



# Responding to policy change: New business models for renewable energy cooperatives – Barriers perceived by cooperatives' members



Carsten Herbes<sup>a,\*</sup>, Vasco Brummer<sup>a</sup>, Judith Rogli<sup>a</sup>, Susanne Blazejewski<sup>b</sup>, Naomi Gericke<sup>b</sup>

<sup>a</sup> Nuertingen-Geislingen University, Institute for International Research on Sustainable Management and Renewable Energy (ISR), Neckarsteige 6–10, 72622 Nuertingen, Germany

<sup>b</sup> Alanus University of Arts and Social Sciences, Chair for Sustainable Organization and Work Design, Villestraße 3, 53347 Alfter, Germany

## ARTICLE INFO

### Keywords:

Renewable energy  
Cooperative  
Community energy  
Business model  
Feed-in tariff

## ABSTRACT

Renewable Energy Cooperatives (RECs) in Germany have received considerable attention in recent years, their number having risen to nearly a thousand since 2004. This growth has resulted largely from Germany's feed-in tariff system. Recent changes in this policy, however, have made the previous REC business models mostly unprofitable, so RECs are looking for new business models. Our study aims at identifying those new models and characterizing the implementation barriers RECs face. To this end, we interviewed REC members and management and observed REC annual general meetings. We found three significant barriers: first, risk aversion on the part of both members and management; second, concerns about the environmental impacts or the ethics of certain models that, while legal, are not felt to align with the intentions of lawmakers; finally, the lack of competencies and time of the mostly unsalaried REC management. These barriers could put the future of RECs at risk, and so threaten the contributions RECs make to the German Energy Transition. Professionalization, partnerships and other strategies can help mitigate this risk. If RECs are to continue to play an important role in the energy transition, policy makers would be wise to consider measures to support their continued growth.

## 1. Introduction

Community energy projects, especially renewable energy cooperatives (RECs), have become an increasingly important element of energy markets in many European countries (Viardot et al., 2013; Bauwens et al., 2016). In Germany, they have changed the long-unaltered structure of the energy market by adding a new type of player. By the end of 2014, 973 RECs (Müller and Holstenkamp, 2015) were operating in Germany (Fig. 1), with the renewable energy facilities of the 772 RECs founded since 2006 alone accounting for a total electrical capacity of approximately one Gigawatt (DGRV, 2015).<sup>1</sup>

RECs focus their business on energy from renewable resources. As such, they contribute to the transition to a more sustainable energy infrastructure. Because of their egalitarian governance structure, where all members have one vote regardless of the size of their investment (Yildiz et al., 2015), RECs offer opportunities for democratic governance of renewables while providing economic payback to the investing communities. They often have strong regional ties and in Germany are said to increase public acceptance of the energy transition (Klagge et al., 2016).

German energy policy has played a key role in driving growth in the REC sector. First, the German Renewable Energy Act (REA) established a favorable feed-in-tariff (F.I.T.) for electricity from renewable resources, especially from photovoltaics (Yildiz, 2014). Second, the German Cooperative Law facilitated the process of establishing a new REC (Volz, 2012; Klagge et al., 2016). Finally, the liberalization of the German energy market in the late 1990s made an important contribution (Menges, 2003). Recently, the German government has provided special regulation for RECs to participate more easily in auctions for wind power, a means to achieve the promulgated goal of keeping a diversity of actors (Federal Ministry for Economic Affairs and Energy, 2016).

Most RECs have relied on an easily scalable, simple and low-risk business model where they produce electricity via photovoltaic (PV) systems and receive the F.I.T. stipulated by the German REA (Yildiz et al., 2015; Sagebiel et al., 2014). To put this in perspective, of 754 cooperatives in the study by Holstenkamp and Müller (2013), 431 focused on solar energy. A survey from 2014 (Klagge et al., 2016) showed that nearly 80% of all regional RECs and more than 80% of

\* Corresponding author.

E-mail addresses: [carsten.herbes@hfwu.de](mailto:carsten.herbes@hfwu.de) (C. Herbes), [vasco.brummer@hfwu.de](mailto:vasco.brummer@hfwu.de) (V. Brummer), [judithrogli@gmail.com](mailto:judithrogli@gmail.com) (J. Rogli), [susanne.blazejewski@alanus.de](mailto:susanne.blazejewski@alanus.de) (S. Blazejewski), [naomi.gericke@posteo.de](mailto:naomi.gericke@posteo.de) (N. Gericke).

<sup>1</sup> The figures by Holstenkamp / Müller and DGRV are not fully comparable.

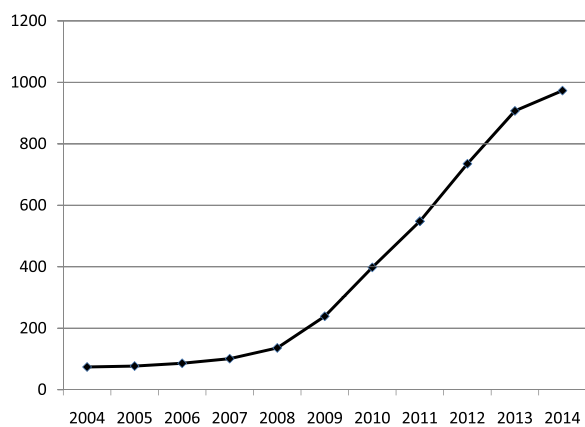


Fig. 1. Development of RECs in Germany. Müller and Holstenkamp (2015) and Kayser (2014).

supra-regional RECs relied on the F.I.T. policy for their revenue stream. Around 80% of the RECs in the survey relied on PV systems. Wind and other technologies were far less widely used.

REC sector growth, however, has been hampered by two recent policy changes. First, in July 2013, Germany adopted the Capital Investment Act (CIA; German: Kapitalanlagegesetzbuch, KAGB) to implement the European Union Directive 2011/61/EU on Alternative Investment Fund Managers. This changed German investment law, and until March 2015, uncertainty about how these changes would affect RECs had both limited the development of non-PV business models and curtailed the number of new RECs (Müller and Holstenkamp, 2015).

Finally, in March 2015, the German Federal Financial Supervisory Authority (BaFin) ruled that in most cases cooperatives do not fall under the CIA (BaFin – Federal Financial Supervisory Authority, 2015). Before this ruling, the BaFin had reasoned that an investment into other companies or cooperatives that amounted to more than 10% of the assets of a REC came under CIA regulations (BBEn, 2014). Had that reasoning stood, RECs investing in larger projects would have had to go through a cumbersome registration process with the BaFin. Even more onerous, they would have had to show that management had the qualifications necessary for running an investment business. Most cooperatives would have failed this test since RECs generally operate with a non-salaried management team that lacks a background in fund management.

Before the March 2015 ruling, RECs had restricted their non-PV strategies to limited investments in large-scale third party projects, the second most important revenue model of RECs (Klagge et al., 2016). These investments neither overtaxed the REC resources nor exceeded the members' risk tolerance. The lingering uncertainty around the CIA, however, affected plans for RECs to invest in larger projects not developed and operated by themselves. As a consequence, many RECs developed an investment backlog that they are still trying to clear.

A second policy change impacting REC sector growth has been reforms to the REA (Klagge et al., 2016; Yildiz, 2014). With these reforms, the German government implemented sharp reductions in the F.I.T., making PV installations far less profitable. These reductions prelude Germany's transition from a fixed-tariff support system to a tendering system in which prospective producers of renewable energy have to develop projects and bid on a government tender. The government then chooses the projects with the lowest production cost.

These changes have driven profit levels down while driving revenue risk up. Significant risk is now placed on bidders who have to invest in developing projects without knowing if their bids will be accepted. The latest reform of the REA (2016) provides special regulations aimed at lowering the risk for "citizens' energy projects", among them REC projects (Federal Ministry for Economic Affairs and Energy, 2016).

RECs, other than their competitors do not have to obtain a permit according to the Federal Immission Control Act before submitting a bid, but still need to invest into wind assessment and other expert services to develop projects, meaning they run the risk of losing investment capital.

These two changes – disruptive changes to the REA and uncertainties around the CIA – drove the number of new establishments in the REC sector down in 2014 and 2015. In 2015, only 40 RECs were founded, while the number in 2011 was 167 (DGRV, 2016). While the CIA uncertainties have in principle been resolved, the long-term REA impacts are only beginning to be felt. The net result is that RECs must now consider alternative methods of operation. In other words, RECs now face a new challenge: business model innovation.

Applying the business model concept to RECs may seem unorthodox, as the concept has been developed to analyze for-profit companies organized as corporations. But its fundamental definition – "The logic of the firm, the way it operates and how it creates value for its stakeholders" (Baden-Fuller and Morgan, 2010) – also applies to cooperatives. However, cooperatives define "value" differently than do corporations. In cooperatives, value for the members arising from the business model includes, of course, the return-on-investment value represented by dividend payments. But additional values accrue to members: the opportunity to source energy at attractive prices; the "ideological surplus value" (Klagge et al., 2016: 244), or psychological utility gained by buyers of green electricity (Hartmann and Apaolaza-Ibanez, 2012); and the public benefit provided by the REC (Wüstenhagen and Boehnke, 2008). These additional values also often differentiate the RECs' business models from those pursued by for-profit organizations. The business model concept has in the past also informed research on non-profit organizations (Byerly, 2014; Cooney, 2011; Maguire, 2009).

Moreover, business models for renewable energy have received increased attention from researchers and practitioners in recent years (Richter, 2012, 2013a, 2013b; Aslani and Mohaghar, 2013; Behrangrad, 2015; San Román et al., 2011; Strupeit and Palm, 2016; Klagge et al., 2016; Hall and Roelich, 2016; Engelken et al., 2016). But although authors frequently use the term 'business model' they often refer only to one or few elements of the business model concept. E.g. Yildiz (2014) focuses on the way citizens invest money into renewable projects, i.e. on the investment vehicle and Klagge et al. (2016) refer to business models but mainly focus on key resources (location of the RE facilities and investors) as well as revenue streams. Business model elements have been used for categorizing RECs (Holstenkamp, 2012). Holstenkamp (2012) presents various approaches from the literature for categorizing RECs. They are mainly based on the RECs activities such as energy production or consulting (e.g. Theurl, 2008; Flieger, 2008). He also presents one approach by a regional cooperatives' association that is partly based on the question whether the REC partners with a local cooperative bank or municipality. The business model concept has also been applied to community energy (Walker, 2008; Juntunen and Hyysalo, 2015; Lund et al., 2010).

Still, RECs differ from joint stock companies or other types of business entities in one important characteristic: cooperatives operate under a democratic decision-making model where each member has one vote regardless of the size of his or her investment. This does not mean that the decision to adopt a new business model has to be made by the members at the annual general meeting (AGM). Provided the Articles of Association of the REC are written in broad enough terms, management can proceed with business model innovation without formal voting by the members. However, many managers abide by the egalitarian spirit of the REC and seek to legitimize decisions by taking them to the AGM. Besides, members can always replace a management team that adopts a business model unacceptable to the majority.

Hence any new business model needs to find acceptance by both members and management. The fact that each member has one vote regardless of the size of their investment means that management has

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