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Governing community energy—Feed-in tariffs and the development of community wind energy schemes in the United Kingdom and Germany

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HIGHLIGHTS

- Scalar path-dependency and lock-in are inhibiting the development of community energy in the UK.
- Feed-in tariffs alone do not provide greater opportunities for multi-scalar energy transitions.
- Multi-scalar approaches to technological diffusion allow new engagement potentials to develop in the community energy niche.

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ABSTRACT

This paper analyses the development of community energy in the UK by comparing it to Germany in relation to decentralisation, scales and ownership structures particularly of wind energy. Varying approaches to energy generation at the community scale provide interesting insights into the impact of policy innovation as well as the capacity of national energy frameworks to foster socially innovative engagement practices beyond the purely technological diffusion of innovations. By examining interactions between technological and social innovations with the help of a qualitative analysis, opportunities for potential generators not traditionally engaged in energy generation to tap into these innovation systems are analysed. This paper suggests that greater commitment to diversification beyond the implementation of policy measures such as the feed-in tariff is required to provide communities with the capacity to develop new generation practices in terms of scale and ownership. The UK in particular is struggling to protect these new generation practices which allow communities to derive benefits facilitated by specific energy policy measures according to their potential. It concludes by indicating areas where niche protection might need to be expanded if community energy is to play a greater role in the UK's ambitious transition to a low-carbon economy.

1. Introduction

Community energy (CE; defined in more detail in the 'Current discussion on community energy in the UK' section) plays a negligible role in all large European economies but large utilities are particularly dominant in the UK. Only 0.3% of electricity generated does not originate from the Big Six UK utilities, British Gas, EDF, E.On, nPower, Scottish Power and Scottish and Southern Energy (Mitchell, 2012). For electricity derived from renewable energy technologies (RETs) the share of community owned generation is higher, with the share of community owned onshore wind turbines estimated at around 10% (Carrington, 2012). Compared to other countries, however, this is also a small share as recent figures indicate that around 51% of Germany's 53 GW installed renewable energy capacity is owned by citizens (40% by individuals and 11% by farmers), 6.5% by the four large market incumbents (E.On, RWE, EnBW and EWE) and 7% by other utilities (BMU, 2012a; Buchan, 2012). As Germany's share of electricity derived from RETs stands at 20.1% (BMU, 2012b) the total share of electricity generation capacity not owned by utilities stands at around 10%.

Much of Germany's successful diversification of ownership particularly of RETs has been put down to its Erneuerbare-Energien-Gesetz or Renewable Energy Act, a feed-in tariff (FiT) system (see Mitchell, 2008; Couture and Gagnon, 2010). It is structured to encourage specific technology promotion and actively 'pick winners' (Mitchell et al., 2006; Fuchs and Wassermann, 2009; Woodman and Mitchell, 2011). The lack of diversification in the UK's energy sector, on the

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other hand, has been attributed to the UK's original Renewables Obligation (RO). It is a quantity-based instrument designed to encourage competition on a technology-neutral playing field. Both instruments aim at achieving cost reduction, price-based mechanisms such as FiTs through stepped reductions in tariffs while quantity-based instruments rely on competition between producers in the electricity market (IEA, 2008).

As the benefits of diversifying supply are becoming more obvious, the governance of RETs in the UK is slowly shifting towards specific technology promotion with the introduction of technology specific banding in its RO (DTI, 2007) and the introduction of the small-scale FiT in the UK (DECC, 2010). The FiT in particular is designed to encourage new scales and ownership models of RETs by 'bringing renewable electricity generation into communities around the country' (HMG, 2009a: 43) and to promote social innovation by increasing public engagement and behaviour change. Referring in particular to the concept of energy generation 'by citizens for citizen' (HMG, 2009a: 64) in Germany, the UK Renewable Energy Strategy (HMG, 2009a) indicates a desire to make generation derived benefits available to everyone and to promote a multi-scalar rollout of renewables similar to countries such as Germany that pioneered price-based support mechanism (HMG, 2009a). The UK FiT is designed to protect <5 MW developments from the more competitive environment fostered by the RO.

In order to thrive, however, these new approaches to electricity generation require more institutional support and a more holistic governance approach than the provision of a FiT. CE in particular can only succeed if it is recognised as a diffusible social as well as a technological concept. This requires a better understanding of the wider benefits that CE can provide and how the concept can be embedded in the governance of the UK energy system and its surrounding national energy framework (NEF).

This paper analyses how the governance of the UK's NEF surrounding its FiT inhibits the widespread diffusion of decentralised RETs with the example of wind energy in community settings. Various aspects including planning, finance and investment and the role of intermediaries in the diffusion process are depicted in relation to communities and compared where appropriate with the development of community wind energy in Germany. By drawing on several interviews with experts and change agents ranging from community representatives to developers and policy-makers, the challenges associated with the UK's approach to CE governance are analysed and evaluated. It also indicates areas where new governance approaches might encourage a variety of CE pathways to develop and become socially and politically embedded. This should be of particular interest to policy-makers as it reflects the influence between energy policy and the wider governance framework at various scales and points of interaction associated with the interviewees' position within the UK's NEF.

The key questions that are addressed in this paper:

What is the role of the UK feed-in tariff and its surrounding governance framework in community energy development?

What lessons can be learnt from countries such as Germany that are considered advanced in the provision of a favourable development environment for new scales and ownership structures of renewable energy technologies?

Starting with an overview of the relevant literature and theoretical concepts regarding new scales and ownership models within the UK's energy system, the development of wind energy and community-led developments in the UK is explored. Following sections include the empirical and methodological approaches of the case study as well as the discussion of empirical data. These sections introduce analysis methods and the analysis itself which is subdivided into sections relating to finance, planning and development expertise. The paper concludes with a policy recommendation and areas that require further exploration.

2. Current discussion on community energy in the UK

Community energy has received considerable attention in recent years. Large surveys and databases such as Walker et al. (2005), Adams (2008) and Seyfang et al. (2012) document increasing diversity and societal embeddednes of community energy. Several academic studies have dealt with the meaning of CE (Walker et al., 2010), various aspects of the development process itself (Gubbins, 2007), associated social impacts (Rogers et al., 2012), participation and facilitation (Hoffman and High-Pippert, 2010; Hargreaves et al., 2013), and niche development processes (Hielscher et al., 2013), just to mention a few recent examples. Some studies have dealt more specifically with the barriers and incentives, pointing towards the difficulty of streamlining the development process (Walker, 2008) and specifically the need for a risk capital fund (Hoggett, 2010). Examples of papers with specific reference to the FiT highlight increasing societal participation (Walker and Cass, 2007) and document the growth in the UK's CE sector following its introduction (Willis and Willis, 2012). Further papers with specific reference to the FiT have dealt with the need for local energy organisations to ensure that the benefits associated with premium tariffs are spread equally (Saunders et al., 2012) and general issues with equity relating to tariffs and the organisational capacities associated with successful community energy projects (Park, 2012).

However, the relative novelty of both CE and FiTs in the UK implies that there has been little empirical investigation into their interaction, especially qualitative surveys and analysis. One of the main difficulties lies in establishing the role that CE currently plays and why its development has been less common in the UK compared to other countries. Some researchers consider CE projects in the UK as 'technically proven' (Walker and Devine-Wright, 2006: 9) although the scale of most projects associated with the term community are small-scale, such as single PV arrays on school halls or parish churches. There are also some notable examples including wind turbines, even wind farms but they are exceptions (Hargreaves, 2011; Willis and Willis, 2012). The exact definition of CE has also received considerable attention as diverse ownership structures include community-owned and self-funded projects including energy self-sufficient island communities based on grant funding as well as wind farms only partly (share-) owned by communities (Hargreaves, 2011; Munday et al., 2011; Allen et al., 2012). For the sake of this analysis, utility and commercially driven RET projects with considerable community benefits associated with their deployment are also included (explained in more detail in the methodology) due to the scale and replicability associated with co-ownership models (Vaze and Tindale, 2011).

This goes back to the point raised in the introduction about CE being more successful and considered a more proven concept in other countries such as Germany and much of what is analysed in this paper as CE relates to co-ownership as much as to community-led CE development.

3. Opportunities and barriers for community energy in the UK

Opportunities for CE and decentralised energy generation in general are arising from the need to develop infrastructures for the coming decades according to principles more in line with the transition to a low-carbon economy (RAENG, 2011). This is an unintended consequence of liberalisation, the 'dash for gas' in the 1990s and the more general lack of energy infrastructure investments resulting in the 'energy gap' (MacKay, 2010;Mitchell, 2008).