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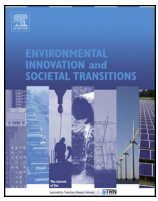

Creating protective space for innovation in electricity distribution networks in Great Britain: The politics of institutional change

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ABSTRACT

Innovation in electricity distribution networks will be an important element in the transition to a sustainable low-carbon energy system. The nature of networks as regulated monopolies means that the locus of the evolution of protective space for innovation is regulatory institutions, and that the politics of creating protective space is the politics of institutional change. In this paper I examine the case of Britain, where protective space for research, development and demonstration projects was created over the course of the 2000s in the form of funding mechanisms within the regulatory regime. The case study is used to test structural and discursive theories of gradual institutional change. I conclude that these theoretical frameworks are consistent with the evidence, but that the characterisations of change actors and of dominant policy paradigms are insufficiently flexible. I also conclude that the framework for innovation in the British regulator remains incomplete.

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1. Introduction

In the analysis of innovation processes for sustainability transitions, the multi-level perspective (MLP) on socio-technical transitions currently plays a dominant role (Smith et al., 2010). The MLP

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provides the concepts of niches, socio-technical regimes and the wider landscape, with technological transitions emerging from interactions between these (Kemp et al., 1998; Geels and Schot, 2007; Geels, 2002, 2010; Smith et al., 2005). Within this framework, the concept of 'protective space' in niches for emergent radical innovations plays a particularly important role (Smith and Raven, 2012). However, the MLP approach (and indeed the wider socio-technical transitions literature) has been widely criticised for a lack of analysis of politics (e.g. Meadowcroft, 2009; Scrase and Smith, 2009; Kern, 2011). This critique then raises the question of exactly *how* politics should be theorised and brought into the analysis of sustainability transitions. In this paper, I turn to the approach that has played a central role in political analysis – institutionalism – to analyse contested ideas and institutional change in the creation of protective space for innovation in electricity distribution networks in Great Britain.[1]

The background for such innovation is the anticipated transformation of electricity systems, with growth in small-scale renewable electricity generation technologies, at least partial electrification of heat and transport, and the possibility of greater demand side response. To fully realise the value of such 'distributed energy resources' (Agrell et al., 2013; Ruester et al., 2014), many governments now take the view that electricity distribution systems will have to be transformed in their ability to observe and control power flows and quality through the application of information technologies, i.e. the 'smart grid' agenda.

However, the context for innovation in electricity networks is very different from that in competitive markets, where most studies of innovation for sustainability are focused. Considered to be natural monopolies, networks are either state owned and operated or are heavily regulated. The balance of risk and reward for regulated companies is determined almost entirely by the nature of the regulatory regime, and those companies react to that regime rather than to market opportunities. In Britain, electricity distribution network companies have historically been seen as risk averse and lacking the skills, capacity and incentives for innovation (e.g. Smith, 2010).

The history of the smart grid policy agenda and the evolution of regulation for network innovation in GB have been widely discussed. As Bolton and Foxon (2011) note, innovation was 'off the agenda' until the early 2000s. The focus of the GB regulator, Ofgem,[2] was on incentivising cost reduction, largely achieved by network companies by squeezing operational expenditure. However, in 2005 Ofgem introduced two mechanisms to support R&D by electricity distribution network companies, an approach which was subsequently expanded from 2010. The focus of this paper is on examining the politics of this pivotal episode of institutional change.

The context for innovation has implications for the way in which the creation of niches and changes to socio-technical regimes are conceptualised. At least initially, technological niches for networks have to be created in the most immediate sense by state or regulatory institutions rather than firms. As a consequence, the politics of protective space pivots around the *politics of change in those institutions*. This fact then drives the selection of a theoretical framework for analysing these politics. In this paper I draw on two institutional frameworks. One is Mahoney and Thelen's (2010) theory relating types of institutional change to political context, institutional characteristics and types of institutional entrepreneurs. The second is John Campbell's framework for understanding the conditions under which ideas are likely to change institutions. In a study of the introduction of support for R&D in networks to develop a smarter grid through a change in the British regulatory regime, the explanatory power of these two frameworks is assessed against evidence obtained from official documentation and interviews with participants in that change (Annex 1).

I find broad support for these two approaches. However, the case study also suggests that the characterisations of change agents and of policy paradigms in these theoretical frameworks need to be made more flexible. I also conclude that while the understanding within Ofgem of R&D and demonstration processes changed significantly over the last decade, it is not clear that other aspects of the innovation process, and in particular the risks associated with moving to business-as-usual investment, have yet been engaged with.

[1] Electricity networks in Northern Ireland are regulated separately from those in the rest of the United Kingdom. This paper focuses solely on networks in GB (i.e. England, Wales and Scotland).

[2] The full name is the Office of Gas and Electricity Markets.

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