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Consumer engagement: An insight from smart grid projects in Europe



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HIGHLIGHTS

- Consumers' key role in the success of the future electricity system (smart grids).
- Survey on consumer engagement experiences in European smart grid projects.
- Focus is on observing and understanding the consumers and on engaging them.
- Trust and confidence as central elements.
- Need to take into consideration different consumer segments/motivational factors.

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ABSTRACT

This paper provides an insight into consumer engagement in smart grid projects in Europe. Projects analysed are those included in the catalogue annexed in the JRC Report "Smart Grid projects in Europe: lessons learned and current developments". The analysis suggests an increase in the interest in consumer engagement projects at European level and a strong focus on the residential sector, and emphasises the key importance of public funding to support these projects. The study also reveals that projects involving consumers are characterised by the pursuit of two main objectives: gaining deeper knowledge of consumer behaviour (observing and understanding the consumer) and motivating and empowering consumers to become active energy customers (engaging the consumer). The paper reviews the main activities undertaken to obtain these objectives and highlights trends and developments in the field. Finally, the paper discusses obstacles to consumer engagement and the strategies adopted by the projects surveyed to tackle them, highlighting the need to build consumer trust and to design targeted campaigns taking into consideration different consumer segments. The conclusions are in line with findings and analyses presented in the literature and underscore the need for further research and action at European level.

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1. Introduction

Growing concerns over climate change, security of power supply and market competitiveness are impacting the current power system operation and architecture, with the resulting need to integrate increasing shares of renewable energy and dispersed energy resources. The traditional paradigm of passive distribution and one way communication and flow between suppliers and consumers is being replaced by a new paradigm of active distribution that is bound to dramatically alter the role of the consumer. Indeed, the future electricity system, i.e. 'smart grid', will enable bidirectional flow of communication and electric power between suppliers and consumers, thanks to a pervasive incorporation of information and

communication technologies—ultimately transforming the traditionally passive end-users into active players.

In this context, smart grid projects are the first step towards the creation of the future electricity system. It is important, at this early stage, to understand and involve consumers in order for them to successfully assume their new role as active participants in the electricity system. As most services are simultaneously produced and consumed, it is essential for energy providers to develop closeness to their consumers during the new service development process to ensure good performance of new services.

As argued by some authors, the only aspects of the smart grid that can be truly smart are the people within it (Honebein et al., 2011). In other words, consumer action is the fundamental driver. Therefore, if we do not observe, understand, and engage consumers at these early stages, smart grid initiatives risk failing to realise their full potential (Honebein et al., 2011). This is why many argue in favour of increasing focus on consumers and their daily routines, while the smart grid community currently still focuses

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mainly on technological issues and economic incentives (Verbong et al., 2013). Observing consumers in their social context (e.g. household or community) and engaging and including them at an early stage is fundamental for the future electric power system to deliver the expected goals.

Jackson (2005) argues that sustainable consumption and consumer behaviour are key issues to the impact that society has on the environment. However, he acknowledges the challenges and difficulties of changing consumption behaviours and motivating consumers. Consumption (of goods or services) is important not only for its functional uses but also because it plays a symbolic role in peoples' lives as it conveys discourses about status, identity, social norms and social cohesion. Moreover, consumers are mostly locked into unsustainable consumption patterns influenced by routines, social norms and expectations as well as incentive structures, institutional barriers and restricted choice. Jackson (2005) argues that consumers are guided as much by social norms and the behaviour and opinions of people around them as by personal choice. This is an acknowledgement of the complexity associated with negotiating, engaging and motivating pro-environmental consumer behaviours and with the development of appropriate engagement strategies.

Some authors view customer engagement as a psychological process comprising cognitive and emotional aspects (Brodie et al., 2013), where customer engagement includes calculative as well as affective commitment and trust. In particular, studies in the psychology of energy use show that the most effective and successful information strategies that engage the consumer in energy conservation are those that include individualised social marketing approaches (Steg, 2008), which provide information that is tailored to the needs and wants of individual segments of consumers and strategies that provide information about the behaviour of others (Abrahamse et al., 2005; Allcott, 2011). Consumer engagement in sustainable technology is influenced by attitude, social norms, perceived behavioural control and personal norm. In particular, attitudes can be influenced by such important factors as confidence, trust and distributive fairness (Huijts et al., 2012).

The role of engagement and involvement of consumers in sustainable consumption is also acknowledged by the EC Task Force for Smart Grids: “the *engagement* and *education* of the consumer is a key task in the process as there will be fundamental changes to the energy retail market. To deliver the wider goals of energy efficiency and security of supply there will need to be a significant change in the nature of customers' energy consumption (...). A lack of *consumer confidence* or choice in the new systems will result in a failure to capture all of the potential benefits of Smart Meters and Smart Grids” (EC Smart Grid Task Force, 2010, p.5). The terms *engagement*, *education* and *confidence* emerge as key factors for smart grids success. The recent European communication on smart grids (European Commission, 2011) further recognises the importance of consumer awareness and underlines how “developing Smart Grids in a competitive retail market should encourage consumers to change behaviour, become more active and adapt to new ‘smart’ energy consumption patterns” (European Commission, 2011, p.10). However, the Communication also recognises the uncertainty linked to this new technology: “Neither is there clarity on how to integrate the complex Smart Grids systems, how to choose cost-effective technologies, which technical standards should apply to Smart Grids in the future, and whether *consumers will embrace the new technology*”, (European Commission, 2011, p 4).

European consumer policy is mainly based on the assumption that the consumer is a rationally acting individual and has its roots in the information paradigm that suggests that the consumer is able, willing and competent to deal with the *information* provided and to take informed rational decisions. The consumer is regarded as an individual where the collective dimension of consumer

behaviour is still largely set aside (Micklitz et al., 2011). However, there is evidence that suggests that for the deployment of smart grids it may not be sufficient to address the complexity of the needed behavioural change with an individualistic approach (Jackson, 2005). The social dimension of consumer behaviour and engagement equally needs to be carefully taken into account (Allcott, 2011; Huijts et al., 2012).

Our study takes the perspective of the European project developers (DSO, research, energy companies). The aim is to present a snap shot of the current development in consumer engagement strategies in smart grid projects in Europe. This work is based on the analysis of the smart grid projects presented in the JRC Reference report “Smart Grid projects in Europe: lessons learned and current developments” that up to present represents the most extensive catalogue of smart grid projects in Europe (Giordano et al., 2011).

Out of the 219 projects presented in the catalogue those with a main or secondary focus on consumer engagement were singled out and approached with a more specific questionnaire. The aim was to collect additional information on key aspects of customer engagement, to identify the main activities being undertaken and to identify possible future challenges in consumer engagement. We acknowledge the relatively small number of projects with a focus on consumer engagement. However, though limited, the analysis presents the most recent overview of the current trends at European level on consumer engagement in smart grid projects. Moreover, this small number is in itself a finding that indicates that more work is needed in order to include and better understand the focal role that consumer engagement plays for the success of the smart grid paradigm.

The paper presents the methodology in Section 2. Section 3 discusses the main findings of the survey, while Section 4 highlights projects' success strategies for consumer engagement and future challenges. Finally, Section 5 provides concluding remarks on the presented analysis.

2. Methodology: survey design and data collection

The projects included in the catalogue annexed in the JRC Report (Giordano et al., 2011) were thoroughly screened to identify and analyse those with a focus on consumer engagement. We considered both projects where consumer engagement represented the only objective and projects where it represented only a stage of a larger initiative.

At the end of the screening process, 55 projects out of 219 were identified as having a focus on consumer engagement. A questionnaire was distributed to the respective project coordinators to gather more detailed information about the projects' objectives, targeted sectors, motivational factors, successful strategies and obstacles to consumer engagement. The analysis of the projects revealed that projects involving consumers are characterised by the pursuit of two main objectives: gaining deeper knowledge of consumer behaviour (*observing and understanding the consumer*) and motivating and empowering consumers to become active energy customers (*engaging the consumer*). These two objectives are strongly interrelated and many projects pursue both of them simultaneously. Clearly, the observation of consumer behaviour is of paramount importance for the design of any project aiming at engaging the consumer, but it is also key to its success, as it enables the fine-tuning of the engagement strategy to the reactions of consumers.

The screening of the selected projects highlighted some recurring activities that can be summarised according to the two following objectives:

Objective 1: observing and understanding the consumer

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