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Sandra Bell is an environmental anthropologist who has researched and published on energy issues including community energy projects, electricity consumption and the evolution of smart grid technologies.

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**Chapter X**

**Community Energy in the UK**

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Community Energy projects in the UK are extremely diverse in nature, scale and geographical distribution. Their activities can be roughly divided into those that raise awareness of domestic energy consumption and promote energy efficiency and those dedicated to electricity generation through renewable sources. Prior to 2014, when the UK government introduced a Community Energy Strategy, programmes and networks to promote community energy projects of both types received piecemeal support: although, some support mechanisms and funding led by government, charities and the private sector began to emerge around the turn of the new millennium. The ideological underpinning of community energy projects in the UK can be traced further back to grass roots activism associated with the alternative technology movement of the 1960s and 70s.

Research in north-west England showed that 90 per cent of questionnaire respondents to be in favour of a community renewable energy project. Just 65 per cent agreed that they would participate in small ways, but no respondents wanted to be involved in project leadership.<sup>2</sup>

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<sup>1</sup> Sandra Bell is an environmental anthropologist who has researched and published on energy issues including community energy projects, electricity consumption and the evolution of smart grid technologies.

The government's 2014 strategy identifies four main types of activities that "communities can get involved with"<sup>3</sup> including generation of heat or electricity; energy saving; energy management by balancing supply and demand; and collective purchasing or switching to new suppliers.

Collective switching of gas and electricity to contracts whereby suppliers provide special bulk pricing mechanisms to domestic customers is mediated through a third party, usually operates on-line and is often initiated by municipal authorities rather than a neighbourhood group or other small scale communities of place. Co-operatives established for buying heating oil in locations that are not connected to the gas grid are more likely to be proximately managed.

Energy management of supply and demand remains in its infancy, because of reliance on the incomplete roll-out of smart grid technologies. However, community groups are expected to play an important role in future pilot-schemes.<sup>4</sup>

Energy saving projects are growing in the UK but are hampered by the difficulty of obtaining funding. There are no direct funding schemes available, despite the government strategy document's declared encouragement of such projects and acceptance that people are likely to be more receptive to energy advice when it is delivered by friends and neighbours. Community groups intent on energy efficiency projects are generally required to create partnerships with local government authorities or seek funding from the few non-governmental organisations that promote the spread of sustainable energy practices, such as the UK's Ashden Trust.<sup>5</sup>

Distributed micro and small scale low carbon renewable electricity generation has an important role in the future energy mix of the UK. They can contribute to the low carbon transition as envisaged by the UK government by reducing the estimated 17% of UK carbon dioxide emissions attributed to the domestic sector.<sup>6</sup> The current centralised electricity system creates geographical and psychological distance between energy generation and consumption. The use of micro and small scale distributed energy generation systems, with outputs ranging between 1W to 5kW and 5kW to 5MW respectively, shifts energy generation from central plants and embeds it within villages, towns and cities.

Environmental benefits of micro and small scale energy generation systems are recognised by the UK Energy Saving Trust who estimate that micro-generation could supply 30-40 per cent of the UK's electricity requirements by 2050.<sup>7</sup> The carbon savings realised from the installation of small scale energy generation projects can be greater than those directly

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<sup>2</sup> Jenny C Rogers, Eunice Simmons, Ian Convery, Andrew Weatherall, 'Public perceptions of and opportunities for community-based renewable energy projects' (2008) *Energy Policy* 36(11):4217-4226.

<sup>3</sup> DECC (Department of Energy and Climate Change), 'Community Energy in the UK: Part 2' (2014) <<https://www.gov.uk/government/publications/community-energy-in-the-uk-part-2>> accessed 03 January 2015

<sup>4</sup> DECC (Department of Energy and Climate Change), 'Community Energy in the UK: Part 2' (2014)b <<https://www.gov.uk/government/publications/community-energy-in-the-uk-part-2>> accessed 03 January 2015

<sup>5</sup> Ashden Trust, 'What we do' (2015) <<http://www.ashden.org/what-we-do>> accessed 03 January 2015

<sup>6</sup> DECC (Department of Energy and Climate Change), UK Climate Change Sustainable Development Indicator: 2010 Greenhouse Gas Emissions, Provisional Figures and 2009 Greenhouse Gas Emissions, Final Figures by Fuel Type and End-User (DECC 2011)

<sup>7</sup> Energy Saving Trust, Econnect, Element Energy. 'Potential for Micro-generation: Study and Analysis full Report' (Energy Saving Trust, London 2005)

associated with the kW produced by a centralised generator due to the double dividend effect, whereby consumers place a higher value on energy produced by their proximate installed system and alter energy practices to reduce consumption. Social benefits of generation projects include the creation of community cohesion through joint endeavour as well as financial benefits through the creation of collective funds to spend on social and environmental projects that benefit the wider community.

Though there are many rewards associated with community energy projects, the path from conception to implementation is not always straight forward. There can be many barriers to success.<sup>8</sup> Community energy groups require a high degree of tenacity with individuals prepared to invest considerable time and effort in navigating potential pitfalls in their plans. The kinds of people responsible for driving projects involving generation from renewable sources tend to be drawn from managerial, administrative and professional occupations, especially retired professionals who have the time, education and confidence to become informed about and to negotiate complex issues relating to licensing, feed in tariffs (FIT), grid connection and planning applications.

Obstacles include local opposition, planning constraints, ecological concerns (e.g. conservation of protected species) and technical difficulties associated with retrofit or connection of electrical generators to the distribution network. Shaw and Mazzucchelli<sup>9</sup> cite disparities between the level of community capacities and the capacities required to develop local generation projects as one reason why their adoption is less common than the adoption of energy efficiency initiatives. Mixed messages and lack of clear impartial advice relating to technology choice and use, embodied energy and lifespan of micro-generation technology are also cited as threats to successful deployment.<sup>10 11</sup>

An estimated 49 megawatts (MW) of community renewable energy generation capacity exists in the UK: although this is thought to be an underestimate.<sup>12</sup> Other schemes are in the pipeline, anticipated to be prompted by new or revised sources of government funding in England, Scotland and Wales. Wind turbines appear to be the most popular generating technologies followed by solar panels and micro-hydro. The popularity of wind turbines may be due to the predominance of renewable community generation projects in Scotland and south-west England. Both areas include upland regions as well as access to institutional support. Since 2007 Scotland has been served by the independent charity and umbrella organisation, Community Energy Scotland (CES).

CES has 400 member organisations more than a hundred of which joined during the year 2014<sup>13</sup>. The steep rise in membership reflects a surge of interest in community energy

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<sup>8</sup> Gordon Walker, 'What are the barriers and incentives for community-owned means of energy production and use?' (2008) *Energy Policy* 36(12):4401-4405.

<sup>9</sup> Suzanne Shaw, Paola Mazzucchelli, 'Evaluating the perspectives for hydrogen energy uptake in communities: Success criteria and their application' (2010) *Energy Policy* 38(10):5359-5371.

<sup>10</sup> Patrick Devine-Wright, Gordon Walker, Sue Hunter, Helen High, Bob Evans, 'An empirical study of public beliefs about community renewable energy projects in England and Wales' (Working Paper 2: Community Energy Initiatives Project, Lancaster University 2007)

<sup>11</sup> Noam Bergman, Nick Eyre, 'What role for micro-generation in a shift to a low carbon domestic energy sector in the UK?' (2011) *Energy Efficiency* 4(3):335-353.

<sup>12</sup> DECC (Department of Energy and Climate Change), 'Community Energy Strategy: Full Report' (2014) <<https://www.gov.uk/government/publications/community-energy-strategy>> accessed 03 January 2015

<sup>13</sup> Community Energy Scotland (CES), 'Annual Review 2013-14' (2014) <<http://www.communityenergyscotland.org.uk/annual-review-2013-2014.asp>> accessed 03 January 2015

activity, particularly generation capacity, which took place across the UK during the same period when an English equivalent organisation, Community Energy England,<sup>14</sup> was also founded. CES is pioneering new technologies and business models for community energy constructed around the concept of Local Energy Economies. This model simultaneously addresses and integrates electricity generation technologies, models for financing and governance, grid connections, electricity storage and infrastructural issues as applied to community managed projects.

Community Energy Wales is a temporary initiative by the Welsh Government's independent policy body, Cynnal Cymru (Sustainable Development Forum for Wales) that is intended to provide a focus point to involve Welsh communities in renewable energy production and energy efficiency programmes.<sup>15</sup> If successful it is likely to become a permanent facilitating organisation for the development of community energy in Wales.

While community energy in the UK has not yet reached levels comparable to those in Germany<sup>16</sup> or Denmark<sup>17</sup> there are strong indications that recent institutional developments and support mechanism, together with accompanying publicity featuring successful examples, may enable it to prosper in the immediate future. Much will depend on people's willingness and ability to participate, particularly in positions of greatest responsibility.

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<sup>14</sup> Community Energy England (CEE), 'Who We Are' (2014) <<http://communityenergyengland.org/about/>> accessed 03 January 2015.

<sup>15</sup> Community Energy Wales (CEW), <[http://www.cynnalcymru.com/Community\\_Energy\\_Wales](http://www.cynnalcymru.com/Community_Energy_Wales)> accessed 03 January 2015.

<sup>16</sup> D Buchan, *The Energiewende - Germany's gamble* (Oxford Institute for Energy Studies 2012)

<sup>17</sup> Anna Schreuer, Daniela Weismeier-Sammer, 'Energy cooperatives and local ownership in the field of renewable energy technologies: A literature review' (2010) <[http://epub.wu.ac.at/2897/1/Literature\\_Overview\\_energy\\_cooperatives\\_final\\_\(2\).pdf](http://epub.wu.ac.at/2897/1/Literature_Overview_energy_cooperatives_final_(2).pdf)> accessed 03 January 2015