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The sun also rises in Norway: Solar scientists as transition actors

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ABSTRACT

This study contributes to transition studies through an empirical analysis of scientists at the Norwegian Research Center for Solar Cell Technology. From a policy perspective, this research centre is a concrete undertaking within transitions politics. How do solar energy scientists make sense of this mission and what strategies do they adopt? The analysis adopts a bottom-up perspective focusing on the politics involved in actor-networks constructing and empowering sustainable innovations. I suggest the micro/macro-divide characterising transition studies may be discarded, if we recognise that actors operate both on niche, regime, and landscape level. Instead of presuming a multi-level perspective, transition studies could analyse the multi-actor politics of translations in arenas of development. Adopting this approach, I argue that solar scientists pursue mainly two lines of activities: improving efficiency (translations to fit and conform) and challenging negative hegemonic representations of solar energy (translations to stretch and transform).

1. Introduction

To mitigate climate change and to meet future energy demand, many countries adopted policies to stimulate sustainable energy transitions. Despite its renewable hydropower, oil-producing Norway was no exception. This shaped Norwegian policy approaches to renewable energy technologies

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(Sørensen, 2007; Karlstrøm and Ryghaug, 2014). For example, a central rationale behind much of the Norwegian policy for new renewables was that climate policy also should be economic policy (Regjeringen, 2011; Karlstrøm, 2012). Consequently, Research and Technology development (R&D) featured prominently in Norwegian climate policy. For example, the Norwegian climate strategy included an effort to increase spending on sustainable energy research by NOK 600 million (ca. 75 million Euros) in 2008–2010 (Meld.St. 21, 2012: 183). Much of this money funded the establishment of eleven Centres for Environment-friendly Energy Research (CEERs) with the goal of developing new Norwegian industry. This fits well with the international tendency to complement climate political instruments, such as quotas and fees, with technology development so that climate policy becomes innovation policy (Kasa, 2011). Indeed, the arrival of the transition idea on a policy level often parallels a renewed interest in mission-oriented, state-led innovation policy (Steward, 2012: 333).

Thus, the establishment of the CEERs can be interpreted as a concrete undertaking within transition politics. The research communities were endowed with the mandate to play a role as transition actors. In this paper, I analyse how one CEER, the Norwegian Research Center for Solar Cell Technology (hereafter FME Sol),[1] enacted this mission. FME Sol aimed to gather the major research groups and companies in the field of Norwegian solar cell technology to develop internationally ranking competence, to promote the Norwegian solar industry and to help make solar energy a significant source of renewable energy (FME Sol, 2009: 3)—in other words, clearly combine climate policy and industry development.

FME Sol lends itself to study what Genus and Coles call the 'complexity and ambivalence of the messy reality of case studies of transition' (Genus and Coles, 2008: 1442). Not least because the country has a cold climate and little winter sunlight, solar energy highlights the paradoxes of Norwegian renewable energy politics. R&D was funded, whereas no public funds were directed towards increasing public deployment of photovoltaic (PV) technology. While it had been difficult to include solar energy in the country's energy mix, Norway actually had a strong export-oriented solar industry until 2007/2008. That Norway hosted a globally lucrative PV industry without a home market was in itself puzzling, and significant research attempted to explain this phenomenon (Hanson, 2008; Klitkou and Coenen, 2013; Klitkou and Godoe, 2013; Koesah, 2013; Ruud and Larsen, 2006). Since 2007, however, the Norwegian solar industry has been severely troubled.

Key questions, then, are how solar energy scientists made sense of their work in this challenging situation and what strategies they adopted in their work as transition actors. To answer these questions, I conducted a series of in-depth interviews with 17 solar energy scientists with diverse disciplinary backgrounds. My research adds to transition studies that demand a more detailed analysis of actors, to account for strategies and collective sense-making activities in the construction of sustainable niches (Farla et al., 2012; Smith and Raven, 2012; Verhees et al., 2013; Jørgensen, 2012). In general, transition scholarship's interest in the solar energy quandary has recently surged (Klitkou and Coenen, 2013; Klitkou and Godoe, 2013; Moosavian et al., 2013; Choi and Anadón, 2013; Liu and Shiroyama, 2013; Dewald and Truffer, 2012). Many of these papers analyse the success of PV policies, accounting for factors such as regional differences, network formations, and infrastructure issues. My work complements this literature with an empirical study of the role and forms of agency of scientists. If transition management—as a kind of reflective governance—wants to provide navigational support to actors on how to reach sustainable transitions, we first must understand *existing* actor strategies.

2. What if levels would not direct the analysis?

How can we theorise research on solar technology within a transition context? Currently, the multilevel perspective (MLP) dominates transition literature. Originating in the works of Rip and Kemp (multilevel model of innovation) and of Schot and Geels (evolution and pathways), the MLP framework differentiates between three levels of transition—the sociotechnical landscape, the regime, and the niche (Geels, 2002: 1260f; Kemp and Loorbach, 2006: 108; Voß et al., 2009: 283). 'Landscape' refers

[1] Since the Norwegian Research Center for Solar Cell Technology has no official English abbreviation, in the following I use the common Norwegian abbreviation, FME Sol.

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