



Consumer behavior in renewable electricity: Can branding in accordance with identity signaling increase demand for renewable electricity and strengthen supplier brands?



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HIGHLIGHTS

- Low demand for renewable electricity contracts falls short of high market potential.
- For this study a consumer choice simulation for electricity contracts was processed.
- Higher visibility and involvement increases demand for green electricity contracts.
- Branding that enables identity signaling contributes to green energy policy goals.

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ABSTRACT

A higher percentage of energy from renewable resources is an important goal on many environmental policy agendas. Yet, the demand for renewable electricity in liberalized markets has developed much more slowly than the demand for other green products. To date, research has mainly examined the willingness to pay for renewable electricity, but limited research has been conducted on the motivations behind it. The concept of identity signaling has proven to play a significant role in consumer behavior for green products. However, (renewable) electricity in the Swedish residential market typically lacks two important drivers for identity signaling: visibility and product involvement.

A consumer choice simulation among 434 Swedish households compared consumer choices for renewable electricity contracts. The results show a positive effect of identity signaling on the demand for renewable electricity and yield suggestions for increasing the share of renewable electricity without market distorting measures. This leads to implications for policymakers, electricity suppliers and researchers.

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1. Introduction

Energy supply, including electricity production, is the largest single contributor to manmade climate change (Sims et al., 2007). The way in which energy is produced thus serves as an important factor for sustainable development (Stirling, 2014). Technological development, legislation and structural changes on energy markets offer grounds for differentiation that enable consumers to influence how markets develop (Giulietti et al., 2005; Amundsen

and Bergman, 2007; Johnsen and Olsen, 2011). If sourced by renewable electricity, the interconnected electric grid can be an important part of a sustainable energy system and a substantial contribution to reach environmental policy goals. To comply with the European Union's goal of a single European electricity market (Glachant and Lévêque, 2009), most of the national electricity markets for residential customers in Europe were liberalized between the late 1990s and now, with Sweden being one of the first countries to open its residential electricity market to competition in 1996 (Bird et al., 2002). Although sales for green consumer goods and services are constantly growing in Sweden and worldwide (Rex and Baumann, 2007), this growth is not realized to an equal degree on the Swedish and worldwide renewable electricity retail markets. The aim of this paper is to examine how branding, through *identity signaling*, can be used to increase demand for

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renewable electricity products in the setting of a liberalized retail market. To date, the role of self-identity for consumer choices has been put in relation to liberalized electricity markets by Ek (2005) and Paladino and Pandit (2012). These studies call for continued research to investigate consumer perceptions of branded energy products.

1.1. Problem background

Thus far, in countries where renewable electricity production capacity has increased sharply, growth has mainly been explained by feed-in tariffs and subsidies (Wüstenhagen and Bilharz, 2006; KPMG International, 2012). However, feed-in tariffs are increasingly perceived as distorting markets (Gardiner, 2013), which in the long term does not support a true integration of renewables in the electricity market (Sjim, 2002). However, in Sweden, the market-based green electricity certificate system¹ is the main policy instrument for fostering renewable electricity production. Unlike the Swedish–Norwegian system, support schemes for renewable electricity are primarily organized nationally, and hence, they diverge with the vision of a common European electricity market based on equal competition (EFET, 2010). However, in liberalized markets strong demand for renewable electricity products would be associated with an increase in supply, which assumes an increase in renewable production capacities. Joskow (1998) anticipates rather favorable environmental effects from competitive markets. Additionally, Markard and Truffer (2006) have identified even indirect positive influences of green electricity products on the ecology of power systems, while Littlechild (2006) expects innovative products and services. Suggested measures to foster demand for green electricity that comply with liberalized market structures include marketing, branding or labeling schemes for green electricity (e.g., Jegen and Wüstenhagen, 2001). However, implementing effective marketing strategies for green electricity² is especially challenging due to the abstract and intangible nature of the product, electricity. As a change of contract does not lead to a different physical quality of electricity for the consumer, it does not yield any direct personal benefits (Wüstenhagen and Boehnke, 2006). The separated commercial and physical flows of electricity are complex and make it difficult for consumers to understand and grasp electricity as a “product” (Ek and Söderholm, 2006).

1.2. Consumer behavior in retail electricity

To create successful marketing strategies or efficient labeling schemes, consumer behavior for electricity products and the motives behind green consumerism must be understood. Research conducted so far on consumer behavior in the electricity sector mainly concerns the willingness-to-pay for green electricity (e.g., Kaenzig et al., 2013) and switching behavior. Switching behavior arguably received much attention from researchers as the development of truly competitive electricity retail markets lags behind expectations³ (Barton, 1999; Defeuilley, 2009; Johnsen and Olsen, 2011). Wilson and Waddams Price (2010), Waddams Price and Bennett (1999) and Giulietti et al. (2005) found searching and switching costs to be a main hindrance for the unexpected low switching rates in the residential electricity and gas markets. However, to date, questions relating to consumer behavior and

consumer choice for green electricity products in particular have received little attention from academic researchers. Rundle-Thiele et al. (2008) and Paladino and Pandit (2012), among others, note the shortcomings in the literature regarding marketing renewable energy, as well as a lack in research on the motivations behind green electricity consumption (Ek and Söderholm, 2008).

1.3. Green electricity marketing

The potential for green electricity in liberalized markets, especially in the Swedish market, can be significant. In recent years, there has been substantial growth in markets for products and services that are considered green or sustainable, and these markets are expected to expand in the future (e.g., Emery, 2012; Kotchen, 2005; Rex and Baumann, 2007). As a result, sustainability has become an important branding topic (Belz and Peattie, 2012), and the simple green label creates value for a product or a brand, which, in turn, results in significant marketing benefits (Porter and Linde, 1995). We expect the value of green products or brands in Sweden to be relatively high given that Swedish consumers demonstrate a willingness to pay more for environmentally friendly products (Käberger, 2003) and that the market shares of green products are on the rise.⁴ Additionally, a study by Ek from 2005 revealed a generally positive attitude among Swedes towards wind energy, while a more recent study by von Borgstede et al. (2013) indicates that Sweden prioritizes renewable energies to resolve environmental issues with respect to Swedish public opinion.

In general, studies have indicated that the price premiums were not found to be a significant impediment to the demand for green electricity (e.g., Rowlands et al., 2003; Salmela and Varho, 2006; Paladino and Pandit, 2012; Kaenzig et al., 2013). Additionally, it has been found that consumers are, in general, more willing to pay a premium for an environmentally friendly purchase than they are to change their behavior (Visschers et al., 2009). Thus, it is more likely that people will buy renewable electricity than change their behaviors to become more energy efficient. Accordingly, we conclude a significant market potential for green electricity in Sweden, even at premium prices.

While the actual percentage of actively purchased green electricity contracts in Sweden varies according to the qualifying criteria, findings from previous years give grounds to the assumption that the percentage of contracts that represent consumer choice for renewable electricity in 2014⁵ can be expected to have risen up to between 10% and 20% (e.g., Bird et al., 2002, p. 525 [6%]; Käberger, 2003, p. 633 [7%]; Ek and Söderholm 2008, p. 170 [1%]; Flood, 2009 [5%]). Moreover, most of the electricity labeled as green was not consumed by households but by companies and institutions (Bird et al., 2002), such as the government-owned railway operator, SJ (Ek, 2005; Ek and Söderholm, 2008).

Thus, empirical reports on consumer demand and market potential are currently poorly matched.⁶ Considering the market potential, the modest price premiums in Sweden (2–5%) and the easy search and switching for consumers,⁷ we suggest that the

⁴ For example, Sweden has one of the highest and fastest growing market shares of organic foods (Willer and Kilcher, 2009) and biofuels (Swedish Energy Agency, 2010).

⁵ The Swedish electric utility Telge Energi (2015) announced in a press release on May 16, 2014 that 17% of all Swedish electricity customers chose certified electricity contracts. Official statistics that support these numbers have so far not been published.

⁶ Salmela and Varho (2006) likewise identified a major mismatch between consumer interest in buying green electricity and actual subscribers in the Finnish green electricity market.

⁷ Swedish households can compare the contract offers valid for their residence swiftly and free of charge on comparison online sites. Services such as www.el

¹ Introduced in Sweden in 2003, the system was expanded to Norway in 2012, thus establishing the common Swedish–Norwegian market for green electricity certificates (Swedish Energy Agency and Norwegian Water Resources and Energy Directorate, 2013).

² Definitions of green electricity vary widely. Acknowledging significant differences in environmental quality of various renewable electricity sources, we generalize renewable electricity as green electricity.

³ Within the process of transforming electricity markets from monopolistic to competitive, the retail market has proven to be especially slow in developing competition (Barton, 1999).

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