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Big Pylons: Mixed signals for transmission. Spatial planning for energy distribution

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HIGHLIGHTS

- We examine links between spatial planning and regulation of energy distribution.
- We examine the Beauly Denny public inquiry in Scotland.
- We highlight challenges surrounding the development of a resilient energy system.
- We highlight links between spatial planning and infrastructural development.

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ABSTRACT

The effective delivery of a sustainable energy future raises many challenges in relation to energy distribution where a new understanding of spatial planning is needed in relation to energy production, consumption and storage. Understanding the emergent low carbon energy economy in terms of its production, distribution and consumption characteristics has prompted a deliberate spatial planning interest. This paper examines issues relating to spatial planning, regulation, political legitimacy and accountability in the current and future systems for energy distribution. In particular it examines the Beauly Denny public inquiry in Scotland as a case study in terms of demonstrating the changing state–market–civil relations in an energy transition context with differentiated values and interests. The case study highlights implications for the regulation in the public interest of highly contested spaces, places and development schemes, together with a synopsis of government structure and change that is influencing the future of spatial planning and energy distribution in particular.

1. Introduction

For a successful and resilient sustainable energy future, the UK planning system requires a holistic approach and this paper will focus on the importance of spatial planning as a central feature of the institutional framework necessary to achieve this. There has been much debate over energy production and consumption in relation to the wider climate change agenda; however, this paper will turn to focus on the importance of energy distribution to the provision of a resilient future energy system. Jones and Eiser (2010) note that the government require a five-fold increase in renewable generating capacity if it is to meet its pledge of 40% of electricity from renewable sources by 2020 (Cotton and Devine-Wright, 2011). With several commitments made by the government under the UK Low Carbon Transition Plan (Department of Energy and Climate Change (DECC), 2009), the legislation introduced an increase in the use of renewables (Renewables Obligation Order 2009, the Climate Change Act 2008 and the Energy Act 2008), so it is more evident that the UK is serious about making changes to the current energy system which includes extensive generation and distribution of electricity from renewables. However, the transition to the government's vision of a renewable energy future requires a multi-faceted and multi-scalar spatial planning approach to provide an understanding of the complex set of underlying factors which have an impact on the efficiency and development of a diverse and sustainable energy system. Cotton and Devine-Wright (2011 p. 942) note that while changes in electricity generation have been a subject of academic study, less attention has been paid to the consequences of such changes upon existing infrastructures of electricity transmission and distribution. These issues must be considered alongside the provision of a comprehensive framework of regulation and longer term environmental and resource management (Peel and Lloyd, 2007a), together with a comprehensive assessment of future land use demands.

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In this paper, whilst focusing mainly on the Scottish planning system, we look at the drivers for change in planning for energy production and the changing role of the planning responses to energy distribution. Firstly we establish a conceptual framework of the energy system as a whole in order to establish the relationship between distribution and the role of planning, with particular focus on the more recent changes in the modernisation of planning. We interrogate the ongoing political debate in planning agendas as the move towards a more integrated framework for a sustainable energy future begins to be realised. Central to this paper is the role of planning has to play in facilitating a sustainable and resilient energy future. Land use decision making must be focused on a sustainable agenda which requires a long term vision for spatial planning. A resilient energy system requires great transformation with regards to changes in technology and the implications of associated processes to energy distribution, with consideration of storage for intermittent renewable energy supply, together with an understanding of competing demands for land use and the scale of such change, which are all aspects that need to be understood within a planning context. Finally, we use a case study of the Beauly Denny public inquiry in order to demonstrate the contested nature of future energy distribution and the challenges in promoting consistent and integrated policy and decision making. The paper concludes by noting some of the challenges ahead for energy distribution and the implications for spatial planning.

To consider spatial planning for a sustainable renewable energy future, it is suggested that consideration first be given to establishing an appropriate conceptual framework of the energy system as a whole before reflecting on these processes in detail. At the most fundamental level, energy production, consumption, distribution and storage are the key stages that form the conceptual framework (see Fig. 1). There is a powerful reciprocal relationship between these elements. Thus, as a basic assumption, for example, production is directly influenced by security of supply, whilst consumption is a derivative of demand management. Distribution and storage of energy are, perhaps, more complex in terms of relationships with existing resources and the technological and scientific capability for future energy development to form part of the supporting infrastructure. Moreover, these processes have clear developmental (and spatial) implications, with particular relevance to forward planning and the regulation of energy related developments, whilst consequently each element of this process is key to achieving a resilient energy system. Parallels may be drawn with, for example, the public concerns relating to the need for mobile telephony infrastructure to support mobile communications (Sheppard et al., 2008). It is important then to approach this canvas with realistic expectations of the interaction between technology and the environment, whilst considering the social and institutional changes that may be required to implement a

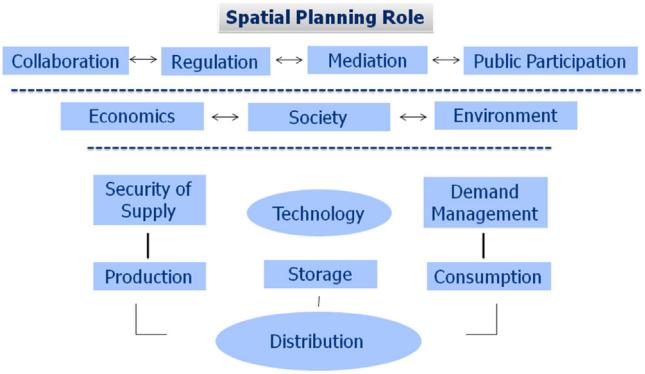

Fig. 1. A conceptual renewable energy framework.

renewable energy future (Elliott, 2000). Here the statutory land use planning system can play an important mediating role.

Energy planning has traditionally been a relatively controversial and contested subject, particularly in the UK and Ireland, where there is an overreliance on fossil fuels (Stern, 2007; BERR, 2008; IPCC, 2007). Jones and Eiser (2010) have noted that the UK has become a net importer of gas, which has notable implications on the security of energy supply, as has been experienced in recent years. Devine-Wright (2011) highlights that to mitigate climate change, governments are committing to reducing reliance on fossil fuels and to increase the use of low carbon sources such as nuclear and renewable energy sources. The use of renewables for generating electricity is increasing. Once described as 'meagre' by Toke et al. (2008), the power supplied in 2008 from renewable was just 2%; Department of Energy and Climate Change (DECC) (2013) now note that electricity generated by renewables in 2012 has risen to 11.3%. There is still a long way to go to reach the 2020 targets and the (then) British Wind Energy Association (BWEA) (2009) highlighted that there was a pressing need for a more effective and more efficient planning system for onshore projects. Associated pollution and the scale of power stations used to generate energy have created adverse planning impacts in visual terms. As well as the associated land use conflicts, there are a wide range of environmental and social implications in planning for energy production. The location of the energy resource may often influence the selection of energy production sites, which can precipitate conflicts in statutory land use planning decisions about development proposals. Often energy resources are located in environmentally sensitive areas, which therefore require responsive regulatory planning and strategic forward-thinking to balance future energy needs with what is currently proposed. Wind farms are a typical example of this contrast, as they are often located in more exposed areas to avail of the wind resource. Looking to the future, for example, Crawford and French (2008, p. 4575) asks 'what particular energy futures might look like?' 'What new techno-economic networks do technological visions presume and what forms of social realignment are required along the way?' Shove (1998, p. 1110). These types of issues form the basis of the spatial planning arena, and pose important questions for development of a spatial planning framework that, on the one hand, prioritises renewable energy policies and, on the other hand, has to give sufficient attention to all other material considerations.

2. The role of planning

Technologically and scientifically informed insights to energy development must be accommodated in both site-specific and associated physical forms. That will likely involve different specific forms of land and property development at the local and strategic scales and, as a consequence, the regulatory arrangements associated with statutory land use planning and spatial planning. Land and property development is highly regulated through processes of statutory land use planning. There is a complex history to the introduction of public sector land use planning controls in a private property rights democracy (Booth, 2002a). The statutory land use planning system consists of three essential elements: the regulatory arrangements through development control, now development management – in effect a set of controls to manage land use and development in the wider public interest (Rydin, 2003); development plans which set out the future vision for land use in given areas – a framework to anticipate societal needs reflecting, for example, changing economic conditions, demographic features, environmental priorities and expressed in terms of expected land use and developments; and strategic policy guidance issued by central government. The overall intention is