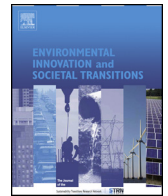


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# Environmental Innovation and Societal Transitions

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## Redefining a stakeholder relation: Finnish energy “prosumers” as co-producers



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### ABSTRACT

Energy innovations have enabled micro-scale energy production that is challenging energy companies' business models and operating environment. This article examines micro-producers of energy as energy “prosumers”—hybrid producers and consumers—and as a challenge to the current logic of energy companies' stakeholder relations. The data consists of interviews and participant observations of Finnish private solar panel owners and energy company representatives. The relationship between energy prosumers and the energy company is found to be a co-producing stakeholder relation that is issue-centric, not organization-centric. Energy prosumers have heightened expectations of how they should be acknowledged by the energy company, particularly concerning reciprocity. The article clarifies the role of the energy prosumer as a new type of stakeholder and connects prosumer relations to the notion of co-production. Thus, the article offers valuable information for energy companies when they update their business models to embrace prosumer relations and community involvement.

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## 1. Introduction

Innovations such as low-cost solar panel components have encouraged households and communities to produce energy on a micro-scale (e.g., [Bohnsack et al., 2016](#); [de Vries et al., 2016](#)). This phenomenon is said to challenge the business-as-usual for energy companies ([Løstrup et al., 2013](#); [Watson and Devine-Wright, 2011](#)), or even to cause a paradigm shift that will ultimately affect energy companies' operating environment along with their competitiveness ([Schleicher-Tappeser, 2012](#)). Micro-production blurs the line between energy producers and consumers and thus, in this article micro-producers of energy are approached as energy “prosumers”—hybrid producers and consumers.

The term “prosumer” was coined to explain the simultaneous behavior of producing and consuming ([Toffler, 1980](#)). In the context of energy, prosuming makes energy production ubiquitous; it is now omnipresent, fragmented, and merged in everyday environments and practices. Although energy prosumers need to interact with an established energy company if they wish to connect to an existing energy grid and sell their excess production, energy prosuming is typically not initiated by a central organization such as an energy company. Instead, prosuming is a user-led energy transition, and thus, it is fundamentally a social phenomenon (e.g., [de Vries et al., 2016](#); [Juntunen, 2014](#); [Reid et al., 2014](#)).

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Many social scientists have argued that energy research needs a broader perspective that includes research on humans as members of their culture and as active individuals rather than just passive consumers (Henning, 2005; Nader, 2010; Strauss et al., 2013; see also Devine-Wright, 2007; Wolsink, 2012). To answer this need, studies on grassroots initiatives and community energy have become popular, stressing how people self-organize to make their energy production and/or consumption more sustainable (e.g., Martiskainen, *in press*; Middlemiss and Parrish, 2010; Sauter and Watson, 2007; Seyfang et al., 2013; Seyfang and Smith, 2007). As current literature on micro-produced energy has mainly focused on communities that can negotiate their relationships with energy companies collectively (e.g., Sauter and Watson, 2007), we focus on energy prosumers as individuals who engage in micro-production by owning and managing their own production units and examine their relationship to energy companies that administrate the grid.

Energy prosuming is driven by a mixture of technological innovations, such as affordable solar panels and the smart grid, and changing social practices in private homes. As producers and consumers, prosumers are not directly comparable to customers or any other stakeholders with whom energy companies have relations. Thus, the emergence of prosumers can challenge the previous organization-centricity in stakeholder relations, especially as prosumers can view their role as stakeholders in the issue of renewable energy instead of stakeholders to a central organization (i.e., an energy company; cf. Roloff, 2008). This perspective calls for new, less organization-centric and more reciprocal negotiations between energy companies and prosumers.

Energy prosumers and their implications for stakeholder relations have been discussed mostly from the viewpoints of engineering and technology (e.g., Bremdal, 2011; Juntunen, 2014). This article is designed to broaden the technical view by focusing on organization-stakeholder relations and individual prosumers as a challenge to the current logic of stakeholder relations. The article concentrates on the characteristics of energy prosumers and their impact on the stakeholder relations of energy companies. As energy prosumers are stakeholders who produce, the article builds on stakeholder and co-production theory to investigate the relationship between prosumers and an energy company as a *prosumer relation* that forms a new type of co-producing stakeholder relation.

The empirical section draws on non-commercial joint acquisitions of solar panels for Finnish private homes. In Finland, the energy prosuming boom is accelerating; the Finnish Ministry of Employment and the Economy (2014) estimated the number of private solar power systems would total approximately 150,000 in the next five to 10 years. This would mean a significant increase compared to the few hundred private solar power systems that were attached to the grid in 2014 (Finnish Ministry of Employment and the Economy, 2014, p. 12). Recently, the Finnish Energy Authority (2015) estimated that private solar panels are currently the fastest-growing segment of small-scale energy production. To study the emerging interaction between Finnish private solar panel owners and a local energy company, the following research questions are posed for the empirical section:

1. How were relations (re-)formed between Finnish energy prosumers and the energy company during two solar panel acquisition projects?
2. What critical issues affected the formation of these relations?

Before introducing the empirical case study and findings, the next section presents a systematic literature search that focuses on the energy prosumer and pinpoints where the contribution of this article lands.

## 2. Defining energy prosumers

Prosuming is typically characterized as a counter-force to established, centralized and standardized one-to-many hierarchies, and the idea of the prosumer as a hybrid producer-consumer dates back several decades (Schleicher-Tappeser, 2012; Toffler, 1980). In the context of energy prosuming, research can focus on very technical aspects to the extent that the device, instead of the human who owns or operates the device, is considered the actual “prosumer” (e.g., Velik and Nicolay, 2014). Thus, there are human-focused and device-focused views of who or what is an energy prosumer. We explored these views with the help of a systematic literature search.

The literature search was executed with the search terms “prosumer or prosumers” and “energy” using the Scopus database of academic literature. We focused namely on energy prosumers who are involved in the production of an everyday commodity that require certain type of equipment and investments, and often also interaction with larger infrastructures. Prosuming is a phenomenon that can be connected to different fields (perhaps most notably digitalization and media production, see Ritzer and Jurgenson, 2010), and thus its characteristics can be different depending on the settings. To cover recent research, the search was limited to a five-year period from the beginning of 2010 to the end of 2014, and the search terms were allowed to appear in all search fields. The search was performed on June 4, 2015, and it returned 81 academic articles. From this sample, only articles that fulfilled all of the following criteria were included in the analysis: (1) a complete file was available in English, (2) the article was published in an academic journal, and (3) the article mentioned prosumers in the article text (abstract and/or full text).

First, the sample that was now limited to 39 articles was first analyzed by determining whether the article only mentioned prosumers or concentrated on studying energy prosumers. Twenty-six articles that concentrated on studying prosumers were further analyzed. The focus was how energy prosumers were defined and approached in the articles. The sample concentrated on research that specifically used the term energy prosumers, although other terms, such as community

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