rather than favoring different sections or factions within society.

Table 1: Energy Justice Decision-Making Framework

Principle	Description	Contemporary application
Availability	People deserve sufficient energy resources of high quality	Investments in energy supply and energy efficiency
Affordability	All people, including the poor, should pay no more than 10 percent of their income for energy services	Fuel poverty eradication efforts
Due process	Countries should respect due process and human rights in their production and use of energy	Social and Environmental Impact Assessments
Transparency and accountability	All people should have access to high quality information about energy and the environment and fair, transparent, and accountable forms of energy decision-making	The Extractive Industry Transparency Initiative, Independent Accountability Mechanisms and international accounting standards (IFRS)
Sustainability	Energy resources should not be depleted too quickly	Natural Resource Funds designed to save for future generations
Intragenerational equity	All people have a right to fairly access energy services	The UN's Sustainable Energy for All Initiative
Intergenerational equity	Future generations have a right to enjoy a good life undisturbed by the damage our energy systems inflict on the world today	Promoting environmentally friendly forms of low-carbon energy such as renewables or efficiency
Responsibility	All nations have a responsibility to protect the natural environment and minimize energy-related environmental threats	United Nations Framework Convention on Climate Change and the Green Climate Fund

However, one key lacuna within the framework is an almost complete lack of engagement with the business literature, or any connection to emerging themes in innovation studies and business model design (for example, open innovation [Chesbrough, 2006; Chesbrough and Bogers, 2014]; iconic business models [Sabatier et al. 2010]; novelty, transaction efficiency, and user simplicity [Gronum et al. 2015]; and business models for sustainability [Foxon et al. 2015]). Therefore, this paper uses an understanding of business models as providing a framework for 1) linking the workings inside the firm

to outside elements (such as customers), in terms of 2) value which is created, captured and monetized (Teece, 2010; Amit and Zott, 2001; Baden-Fuller and Mangematin, 2013). Business models are defined as “a series of activities from raw materials through to the final consumer that yield a new product or service with value being added throughout the various activities” to establish a unique resource, asset, or position where the firm enjoys a competitive advantage (Chesbrough, 2006: 2). Thus, the business model framework provides a whole system perspective of the relationships and exchanges that take place within a particular supply chain.

There has been a growing interest in using the business model as a system concept arranged around activities (Zott and Amit, 2010) describing the processes and rationales that bring together and coordinate a range of focal and complementary activities that span the public-private divide within a value chain or network (Osterwalder et al., 2005; Massa and Tucci, 2014). Thus, business models can be thought of as a set of interdependencies and transactions between a focal firm or institution and its multiple networks of suppliers, partners and customers (Zott and Amit, 2010). The usefulness of tracing value flows is in exposing (to scrutiny) who creates and captures value and how, thus opening up for discussion those who are left behind in this process and the underlying moral and ethical implications of such distribution.

The focus on business model innovation about alternative, environmental and social values, is also helpful in tracing the evolution of business model thinking and its application to energy services. Business model innovations can consist of the inclusion of new activities in a business model (innovation of design), changing the reconfiguration of activities (changing how the activities are linked together and in what sequence) within an existing business model (Massa and Tucci, 2013), or

changing who performs an activity (Amit and Zott, 2012). Such innovations can be valuable mechanisms for changing what is considered *valuable* or *of value* in a particular context, and *how* value can be created and captured, especially if such changes take place in a direction towards sustainability (Brocken et al., 2015; Foxon et al., 2015; Massa and Tucci, 2014). Davies et al, (2010, p.6) point out that business model innovation can occur as a response to strategic circumstances (Johnson et al., 2008): (1) disruptive or breakthrough innovation to meet the needs of large groups of customers whose needs are not met by current offerings, (2) to capitalize on new technology by building a business model to deliver it, (3) focus on fulfilling an unmet need, (4) to fend off competition from low-cost producers, and (5) the need to respond to rapidly changing competition.

It is time to extend our understanding of the business model framework and its potential to respond to social needs, such as energy justice. As Davies et al, (2010) point out much of the business model literature is dominated by examples of highly successful private firms developed for purely competitive market conditions, and caution about the extent to which these can be ‘transferred’ and ‘translated’ to different variations of public-private context, and/or applied in settings where competition is a less important driver than energy vulnerability and justice (Wüstenhagen and Boehnke, 2008). A focus on integrating alternative values into business model would need to pay attention to how these values are brought into the model, who by and to what extent they correspond to other/traditional business model rationales such as competitiveness and the need to be profitable. This will feed into an often overlooked aspect of business model literature which focuses on value creation for customers, as well as for the firm.

Extensions of business model thinking already include the use of business models framework for the creation of shared values, which involve creating economic value in a way that also creates value for society by addressing its needs challenges (Porter and Kramer, 2011) and higher value services, which include improvements offering higher value services and solutions for end users (Davies et al, 2010). For example, a shared value approach to community energy services will focus on improving available techniques and strengthening the local cluster of energy suppliers, producers and other institutions to increase project efficiency, outputs, service quality and sustainability, leading to more value being created, shared and monetized for public and private participants. Randles and Laasch (2016) argue that the mainstream conceptualization of business models shouldn't be simply adapted or modified to include a range of societal cares, concerns and values (such as sustainability). This suggest that they fit in around mainstream business model logics of efficiency and profit-maximization. Instead they propose a new concept: the Normative Business Model which is built on a set of moral or ethical steers to actors' behavior originally proposed by Scott (1995), which are deeply embedded (or normalized) into the logic and practices of organizations. Randles and Laasch (2016) introduce the premise of competing normativities: those build around pre-existing competing logics such as profession, bureaucracy and market logics with collective, societal cares, such as well-being and justice. They advocate an expansion of understanding the actors/institutions at the core of the business model framework beyond 'businesses' (often understood as corporations and firms) to organizations with a public or social mission, such as education and research; as well as charitable foundations, social enterprises and trusts (ibid. p. 56).

4. Tensions and Complexities - Social Innovations as a Bridge

This paper focusses on creating linkages between four principles of energy justice and business model innovation. It therefore sits at the nexus of energy justice, business model innovation, and social innovation. These are briefly discussed in turn.

Equitable distribution of costs and benefits can be interpreted as an equitable distribution of the value created through energy production, transmission, distribution and supply. It also refers to equitable distribution of the benefits from access to greener, more sustainable and low carbon energy. In certain cases greener, more sustainable and low carbon energy can contribute to more equitable dynamics. For example, household or community solar panels can lead to more affordable energy services, such as greater thermal comfort or access to hot water, while greater energy efficiency of building and electrical appliances (along with energy efficient processes at the industrial level) can lead to the use of cheaper and less energy. Yet, the notion of equitable distribution of costs and benefits can be seen as contradictory to a business model framework, where value can be created by one set of stakeholders but captured elsewhere, as long as part of the value created can be monetized by some of the participants. Traditionally it is accepted that value can be created by external firms but part of it needs to be monetized within the core company to recuperate costs of operation, otherwise the business model is not sustainable. In a business model framework it is generally unacceptable for a firm to operate mainly to create value which will be captured elsewhere.

In connection with the discussion of potential benefits from more equitable energy distribution (i.e. the potential value created from energy generation, transmission, distribution and supply), *affordability* as a characteristic of the energy system should include not only the part of consumption (i.e. refer to the payment of no more than 10 percent of people's income for energy services) but the whole energy supply chain. This would include the access to energy efficient technologies and infrastructure, such as heaters, loft insulation and double glazing. Affordability is one area where there is a closer overlap with a business model perspective, as reducing the cost of any products is seen as a positive way to sell more of it. This fits well with the nature of energy services as services that usually need to be continuously supplied over the long term.

Due process focuses on the procedures involved in maintaining or ensuring justice, and embraces principles such as transparency, fairness in exchanges between actors, ensuring sufficient representation in all activities, and meeting relevant standards and laws. While the business model framework observes meeting relevant standards and laws, and is embracing transparency and openness as desirable principles of value creation and capture activities that facilitate innovation, it offers a limited treatment of representation and fairness dedicated to specific activities and groups, largely users and suppliers from developing countries. This leaves out a large number of (groups of) actors, such as city dwellers and home owners.

A more just framework for energy should include opportunities for a more active role (in terms of more and more direct *participation*) for energy users and a variety of stakeholders in decision-making throughout the whole energy supply chain. In the context of a traditional business model perspective users can participate in the design of products and services and this is seen as a positive which reduces

the risks in the model. As mentioned previously business models have opened up to include a wider range of interactions between different stakeholders, but this has been discussed in the context of introducing a new set of actors and processes to create value externally to a firm. Participation in the way it is conceived as a principle of energy justice therefore is at odds with the business model framework.

The two extended frameworks of energy justice as covering the whole system of energy generation, supply and use, and focusing on the type of innovative activities, artefacts and actors that come together to create, capture and monetize value from energy, open up opportunities for examining to what extent innovative business model activities contribute to 4 principles of energy justice. The latter have been selected on the basis of 1) the potential/opportunities they offer for meaningful involvement and access to the energy decision-making process, as well as energy generation and use; and 2) how these correspond to the business model framework of value creation, capture and monetization.

Affordability is interconnected to the equitable distribution of costs and benefits, corresponding to *how* value is created, captured and monetized. While the principles of due process and participation can open up spaces (i.e. *where*) for these value creation, capture and monetization activities to take place.

Most examples where principles of energy justice overlap with the business model framework (albeit partially) involve forms of social innovation. We argue that these forms of social innovation are closely linked to the business model innovations for energy and as such can act as a bridge between business model innovations and energy justice. Although we recognize the existence of multiple and contested definitions of social innovation, for the purposes of this paper, we define it as ‘innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed

and diffused through organizations whose primary purposes are social' (Mulgan et al, 2007). Here, *social* denotes social needs or problems (e.g. poverty and vulnerability), social value (e.g. justice) and/or balance in creation and capture of value that favors the public, rather than private individuals, such as shareholders and business entrepreneurs. Phillips (2009) argues that the novel solutions have to be better than existing approaches (i.e. sustainable or just). Social innovations tend to operate across the boundaries between public, private, and nonprofit sectors and include exchange of ideas and values, shifting roles and relationships between them; and blending of market-based principles and mechanisms with those of the public and philanthropy, all of which leading to the dissolving of boundaries. Social innovations, particularly in an urban context can also be seen as innovative governance structures which aim to meet the needs of marginalized or excluded groups (MacCallum et al. 2009; Moulaert et al. 2005). They can work on two levels: addressing issues in social relations (process changes) and addressing social needs (outcomes changes). Social innovations are meant to be open to knowledge-sharing and the ownership of knowledge (McNeill, 2013).

In the context of expanded understanding of business models (beyond a dichotomy of public and private) and innovations that introduce sustainability, environmental and social values, boundaries between what are social and commercial activities, practices and values are starting to blur. However, the extent to which social innovation can bridge some of the conflicts and tensions between expanded and traditional business model values for infrastructure, is not universal. Its boundaries would need to be drawn, exploring a range of concrete empirical cases. From the outset it is evident that not all forms of social innovation can lead to business model innovation. Too much focus on the social values created through an energy project can threaten the commercial aspect of the business model. Energy firms have not had many incentives to learn how to monetize indirect value creation. Social and

commercial values are inherently contradictory and can successfully contribute to each other only in an opportunistic set of circumstances - i.e. in specific amounts, at the right place of the supply chain, and if they can be conceived together from the beginning. This suggests the importance of context in these processes, and merits an investigation of a variety of mixes of social and business innovations, and mechanisms for bringing in principles of energy justice in business model innovations.

5. Energy Justice in Practice: Four Case Studies

This section discusses four case studies at differing scales: local, subnational, regional and global, which illustrate how one (or more) principles of energy justice can be incorporated into energy business models. Table 2 summarises the details of the 4 case studies, outlining their business models and corresponding principles of energy justice.

Table 2: Case study summaries, business models and corresponding principles of energy justice

Scale	Name	Business model	Elements of energy justice
Local	<i>Carbon coop</i>	a community benefit group, 100% owned and run by the householders (members); not for profit company; creates value by providing capacity building, training, and access to discounted materials, services and low cost finance to reduce household energy usage; captures value by creating a community of knowledge and for action; benefiting from acting as a group and from members donating their time	Reduced household energy usage; Enhanced access to energy services and benefits; Participation in energy decision making and vision building;
Subnational	<i>Robin Hood Energy</i>	100% owned by Nottingham City Council; not for profit company;	Providing energy and heat comfort and services to vulnerable consumers and businesses;

		<p>creates value by offering low cost energy (tariffs) to households;</p> <p>captures value by supplying energy (electricity and gas) to households and tackling fuel poverty</p>	<p>Providing low energy tariffs, easy to switch and payment arrangements</p>
Regional	<i>RenEsco</i>	<p>A residential private ESCO and social enterprise;</p> <p>Dutch company operating in the Eastern European market;</p> <p>Creates value by financing and performing deep renovations of soviet-era apartment buildings; and providing a minimum price guarantee for energy exceeding operational costs and debt obligations;</p> <p>Captures value by using energy performance contracting and support from national renovation program; and locking in customers for 20 years</p>	<p>Low risk (no collateral required) and no cost deep retrofits for apartment owners</p> <p>Energy savings (guaranteed for 20 years);</p> <p>Flat owners receive 25% profit share of Renesco's net result;</p> <p>Increased heat and energy comfort for residents;</p> <p>Use of renewables and heat generation on site;</p> <p>Straightforward and transparent process for residents</p>
Global	<i>Yansa</i>	<p>A community interest company working on wind energy development and sustainable community development;</p> <p>Creates value by developing large scale community wind farm projects and reinvesting a share of the earning in the community;</p> <p>Captures value by generating and selling wind energy; and by working with institutional investors to lower overall financial costs and risk</p>	<p>Providing renewable energy to local communities;</p> <p>Reinvesting share of the wind energy project profits in the local community;</p> <p>Empowering locals to decide on social and environmental returns delivered</p>

4.1. Local Scale – The Carbon Co-op

The Carbon Co-op is a local energy organization established in 2008 by residents in Greater Manchester. In cooperation with housing specialist Urbanism, Environment and Design (URBED) residents carry out changes to their own houses and community buildings, by providing capacity building, training, and access to discounted materials, services and low cost finance to reduce

household energy usage. The Carbon Co-op is a not for profit company, 100% owned and run by participating householders (members), and all resources are kept within the cooperative. URBED is an employee-owned co-operative since 1996 built around a set of core values of urbanism, community, environmental sustainability and design. The work is being paid for through a zero interest loan to householders, funded by the Department for Energy and Climate Change (DECC), and money from the Energy Company Obligation (ECO) (Grimshaw and Atkinson, 2014; Carbon Co-op, 2016).

The Carbon Co-op dedicates itself to developing communities of people to improve homes in Greater Manchester to 2050 standards in a quicker, easier and cheaper way through sharing experience, knowledge and reduced costs (through bulk purchase). Value is captured by creating a community of knowledge and for action; and through members of the group donating their time. This is done through a number of initiatives designed to ‘hack’ or provide more opportunities for direct participation of individuals and groups of people (like neighbors and communities) via initiatives such as Eco Home Lab, where the Carbon Co-op is partnering with a project (Open Energy Monitor) delivering open-source tools for engaging with energy, either at home or the energy systems as a whole. This aspect of the Co-op’s work creates value for participants by bringing together people interested in being more directly engaged with energy decisions, ‘taking control’ and better understanding a home’s energy needs, usage and generating potential by using open source software to put together battery storage devices, home energy monitoring systems, user interfaces, and aggregate data sources (Carbon Co-op, 2016).

The Carbon Co-op’s model is to capture value by bringing people with useful skills: such as retrofitting, physical electronics, web development or programming and sharing their knowledge with

others interested in more direct forms of participation. Value is captured by the cooperative and participants in enabling a more equitable distribution of costs and benefits from energy usages and generation, and making such energy services more affordable. However, one potential limitation of the Carbon Co-op's model is that it relies on the volunteering of people's time and willingness to share expertise and knowledge. (Carbon Co-op Newsletter, 2016; 2017; Carbon Co-op, 2016). This indicates that such business model frameworks will likely exist in areas where there is a concentration of people with such interests, skills, knowledge and time to participate.

5.2.Subnational Scale – Robin Hood Energy

Robin Hood Energy was established in September 2015 by the Nottingham City Council. A not-for-profit energy supplier, it “aims to provide customers throughout the UK with gas and electricity at the lowest possible price” (Energylinx, 2015). This is achieved by buying energy in bulk on the open market, from the National Grid, and then selling it on to its customers. Unlike other energy suppliers Robin Hood Energy has no private shareholders and no director bonuses. Revenues from energy supply are used to cover overheads and reinvest to offer further savings to consumers (Grant Thornton, 2016).

The aim of the energy company is to facilitate access to energy (services) in every meaning of the word. Apart from affordable energy (competitive energy prices to help customers save money on their energy bills) this includes the purposeful use of jargon-free communication, and a transparent and straight-forward service (Laybourn-Langton, 2016). Robin Hood Energy's business model advertises key features that include creating value to consumers through hassle free switching, monthly billing (rather than quarterly to help bill and consumption management), no cancellation fees and no tie-in to

any contract, and a UK Customer Service Centre. Surplus revenues are put back into the local economy. Although the energy firm was initiated by the Nottingham City Council, its services are offered to customers nationwide (Which?, 2015).

However, Ingrams (2016) has noted that its cheapest deal is available to residents in Nottingham only, while there are other competitively priced tariffs offered to residents elsewhere. The anchoring of the best tariffs as 'local' deals is a common feature of similar socially motivated energy suppliers (Laybourn-Langton, 2016). Value capture by consumers is also enabled through the lack of large bonuses for the company's directors (Hellier, 2015).

5.3. Regional Scale – RenEsco

RenEsco Ltd³ was founded in 2008 to develop and implement energy efficiency projects for residential housing by renovating multi-family buildings in the Eastern European Market. The firm is primarily active in Latvia. RenEsco is the first energy service (ESCO⁴) company in Eastern Europe offering comprehensive renovation of apartment buildings. It creates value by investing 100% of its own capital into existing privately owned multi-family apartment buildings on the basis of future energy savings; combines experience of foreign and local experts in energy efficiency, renewable energy, project finance and project management; works together with international finance institutions (European Investment Bank, IFC, EBRD) and local and national government institutions. RenEsco provides a

³ Ltd. „RENECO” is a Latvian company established in 2008. The company is a subsidiary of a Dutch firm “Sun Energy Baltic”.

⁴ ESCO is an investment company that invests in energy saving measures, implements these measures and earns the investments back from the achieved final energy savings over a longer period of time (typically 20 years). Based on a so-called Energy Performance Contract the ESCO either guarantees the expected energy savings, or even takes on the full investment on its own account (RENECO's model).

minimum price guarantee for energy exceeding operational costs and debt obligations. Renovations include a wide range of activities aimed to improve the energy efficiency of the buildings and decrease energy consumption, such as repairing and insulation of major walls, roofs and foundations; renovation of heating and hot water systems; restoration of pipe insulation; installation of energy monitoring systems. The firm captures value by using energy performance contracting and support from national renovation programs; and locking in customers for 20 years. RenEsco manages and supervises the whole building refurbishment process from initiating and managing an apartment owners meetings at a residential building to ensuring management cost reduction for residents (heating and maintenance costs) (Rochas et al., 2014).

Because of its operation as a private company but dedication towards the achievement of a set of social and ethical goals RenEsco considers itself to be a private ESCO and a social enterprise. The firm commits to due process through supporting fair entrepreneurship in Latvia, operating with 100% transparent working practices that explicitly exclude ‘all forms of corruption, favoritism and bribery’, which they consider to be ‘endemic in many of the housing and communal service industries in Latvia and other former Soviet Union countries’ (RenEsco, 2017). Since 2009 it has been carrying out residential building refurbishments with the help of the European Union Regional Development Fund.

RenEsco is a partner of the EU funded SUNShINE⁵ project which aims to deliver deeply renovated⁶ multifamily residential buildings. RenEsco creates value by organising individual owners to manage

⁵ Save your bUildiNg by SavINg Energy

⁶ Deep renovation refers to capturing the full economic energy efficiency potential of existing buildings with focus on building envelopes.

their collective property, through Energy Performance Contracting (EPC). To this end SUNSHINE uses an innovative investment scheme and a special purpose fund for EPC. Value is created through project partnership based on cooperation amongst key players and the local, private, technical and financial actors; a municipal district heating company; an EPC facilitator; a new fund management company with the ethical goals of managing the Energy Saving Forfaitors; and an energy consultancy and engineering company. One of the aims of the project is to create an online platform with information on how to renovate a multi-family building, with several technical, economic and financial tools and with various templates and applications (e.g. contracts, protocols, reporting). The project is designed to include the local involvement of various stakeholders and direct beneficiaries of the initiative (Pocock, 2017; Housing and Energy Conservation Bureau, 2013), and as such promotes equitable distribution of costs and benefits from the deep retrofits of private buildings, while offering affordable energy services, with enhanced due process and direct participation.

The business model innovation of RenEsco involves absorbing the full cost of building renovation work without any financial contribution or guarantees from the apartments' owners, who receive a 25% share of the company's net profits. Among the most innovative aspect of its operation is the energy performance contracts and bank agreements that it has developed with residents and the banking credit committees that have been put in place (BUILD UP, 2014). The firm's business model is organized around making one company responsible for all aspects of the project (allowing it to tailor the best combination of cost reduction, quality control and energy saving) and placing all the financial and technical risk with the same one party which is best suited to understand and manage it.

In addition to the increased thermal comfort, an added value captured by residents is the prolonged life of the renovated apartment blocks. Created and captured value includes energy savings through reduced annual energy consumption and carbon dioxide emissions. However, the RenEsco business model removes the opportunity of users to control the monitoring systems in place for a 20-year period, so the ESCO controls the heating of the building. This is the reason why the firm is able to take on the full financial responsibility for the loans and cash flows in the project. However, it creates potential problem areas where usage practices are controlled by a third party (Housing and Energy Conservation Bureau,2013; Berman, 2015).

5.4.Global Scale – Yansa

The Yansa Group represents the use a new innovative form of business institution known as a Community Interest Company, or CIC. A CIC attempts to put community interests “at its heart” and agrees to additional regulatory oversight on how it uses its revenues; CICs also agree to meet some type of social mission and attempt to operate with more transparency and accountability than traditional firms (Nicholls 2010; Bater 2005; Cross 2004). In very simple terms, a CIC is somewhat akin to a “for-profit charity” (Malani and Posner 2007). They operate under an “asset lock” which places restrictions on how assets and profits are distributed (Defourny and Nyssens 2008).

The Yansa CIC deals with community-based wind energy systems, and it is one of three core elements of the Yansa Group, which consist of:

- The Yansa Foundation: a non-profit community-based social development charity based on wind energy proceeds;
- The Yansa CIC: a vehicle that offers technical capacity, wind farm planning and realization
- Yansa Investment Funds: specific financial mechanisms created to fund particular projects.

The Yansa⁷ CIC was registered in May 2008 in the United Kingdom. It has a stated commitment to (1) developing wind turbine designs for rural communities, (2) working with community based organizations at resource assessments and training, and (3) raising awareness and doing research and publications (Oceransky 2010).

The Yansa CIC has designed a wind platform intended to be cheaper and more affordable for communities than conventional commercial designs. The platform is also locally produced, drawing from local materials and local communities for operations and maintenance. Commercial wind companies, for example, often refuse to share data produced from wind sensors in their machines with buyers; while Yansa shares the data freely. Some designers plan their machines for obsolescence or discontinue manufacturing lines, while Yansa CIC pledges not to do so. The company also has pledged to share all profits with communities on a 50-50 basis.

Their flagship pilot “The Ixtepec Project” is currently (as of 2016) ongoing in Oaxaca, Mexico, where they have partnered with the Zapotec community of Ixtepec to design and implement a community wind farm consisting of about 100 MW and 44 individual turbines. From 2008-2011, Yansa CIC

⁷ The name “Yansa” was inspired by the under goddess of the Niger River, who in the Yoruba religion represents the power of wind, generating change and transition (Yansa Group 2012).

undertook wind resource assessment, infrastructure and logistics, environmental permitting and contract negotiation (Yansa Group 2012). They are also conducting a study of flora, vertebrates and insects, year-cycle studies on birds and bats and creating community-based biodiversity restoration areas to ensure the safety of wildlife.

The Yansa CIC justifies their focus on Mexico based on the vulnerability of indigenous peoples there and the need for justice. As they write:

Territories rich in renewable resources are [.....] often inhabited by historically disadvantaged indigenous and peasant communities...[....] the rights of these community members are routinely compromised. The development and operation of commercial wind energy projects often escalates to exploitation, displacement and even violence in some regions as communities defend their homes, traditional lands and livelihoods ... Through direct community involvement in the construction and operation of wind farms, [Yansa CIC enables communities to] retain control of their renewable energy resources and knowledge and skills are transferred between all community members. By selling the energy to the national grid, Yansa's approach establishes a source of income for the community, creating opportunities for economic and social growth (Yansa Group 2012).

Moreover, the Ixtepec community has ancestral lands with optimal wind resources, close to existing substations and transmission networks necessary to evacuate the generated power.

To achieve these outcomes, Yansa CIC pledges that local agrarian lifestyles can be maintained in tandem with local wind farm development and that each year after debt servicing, profits generated from wind energy projects will be split equally between the partnering community and Yansa. Yansa states that their portion of the profits will be used to finance additional projects in other communities utilizing the same model and facilitating lower borrowing rates for future projects.

Unfortunately, progress at Ixtepec has proceeded more slowly than anticipated, and it underscores some of the challenge that can occur when trying to couple business efforts with justice outcomes. Although the proposal for a 102 MW wind farm was ready to be implemented in 2002, the Mexican utility CFE blocked interconnection and access to the grid. The Yansa CIC and community initiated litigation against CFE in 2012, and the utility responded (after more than two years of negotiation) with a plan for a 585 MW project open to community involvement but also larger bidders. Even then, the Yansa Group (2016) argue that after obtaining a Power Purchase Agreement and grid access, risks are still high, and spot markets for electricity remain volatile. The result will be a “high-cost oligopoly” market structure not amenable to Yansa’s mission and objectives.

6. Conclusions and Policy Implications

This section offers five conclusions. Firstly, all four cases, summarized by Table 2 (above), have elements of social innovations as part of their business models. In the case of the Carbon Co-op, social innovations are building on a concentration of existing skills, knowledge and social capital. These would not have been developed with the intent of capacity building for social innovation, business

model innovation and/or energy justice, but create a supportive environment within which these can take place. In the case of Robin Hood Energy we see the operation of the public organization following separate drivers and terms of operation than those used in the rest of the market. In the case of other municipal energy companies, we see a partnership between public and private organizations, and that the blurring of the boundaries between private and public can be managed successfully. With Yansa, we see business elements of CICs fused together with community cooperatives and a blending of corporate and social missions.

Second, our study reveals that the drivers for energy justice are localized and contextually dependent (i.e. subject to specific conditions available only in the Eastern European Housing market and driven by the needs of municipal residents). This means that policymakers (at national and even supranational levels) should introduce sufficient flexibility within existing regulatory frameworks to make use of such local conditions and to turn them into local deals. This implies a policy shift away from upscaling business model and social innovations (i.e. taking a local model to a national scale), and towards creating supportive conditions for more local deals in different geographic locations. Another implication is that local authorities and councils should be incentivized and receive support in creating municipal energy companies and/or partnerships, which make use of local energy sources, such as waste to energy plants and renewables, and improve the efficiency of existing infrastructures.

Third, business models innovations for energy justice are not created in vacuum but need supportive environments, or protective spaces, to materialize. Such supportive environment can emerge through recognition practices and interventions coming from multiple levels and focused on different aspects of energy generation, supply and use (i.e. finance, technical implementation etc). For example, the Carbon

Co-op created value for users and other organizations like itself by making use of government funding and subsidies, as well as a number of social innovations (Open Energy Monitor and Eco Home Lab) and a concentration of existing skills and knowledge. In the case of RenEsco, its financing innovation was possible because of the existence of banks and financial institutions in Holland and the EU (EBRD), and later on through the introduction of a national fund for deep retrofits, that were supportive of its business model. Better governance frameworks and support environments to harness capital markets and the financial system to deliver energy justice are needed. Yansa's CIC, our global case study, only works as well as it does because it is sheltered within a broader Yansa Group.

Fourth, our study does possess some limitations which point the way towards compelling future research questions. It provides small-scale business examples that may be relatively obscure or contextually unique in their approach to business (especially Robin Hood Energy). A logical question that follows: Is it possible to use the same social innovation structures within preexisting large-scale business? How can these be socially innovative in the same way, or is this not the appropriate platform? Similarly, all of our case studies engaged with relatively local scale, renewable installations, not fossil fuels. Can the same principles ever be applied to the fossil fuel industries? In this study, we have focused mostly on two energy justice principles related to distribution of costs and benefits and due process. Future work could of course explore other principles. Here, we have also focused only on what each business entity does in terms of its operations – we did not look at who owns it, or who benefits and loses in terms of employment. Lastly, our focus here has been on successful instances of where energy justice principles have been harnessed by business actors, but future researchers should also consider failures and problematic cases to better illustrate the tensions that may occur when these two streams merge in practice.

Fifth, despite its utility, promoting the dual missions of business profit maximization and social justice realization do result in tensions that must be managed. Randles and Laasch (2016) argue that normative contradictions, inherent in the single purpose organizations, exist also between combinations of divergent actors brought together for the purpose of value creation and capture. Multiple, normative orientations, can coexist simultaneously, “producing a mix of dominant/subordinate and aligned/misaligned relations, with different outcomes including normative re-enforcement, contradiction and ambiguity” (Randles and Laash 2016, p.58). But deep institutionalization (or reaching a state of new normal) is achieved through the alignment of governance tools, devices and forms of agency to orientate and steer innovation towards societal values and normative goals (Randles and Laasch 2016, p.61-62).

Single organizations taking over the implementation and/risk management of energy projects, as in the case of Robin Hood Energy and RenEsco have more opportunities to bring together different aspects of the energy supply chain in a way that creates opportunities for developing business model innovations with elements of energy justice at their core. The success of single organizations in this respect could be reflective of the controversies between social innovation and commercial purpose being more easily reconciled within a single organization (i.e., internally). Achieving the same balance might be more difficult with a higher number of actors involved and a more diverse group of actors. The first two case studies (the Carbon Co-op and Robin Hood Energy) are non-profit enterprises, indicating even less of a struggle to reconcile competing objectives. Furthermore, Robin Hood Energy, RenEsco, the Carbon Co-op, and Yansa were purposefully created organizations with energy justice elements at their core, rather than existing organizations from whom energy justice values have been introduced as

innovations in their business models. This implies that until energy markets fundamentally change, examples of corporate or company entities providing business services that match energy justice principles may remain the exception, rather than the norm.

Overall, the paper makes a direct contribution to the call of the Special Issue's editors for the creation of "new supply chains" and "new impacts" for energy systems (Jenkins, et al, 2017, p.1) as well as Sovacool et al.'s (2017) call for more explicitly recognizing the "co-benefits" of energy justice. It does so by enhancing an understanding of the processes that exist for the remediation of energy injustices - at multiple scales and multiple places within energy systems, - to help imagine new ways of creating and sharing value between the private and the public, and between users, consumers and citizens, and businesses. By the doing so, the paper also contributes to the increased justice literacy of businesses, practitioners and academics, and makes a direct contribution to the continuous development, implementation and application of the concept and normative agenda of energy justice in the policy and business sectors. The multi-scalar nature of our four cases—local, subnational, regional, and global—and the use of international examples helps learning beyond a national context, and enables local and community learning and experimentation. Energy justice needs to be taken out of the abstract and placed into the realm of the practical, by illustrating how business and policy actors, institutions and competing interests manage the translation of broad universally accepted values into real life at multiple scales. Such advances are needed if society is to truly manage the transition to a more equitable and fair global energy system.

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