Environmental Innovation and Societal Transitions xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

Environmental Innovation and Societal Transitions

journal homepage: www.elsevier.com/locate/eist

Niche construction and empowerment through socio-political work. A meta-analysis of six low-carbon technology cases

Rob Raven [a,b,*], Florian Kern [c], Bram Verhees [a], Adrian Smith [c]

[a] School of Innovation Sciences, Eindhoven University of Technology, Eindhoven, The Netherlands
[b] Copernicus Institute, Utrecht University, Utrecht, The Netherlands
[c] SPRU-Science Policy Research Unit, University of Sussex, Brighton, UK

ARTICLE INFO

Available online xxx

Keywords:
Niche
Politics
Protective space
Sustainability transitions
Technology advocacy

ABSTRACT

In the sustainability transitions literature the idea of 'protective space' shielding niche innovations from unfriendly selection environments is a fundamental concept. Few studies pause to consider how and by whom such protective space is created, maintained or expanded. The paper develops three propositions to deepen our understanding of the 'outward-oriented socio-political work' performed by technology advocates. The paper conducts a meta-analysis of six low-carbon technology case studies in the UK and The Netherlands. In each case, analysis finds the cases relevant to the propositions, but requiring finer nuance and further development.
© 2015 Elsevier B.V. All rights reserved.

1. Introduction

A founding assumption in the literature on sustainability transitions is that incumbent systems of production and consumption need to change fundamentally in order for more sustainable technologies to become widely adopted (Rip and Kemp, 1998; Elzen et al., 2004; van den Bergh et al., 2011; Markard et al., 2012; Dangerman and Schellnhuber, 2013). Consequently, research in this field has tried to understand where and how these new sustainable technologies emerge and contribute

* Corresponding author at: Utrecht University, Copernicus Institute of Sustainable Development, Heidelberglaan 2, Utrecht, The Netherlands. Tel.: +0031 30 7807; fax: +0031 40 253 602.
E-mail addresses: r.p.j.m.raven@uu.nl, r.p.j.m.raven@tue.nl (R. Raven).

http://dx.doi.org/10.1016/j.eist.2015.02.002
2210-4224/© 2015 Elsevier B.V. All rights reserved.

Please cite this article in press as: Raven, R., et al., Niche construction and empowerment through socio-political work. A meta-analysis of six low-carbon technology cases. Environ. Innovation Soc. Transitions (2015), http://dx.doi.org/10.1016/j.eist.2015.02.002

towards transforming systems (Kemp et al., 1998; Hekkert et al., 2007; Jacobsson and Bergek, 2011). The concept of 'protective space' has been deployed to denote a wide variety of 'niches' favourable to new low-carbon technology development in contexts otherwise disadvantageous towards them, such as R&D settings (Belt and Rip, 1987), geographical locations (Coenen et al., 2009; Verbong et al., 2010), NGOs and environmental user groups (Verheul and Vergragt, 1995; Truffer, 2003) and grass-roots communities (Seyfang and Smits, 2007; Ornetzeder and Rohracher, 2013). When innovations are empowered to 'break out' of their protective spaces, some induce far-reaching implications for wider institutions, infrastructures and other structural dimensions of the selection environment. This makes them potentially path-breaking innovations. This paper aims to make a contribution to this particular topic.

The niche concept has been most prominent in the Multi-Level Perspective (Geels, 2011) and the Strategic Niche Management framework (Schot and Geels, 2008; Raven et al., 2010). These related frameworks presume sustainable technologies are disadvantaged and require strategic support to protect them against premature rejection by investors, customers and users whilst the performance, price and infrastructures for these technologies develop. In evolutionary terms, novel technological varieties with more environmentally friendly and socially just characteristics struggle to develop under unfavourable, multi-dimensional selection pressures (i.e. incumbent 'socio-technical regimes') (Nill and Kemp, 2009). Protective spaces, where these selection pressures can be reduced or modified, are required in order that sustainable technological developments have a chance to become sufficiently robust to eventually compete with incumbent technologies and/or exert an influence over wider selection environments.

Until recently, however, analysis has rarely paused to consider how protective spaces are created, maintained and, if at all, removed. Spaces have tended to be taken as given, and analysis focused on the development of technological expectations, actor networks and social learning processes that nurture technological development within those spaces (Kemp et al., 1998). Recognising this lacuna, Smith and Raven (2012) developed a framework conceptualising the construction of 'protective space' as consisting of three features: shielding, nurturing and empowering. The aim of this paper is to develop the framework by discussing three propositions regarding the ways in which those who aim to promote a certain low-carbon technology, i.e. technology advocates, mobilise and maintain protective space. Our concept of advocates does not only include technology developers, but also other interested actors such as lobby groups, environmental NGOs, policy makers and politicians, potential users, etc.

Our analysis also responds to calls for more politically informed analyses of transition dynamics and system transformation more generally (Aklin and Urpelainen, 2013; Hendriks and Grin, 2007; Shove and Walker, 2007; Scrase and Smith, 2009; Meadowcroft, 2011; Kern, 2012; Cheon and Urpelainen, 2013; Hess, 2013). In order to shed light on the politics of protective space, the propositions adopt an actor-oriented perspective (Ferguson et al., in press; Farla et al., 2012) focussing on the strategic work that technology advocates undertake when attempting to construct, maintain and expand protective spaces. As such, we address the following research question: How do technology advocates attempt to create, maintain and expand protective space for developing their path-breaking low-carbon technologies?

Published research provides a conceptual approach to this issue (Smith and Raven, 2012), and some isolated case studies have explored it empirically (Verhees et al., 2013; Smith et al., 2014; Walter, 2012; Boon et al., 2014; Kern et al., 2014a, 2014b; Verhees et al., 2014). As yet, however, there has been little synthesis across individual cases that might provide a more robust basis for understanding the dynamics of 'protective space'. To address this gap we conduct a meta-analysis of case studies of three different types of low carbon electricity-generating technologies in two jurisdictions committed to energy transitions. The technologies are solar photovoltaics (PV), offshore wind (OSW), and carbon capture and storage (CCS). The jurisdictions are the UK and The Netherlands. The methodology section justifies these choices.

The paper begins in Section 2 with a discussion of protective space and develops three propositions about the role of technology advocates. After outlining the methodological approach in Section 3, the paper continues in Section 4 with the analysis reviewing the propositions against evidence from the case studies. The paper ends with conclusions and implications for research in Section 5.

Please cite this article in press as: Raven, R., et al., Niche construction and empowerment through socio-political work. A meta-analysis of six low-carbon technology cases. Environ. Innovation Soc. Transitions (2015), http://dx.doi.org/10.1016/j.eist.2015.02.002

Download English Version:

https://daneshyari.com/en/article/6559275

Download Persian Version:

https://daneshyari.com/article/6559275

Daneshyari.com