



# Energy cooperatives in Germany – an example of successful alternative economies?

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## ABSTRACT

Because of their democratic governance and value-driven approach cooperatives are often regarded as a prime example for alternative economies and contributing to (more) equitable economic development. Furthermore, they theoretically combine production and consumption and are often regionally-oriented. The recent boom of German renewable-energy cooperatives provides an interesting example of how cooperatives can also make an important contribution to sustainable development, here the German energy transition, and its social acceptance. The paper will first show how a specific regulatory environment supported this development and then analyse how German energy cooperatives cope with legal changes leading to less favourable institutional conditions. Based on a comprehensive survey, we examine whether they can, apart from their legal form, be regarded as alternative economies. Our analysis is guided by a set of criteria derived from Gibson-Graham's diverse-economies framework, including voluntary and paid work, (origin of) borrowed capital, size and structure of membership, business goals and strategies, especially after the legal changes, as well as regional orientation. We will show how different categories of German energy cooperatives differ with regard to their business models, alternative-economy characteristics and coping strategies. The future development of energy cooperatives in Germany will very likely be as diverse as their recent history, thus illustrating the diversity of alternative-economy organisations as stipulated by Gibson-Graham. Most of them, however, deal with the new regulatory environment pro-actively and are developing business models, which are independent from public support and might lead to new cooperative strategies at the shifting interfaces between state, market and civil society.

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## 1. Introduction

Cooperatives are often regarded as a prime example for alternative economies (see Lötzer, Giegold, and Embshoff 2008, 209; Müller et al. 2015, 89). Each cooperative member has, regardless of the number of owned shares or capital contribution, only one vote, which distinguishes cooperative members from shareholders of other firms. Cooperatives are therefore the most participatory and democratic form of economic organisation (Klemisch and Boddenberg 2012, 577) and thus contribute to a (more) equitable economic development. Furthermore, they are “driven by values not just profit” (ICA 2011). In combination with their often regional orientation, these principles “are regarded as success factors which help to increase local acceptance” of renewable energy (Viardot, Wierenga, and Friedrich 2013; Klagge et al. 2016, 245; Süsser, Döring, and Ratter 2017).

These are important aspects to explain why energy cooperatives have played – so far – an important role in the sustainable transition of the German energy system (Müller et al. 2015, 98; Klagge et al. 2016, 243). Energy is an important challenge for sustainable development. Most importantly, the traditional and still dominant generation of power and heat using fossil fuels causes pollution, health problems and significantly contributes to climate change (IPCC 2012, 2015). Furthermore, the energy system is characterised by large structures and conglomerates, resulting in an uneven distribution of its negative impacts and associated with unequal power relations entailing very few political co-determination opportunities or even rights for citizens (Hamhaber 2007, 21; Ohlhorst 2009, 90). In contrast, energy cooperatives are a tool for directly involving citizens in the generation and distribution of energy (Becker, Moss, and Naumann 2017; Becker and Naumann 2017). Therefore, cooperatives contribute to “energy justice” (Sovacool and Dworkin 2014, 5). They improve to equitably share “both the benefits and burdens involved in the production and consumption of energy services, as well as one that is fair in how it treats people and communities in energy-decision-making” (Sovacool and Dworkin 2014, 5). Overall, they can be regarded as an experiment “with the ethical dynamics of building community economies on the ground” (Gibson-Graham and Roelvink 2009, 323) and are thus an, also politically, interesting topic.

The success of energy cooperatives in Germany was closely related to favourable feed-in-tariffs (FITs) guaranteed by the “Renewable Energy Law” (EEG) and driven by a demand for an alternative, sustainable energy supply and the rejection of monopolistic utility companies (Elsen 2011, 100; likewise Flieger 2011, 59). However, energy cooperatives (can) also generate profits and hand out dividends and can therefore become a lucrative investment opportunity (see Klemisch and Boddenberg 2012, 571f). There is empirical evidence that financial considerations have so far played only a minor role for membership in energy cooperatives, which confirmed the assumption that they can be regarded as alternative investment and economy (Bauwens, Gotchev, and Holstenkamp 2016; Holstenkamp and Kahla 2016). The recent cuts, the out-phasing of FITs and the shift towards a more market-based approach in the hitherto very favourable regulatory environment for energy cooperatives provide an interesting opportunity to examine the development of energy cooperatives. We will show that there is a diversity of different ways and strategies to cope with institutional change and an environment that does not allow for simple business models with relatively easy and risk-free profit opportunities anymore.

The main focus of this paper is to analyse in which ways energy cooperatives and their (revised) strategies constitute an alternative to traditional capitalist enterprises.<sup>1</sup> Based on the diverse-economies framework by Gibson-Graham, we will develop a set of criteria which we will use to analyse the most recent development of energy cooperatives and their strategies at the shifting interfaces between state, market and civil society. To situate this conceptualisation and our empirical research questions, we will discuss the core principles of (energy) cooperatives and take a closer look at recent developments in Germany (chapter 2). Our methodology is based on a recent survey of German energy cooperatives (chapter 3). In our empirical analysis, we will use our survey data to explore energy cooperatives with respect to their alternative-economy characteristics and coping strategies (chapter 4). We will then summarise and discuss our results (chapter 5) and close with conclusion and outlook (chapter 6).

## 2. Energy cooperatives and alternative economies – a conceptual framework

Cooperatives are not a new phenomenon, but have existed for more than 150 years. They were developed as self-help organisations in the absence of, or as an alternative to, mainstream economic organisations, specifically large hierarchically organised firms (section 2.1). While there are some early examples of energy cooperatives (Maron and Maron 2012), the most recent boom is the result of very specific institutional conditions (section 2.2). We will then relate these developments to the diverse-economies framework by Gibson-Graham (section 2.3) and present our research questions (section 2.3).

## 2.1 Cooperative roots and principles

The first cooperatives in Germany were founded in the middle of the nineteenth century in the context of profound socio-economic changes during the industrialisation of the country. As locally embedded grassroots organisations, cooperative members collectively pursue mutual goals and seek to improve the conditions for their fellow members. Based on the fundamental principles of (collective) self-reliance and self-help, cooperatives are distinguished by three core principles: (1) Member-orientation: Cooperatives pursue economic, social or cultural concerns of their members. (2) Principle of identity: Members are providers and users (or producers and consumers) at the same time. (3) Principle of democracy: Whereas in other enterprises shareholders usually have votes according to their share ownership, in cooperatives each member usually has only one vote regardless of the number of owned shares (Schröder and Walk 2014; Blome-Drees et al. 2015).

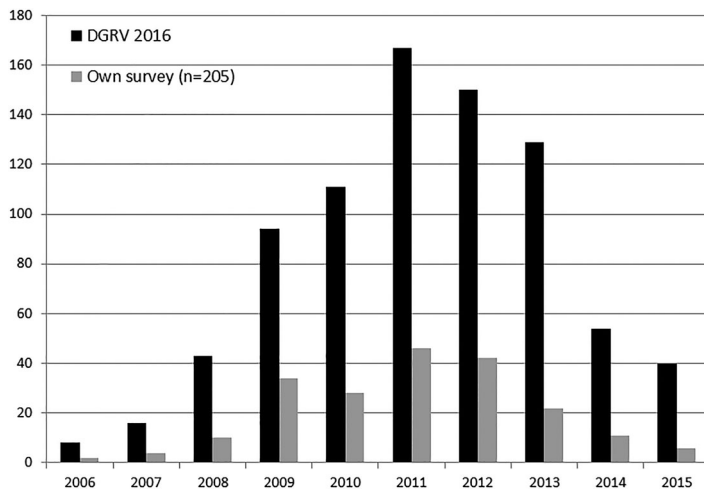
In sum, cooperatives are unlike “capitalist” corporations; rather they are “firms that are owned by their users rather than by their investors” (Huybrechts and Mertens 2014). Therefore, cooperatives are often characterised as alternative economies (see Gibson-Graham 2006; Lötzer, Giegold, and Embshoff 2008, 209; Müller et al. 2015, 98). Nonetheless, cooperatives are also firms which can generate profits and hand out dividends to their members. Especially in a low-interest rate context, membership in a cooperative can become a lucrative investment opportunity (see Klemisch and Boddenberg 2012, 571f). This is especially the case when institutional conditions allow cooperatives to pursue low-risk business strategies, as was the case for German energy cooperatives.

## 2.2 The recent boom of energy cooperatives in Germany and its end

The boom of German energy cooperatives started in 2006 when the amendment of the German Cooperatives Law (GenG) facilitated the establishment of new cooperatives. Many of the newly established energy cooperatives based their business case on FITs guaranteed by the Renewable Energy Law (EEG) which was passed to promote renewable energies and provided a simple, but at the same time rather lucrative and almost risk-free business and investment opportunity and business strategy. The EEG was originally passed in 2000 as an important milestone in the German energy transition towards renewable energies, and has since then been amended several times. Together, the EEG and the GenG amendment are considered as the major drivers for increasing the number of newly established energy cooperatives (Volz 2012; Debor 2014; Engerer 2014). According to the umbrella organisation of German cooperatives (Deutscher Genossenschafts- und Raiffeisenverband - DGRV), 812 energy cooperatives were founded after the amendment of the Cooperatives Law in 2006 (DGRV 2016, 4; see Figure 1).

The EEG amendment of 2014 led to a phase-out of FITs and to the introduction of auctions and tender procedures for renewable electricity production, thus rendering the most important (FIT-based) business strategy of many small(er) players like RE-cooperatives unfeasible. Rather, the need to participate in auctions and tender procedures confronts them with higher transaction costs, increased financial risk and additional hurdles. Not surprisingly, this marks the end of the boom of energy cooperatives in Germany (Klagge et al. 2016). There were only 54 new energy cooperatives founded in 2014 and 40 in 2015, as opposed to 129 in 2013 and 150 in 2012 (DGRV 2016, 4; for slightly different figures, see Müller and Holstenkamp 2015).

Preceding and following the 2014 EEG amendment there has been an intensive debate on whether energy cooperatives and other smaller and locally embedded investors should be provided with special privileges (BMW 2015, 2016; Ecofys 2015). Due to their democratic organisation, mostly local or regional orientation and the opportunity for direct participation of individuals they are widely regarded as a major success factor of the German energy transition and its acceptance (Viardot, Wierenga, and Friedrich 2013; Klagge et al. 2016, 245; Süsser, Döring, and Ratter 2017). Also, energy cooperatives epitomise the transition from a rather centralised energy system towards a more decentralised system (Blome-Drees et al. 2015). More specifically, the number and types of actors



**Figure 1.** The boom of German energy cooperatives and its representation in our sample by foundation year, 2006–2015 (Sources: DGRV 2016, 4; own survey).

involved in energy production and distribution have increased immensely, many of them, and not only energy cooperatives, with a regional orientation (Maron, Klemisch, and Maron 2011). This development has been regarded as positive by many and thus also contributed to the acceptance of the energy transition and its implications for landscape changes and other impacts from renewable-energy facilities (Viardot, Wierenga, and Friedrich 2013). As a reaction to the debate on problems and challenges resulting from the EEG amendment for energy cooperatives as well as for other smaller players, additional legislation passed in 2016 has facilitated their participation in tender procedures and eased some of the imposed restrictions and requirements (BMWi 2016).

Energy cooperatives have thus played an important role in the German energy transition. However, in the changed institutional context they, as well as other smaller actors and investors, have to rethink and adapt their strategies to a more market-oriented environment. This might lead to conflicts with the motivations for engagement in and goals of energy cooperatives. According to various surveys, there used to be a strong focus on making a contribution to Germany's renewable-energy transition and to sustainable development, on local empowerment and economic democracy, whereas financial or market-oriented goals such as high dividends and growth were mentioned less often or as less important (trend:research GmbH and Leuphana Universität Lüneburg 2013). The aforementioned goals as well as the associated strategies can be loosely characterised as alternative and will be conceptualised more systematically in the following section.

### **2.3 Energy cooperatives as alternative economies: a criteria-based approach**

There is a controversial debate on what distinguishes “alternative” economies from capitalism(s), their various forms (e.g. Hall and Soskice 2001) and, more generally, capitalist structures (for overviews, see Zademach and Hillebrand 2013; Schulz and Bailey 2014; Krueger, Schulz, and Gibbs 2017). This includes debates on degrowth/decroissance (e.g. Jackson 2009; Latouche 2010; Demaria et al. 2013), postgrowth (e.g. Seidl and Zahrnt 2010; Paech 2013), green economy/growth (e.g. UNEP 2011; Brand 2012; Bailey and Caprotti 2014; Brown et al. 2014) as well as more general approaches on resources, local, sustainable and solidarity economies/economics (e.g. Jackson 2011; Le Blanc 2011). Interestingly, growth is seen as an important, and often negatively connotated, aspect in various alternative-economy approaches, especially in degrowth approaches (e.g. Krueger, Schulz, and Gibbs 2017). However, it should be noted that growth does not have to be negative per se.

Rather, it can – up to a certain degree – improve welfare, as long as it does not contribute to (increased) resource depletion or causes (additional) environmental or social harm (Seidl and Zahrnt 2010). This paradox can be overcome, some argue, by fostering the selective growth of those businesses and sectors that are based on a more sustainable resource use, non-profit-oriented goals and alternative modes of ownership (Kunze and Becker 2015).

The most prominent and comprehensive conceptualisation on alternative economies is provided by Gibson-Graham with their work “The end of capitalism (as we knew it)” (Gibson-Graham 1996), followed by “A postcapitalist politics” (Gibson-Graham 2006). At the core of their work, Gibson-Graham wants to expand the understanding of different forms and varieties of the economy, thus challenging “hegemonic visions of normative capitalist development and open [...] up the possibility for alternative localized pathways” (Hillebrand and Zademach 2013). And, as part of a political program, with the development of a different economic language they also try to foster “conditions under which images and enactments of economic diversity (including noncapitalism) might stop circulating around capitalism [...] and stop being seen as [...] departures from the norm” (Gibson-Graham 2006, 56).

To systematise the broad variety of alternative economies and approaches, Gibson-Graham (2006; also see Gibson-Graham, Cameron, and Healy 2013) developed their so-called diverse economy framework. In this framework, they account for up to five dimensions of alternative forms of economic activities – namely labour, enterprise, transactions, property and finance – and contrast the capitalist manifestations of these dimensions with, often more than one, alternative expression. In this section, we will apply these to cooperative principles and characteristics and develop a set of criteria for the analysis of energy cooperatives (Table 1). Local embeddedness or regional orientation, which is regarded as an important characteristic and success factor of energy cooperatives, is not an explicit part of Gibson-Graham’s framework. However, they are often – albeit controversially (cp. Featherstone et al. 2012) – discussed as a feature of alternative-economy organisations (Johanisova, Crabtree, and Frankova 2013). We will therefore include geography as an additional cross-cutting dimension in our analysis.

The organisation and remuneration of **Labour** is an important aspect in distinguishing alternative economies from capitalist economies. Whereas in capitalist economies wage labour is the norm, alternative approaches often rely on voluntary and unpaid work. Voluntary work can clearly be seen as an alternative approach which according to an older survey has played a large role in the development of energy cooperatives (Volz 2012). Nonetheless, in some energy cooperatives wage labour complements voluntary work in the form of salaried positions. It will be interesting to see to what extent the recent legal changes might lead to an increasing importance of paid work/salaried work as a strategy to cope with the growing risk and complexity in the new institutional environment.

A cooperative as a legally defined **Enterprise** with formal ownership titles, i.e. members’ shares, represents a clear deviation from the capitalist norm due to the principle of democracy. In addition,

**Table 1.** Diverse-economy framework and criteria for analysing energy cooperatives (based on Gibson-Graham 2006, 71; Gibson-Graham et al. 2013, 14; also see Hillebrand and Zademach 2013, 17).

Labour	Enterprise	Property	Transactions	Finance
Wage	Capitalist	Private	Market	Mainstream market
Alternative paid	Alternative capitalist	Alternative private	Alternative market	Alternative market
Unpaid	Non-capitalist	Open access	Non-market	Non-market
<b>CRITERIA for analysis of energy cooperatives</b>				
Voluntary/unpaid work	Profit orientation and dividend payments	Size and structure of members, especially municipalities and other non-firms as members	Members are owners and users/consumers	Borrowed capital, especially from cooperative banks
Salaried positions/wage labour	Non-financial goals Growth orientation and strategies		Distribution channels	

**GEOGRAPHY:** Local embeddedness and regional orientation of activities and members

in capitalist enterprises the main goal is profit-making through high dividends and increasing shareholder-value and often also growth. In contrast, cooperatives often pursue a broader set of goals including non-financial, e.g. social and, especially in the case of energy cooperatives, environmental goals (Holstenkamp and Kahla 2016). However, the mix of goals can be very different between cooperatives, and financial goals and dividends as well as growth strategies might also be pursued. It is against this background that in our empirical investigation we will examine cooperatives' goals and strategies.

What distinguishes cooperatives and marks them as alternative economy more clearly than their often less profit-oriented set of goals is their specific concept of **Property**. This includes the principle of one person – one vote (cp. section 2.1) as well as the important role of private individuals and other non-firms as shareholders/members. According to Clemens (2006), there is a connection between internal democracy on the one hand and individual commitment, such as voluntary work, on the other hand. However, formal democracy is not necessarily associated with broad membership participation which might become more challenging in larger and geographically disperse cooperatives. "[T]he larger and richer and more formalized the organization, the fewer the opportunities for participatory governance and democratic socialization of members" (Clemens 2006, 210; see also Rommel et al. 2016). Size, structure and geography of a cooperative's membership can therefore serve as proxies for the feasibility of the broad participation in the internal democracy of a cooperative.

Local embeddedness and regional orientation, as criteria of the cross-cutting **Geography** dimension, are often associated with alternative-economy organisations, as reflected in debates about local economies and more specifically community energy (Bauwens, Gotchev, and Holstenkamp 2016; Süsser, Döring, and Ratter 2017). With respect to German energy cooperatives, they are also regarded as important features for their success in Germany (see section 2.2) and distinguish them from large utilities as incumbents in the energy sector, and are also reflected in the British debate on community energy. However, in the new institutional context where the protected niche of FITs is being curtailed, energy cooperatives are increasingly subject to competition with other smaller and larger players in the energy market. In this situation, economies of scale are becoming more important (Klagge et al. 2016) and might lead energy cooperatives to pursue diversification, geographical expansion and more generally growth strategies.

The **Transactions** dimension relates to how activities and relationships with members/shareholders and external partners are organised across geographical scales. For energy cooperatives, this includes the already mentioned issue of voluntary labour and in-kind provision of goods and services, i.e. whether and to what extent members are users or consumers (principle of identity). In addition, we will look at distribution (channels) and to what extent electricity-generating cooperatives rely on FITs. Regarding local embeddedness, we will also examine to what extent these cooperatives sell electricity to local customers without grid transmission charges, the so-called in-place-marketing.

The **Finance** dimension focusses on who and how cooperatives finance their activities. The conservation option would be to concentrate on equity provided by members without any borrowed capital. Financially, however, some borrowed capital is often advantageous and might be necessary to enable or facilitate certain activities or growth. There are various options of borrowed capital, which Gibson-Graham view as more or less alternative. In our analysis, we will focus on capital borrowed from cooperative banks as an alternative source.

## 2.4 Research questions

As can be seen from the above explanations, the five plus one dimensions are not analytically separate, and the boundaries between them are dynamic and fluent. This, together with the set of criteria developed to analyse them, reflects the "great variety of noncapitalist practices" pointed out by



Gibson-Graham (2006, xxxii). In the following, the criteria will be used as a guideline to examine energy cooperatives and their diversity and to explore the following research questions:

- To what extent can energy cooperatives, apart from their legal form, be regarded as alternative economies?
- Which dimensions of alternative-economy organisations are especially relevant for energy cooperatives?
- Are there different expressions of alternative-economy dimensions and is there a distinction between different types of energy cooperatives?
- How do (different types of) energy cooperatives deal with the new regulatory context?

### 3. Methodology and overview of surveyed energy cooperatives

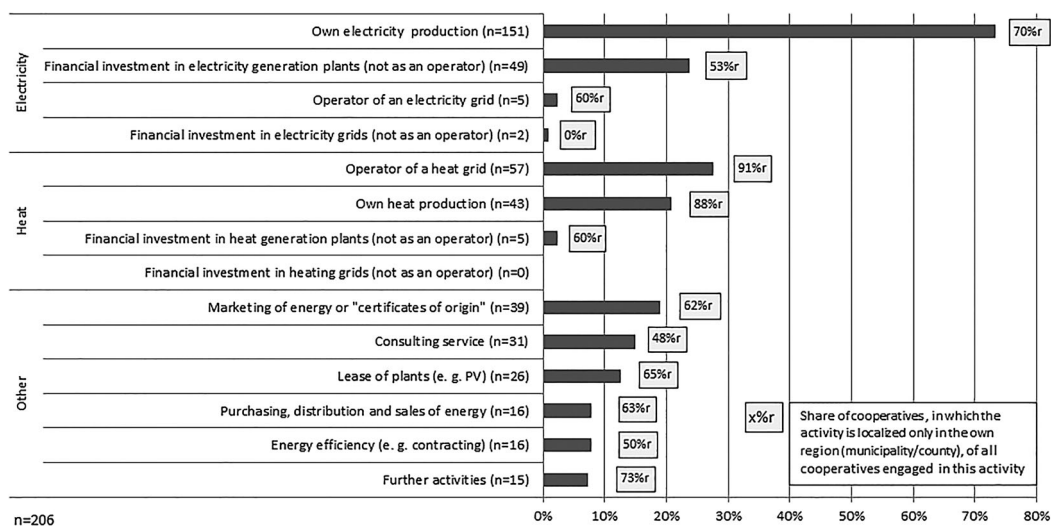
To better understand German energy cooperatives' most recent development and prospects for the future, we have conducted a comprehensive survey, which operationalises the criteria developed in section 2.3 through indicators as shown in Table 2. While some of the indicators just reflect facts and figures, others are based on the self-assessment by the respondents. The respondent usually was a member of the supervisory or executive board of the cooperative so that the answers can in general be regarded as fairly reliable.

For our survey, we identified 828 active energy cooperatives in Germany which were contacted by mail in late 2016 with several rounds of reminder per mail and/or telephone. Until March 2017, a total of 213 cooperatives participated in our survey (response rate >25%) which allowed a paper-based ( $n=84$ ) or an online response ( $n=129$ ). Our sample well represents the dynamic age structure of all energy cooperatives (cp. Figure 1), which can be explained by major legislative changes in 2006 (GenG), 2000, 2012 and 2014 (EEG) (see section 2.2). The five energy cooperatives founded before 2006 reflect very special circumstances: Four of them were already established in the first half of the twentieth century (between 1910 and 1922) and operate electricity grids, an otherwise not very prominent activity (cp. Figure 2). Another younger cooperative was founded in the 1990s as a provider of green energy and is today one of the largest energy cooperatives in Germany. Four out of five of the older cooperatives have well-above-average figures for members, including one cooperative with more than 20,000 members. Because of their specificity, these five older cooperatives will be excluded from the following analysis, resulting in a sample of 208.

An overview of the activities shows that electricity-related activities, and specifically own electricity production, are most important (Figure 2).<sup>2</sup> The second main activity, however, is heat-related, namely the operation of a heat grid, whereas activities which are neither directly electricity- nor heat-related are much less important. Not surprisingly heat-related activities are overwhelmingly local or regional, whereas there is a greater variety for electricity-related and other activities.

**Table 2.** Indicators for empirical analysis.

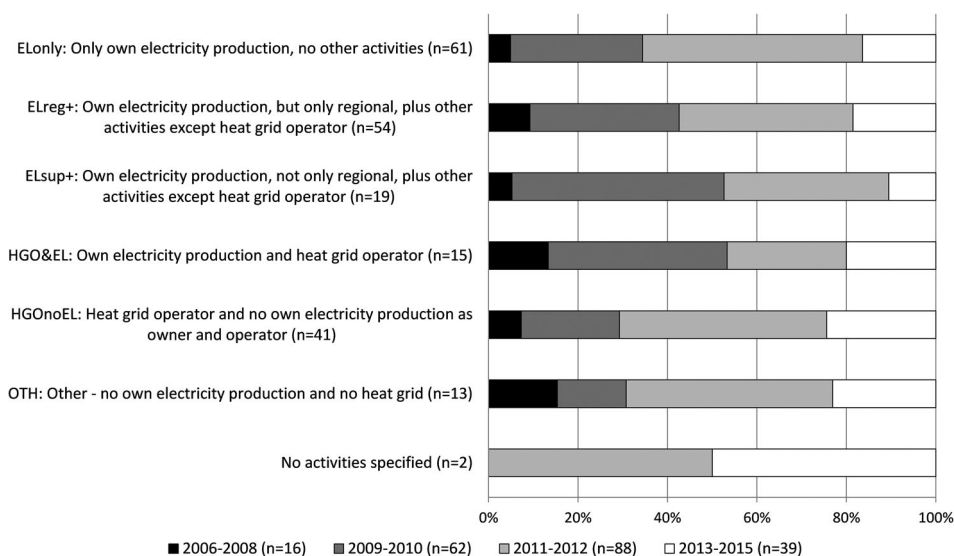
Dimensions	Indicators (section number where indicator is analysed)
Labour	Number of salaried positions (4.1) Importance of voluntary/unpaid work (4.1)
Enterprise	Goals of cooperative (4.2) Existence of dividend, percentage 2015 (4.2)
Property	Size and structure of membership (4.3) Reaction to new institutional context and growth strategies (4.5)
Transactions	Members as consumers (4.4) Distribution channels for electricity (esp. FIT) (4.4)
Finance	Borrowed capital (5.8), from cooperative banks (4.2)
Geography	Geographical structure of members and activities (4.3) Future geographical development (4.5)



**Figure 2.** Energy cooperatives' activities and their geographical reach (Source: own survey).

To better structure the following analysis, we have grouped our sample into different categories based on whether they pursue one or both of the above-mentioned main activities (Figure 3). In addition and to reflect existing geography-related categorisations (e.g. Klagge et al. 2016), cooperatives engaged in electricity production and other activities except heat-grid operator were further divided into energy cooperatives with own electricity production only in their own region (municipality or county) (ELreg+) and those which have such facilities (also) in other regions (ELsup+). This produces six mutually exclusive categories reflecting their core activities as shown in Figure 3.

As Figure 3 shows, this categorisation reflects quite well different activity spectrums and to some extent also age groups with rather large activity spectrums in categories ELreg+, ELsup+ and especially HGO&EL as well as smaller spectrums in categories ELonly (by definition!), HGOonEL and OTH as residual category, i.e. no own electricity production and no heat-grid operator. Not



**Figure 3.** Activity-based categories of energy cooperatives by foundation year (Source: own survey).



surprisingly, energy cooperatives with the largest and most diversified activity spectrum (ELreg+, ELsup+, HGO&EL) are older and those focusing on either (only) electricity production (ELonly) or mainly heat (HGOnoEL) are younger than the average energy cooperative.

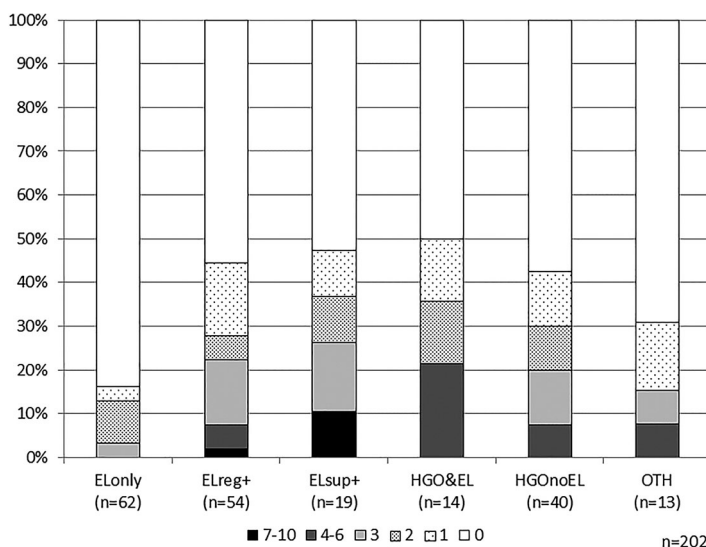
#### 4. Alternative-economy characteristics of energy cooperatives: survey results

Our analysis will be organised around the criteria developed in section 2.3 and start with the most obvious indicators for alternative economies, voluntary work (section 4.1), goals and financial aspects (section 4.2). We will then look more closely at size, structure and geography of membership (section 4.3) as well as the role of members as consumers and, for electricity-producing cooperatives, of other distribution channels (section 4.4). Eventually, we will analyse how energy cooperatives react to the institutional changes and how they see their future development (section 4.5).

##### 4.1 Voluntary work and salaried positions

A high prevalence of voluntary work is a clear indicator for the alternative economy, and indeed energy cooperatives rely on voluntary work heavily: Over 80% (169) of the respondents think that their cooperative is strongly dependent on voluntary work, another 13% (26) see a moderate dependency. Considering the fact that 65% (133 out of 205) of the cooperatives have no salaried positions at all, voluntary work clearly dominates the energy cooperatives in Germany. And, according to our respondents this will not change in the next 5 years; 59% agree fully and 33% moderately that there will be a (continued) strong reliance on voluntary work.

A closer look at the 71 cooperatives which have employees and specified their number reveals that there is a total of 187 salaried employees, i.e. an average of 2.6 for cooperative with employees and 0.9 for all cooperatives including those with no salaried positions. However, there are significant differences between the six categories of cooperatives (Figure 4). Cooperatives with larger activity spectrums (ELreg+, ELsup+, HGO&EL) tend to have salaried employees more often, whereas specifically in category ELonly only 16% have salaried employees at all with a maximum of only three positions. This result corresponds with the finding that younger cooperatives tend to rely on voluntary work more than older ones and that the latter tend to have salaried positions more often and with on average larger numbers of employees.



**Figure 4.** Number of salaried employees by activity-based category (Source: own survey).

#### 4.2 Stated goals and financial aspects: dividends and borrowed capital

According to their representatives, the surveyed cooperatives rate goals beyond financial return and growth as (much) more important, thus qualifying them as alternative economies (Figure 5). Most prominent are environmental and energy-related goals as well as to contribute to the local economy and local identity. However, various financial and growth goals are also mentioned as very or at least rather relevant by 30–50% of the respondents (per goal). Interestingly, such goals feature much weaker in cooperatives which are heat-grid operators (HGO&EL, HGO&noEL) and stronger than average in the electricity-producing cooperatives with no heat grids (ELonly, ELreg+ and ELSup+).

This is consistent with the finding that only a few cooperatives which are heat-grid operators (HGO&EL, HGO&noEL) have handed out dividends (4 out of 50; 8%), whereas most cooperatives in other categories did distribute dividends (91 out of 145; 63%) (Figure 6). The highest percentages of cooperatives with dividends are in categories ELreg+ (67%) and ELSup+ (68%). While the average dividend was 1.9% in 2015 (including cooperatives with no dividend) and the majority of dividends were 0% to 3% (77%), there are a few surveyed cooperatives with rather high dividends up to 25%. Overall, 14 (7%) handed out dividends over 5%. These figures provide mixed evidence regarding how alternative energy cooperatives really are. Quite a few of them, can – in the actual low-interest rate context – be regarded as lucrative investments for their members, especially in the categories ELonly, ELreg+ and ELSup+ and the vast majority of respondents (>80%) from these categories also see an appropriate dividend as part of their future development.

Interestingly, the energy cooperatives which are heat-grid operators are at the same time those with the highest incidence of borrowed capital, 100% (HGO&EL) and 93% (HGO&noEL) as opposed to 76% of all surveyed energy cooperatives. This is probably due to the rather high investment costs for heat grids and the rather small number of cooperative members (and users). Overall, cooperative banks are the most important capital provider acting as a creditor for more than two-thirds (69%) of all surveyed energy cooperatives with borrowed capital, followed by other banks by a large margin (34%). This shows that energy cooperatives have strong links to other cooperative organisations, thus emphasising their alternative approach of doing business. Before

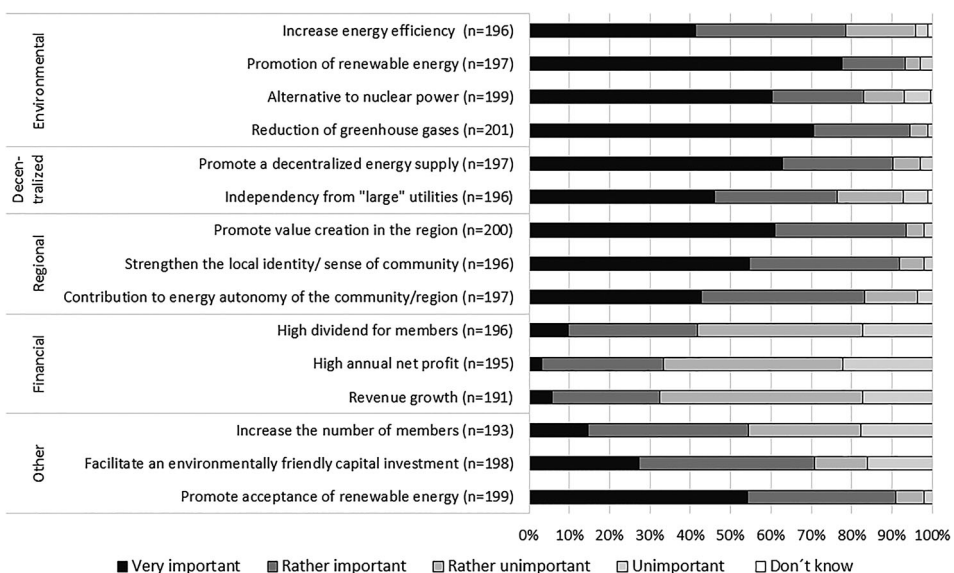
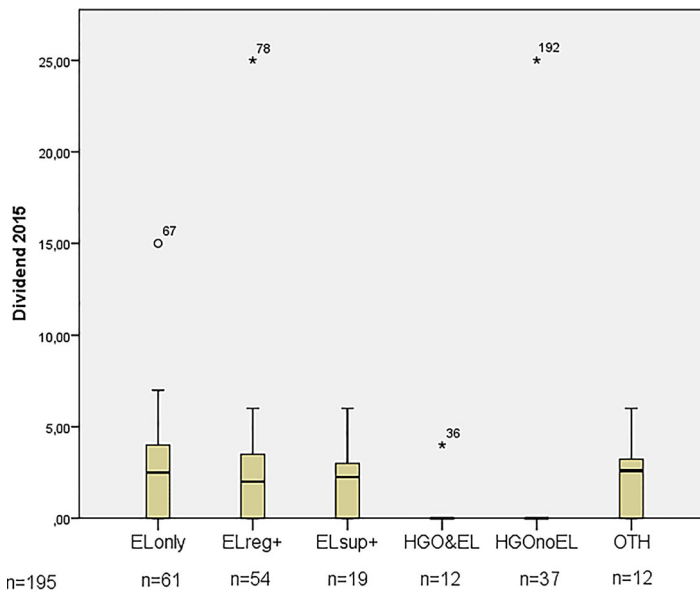


Figure 5. Rating of financial and non-financial goals (Source: own survey).



**Figure 6.** Dividends by activity-based category for cooperatives founded between 2006 and 2014 (Source: own survey).

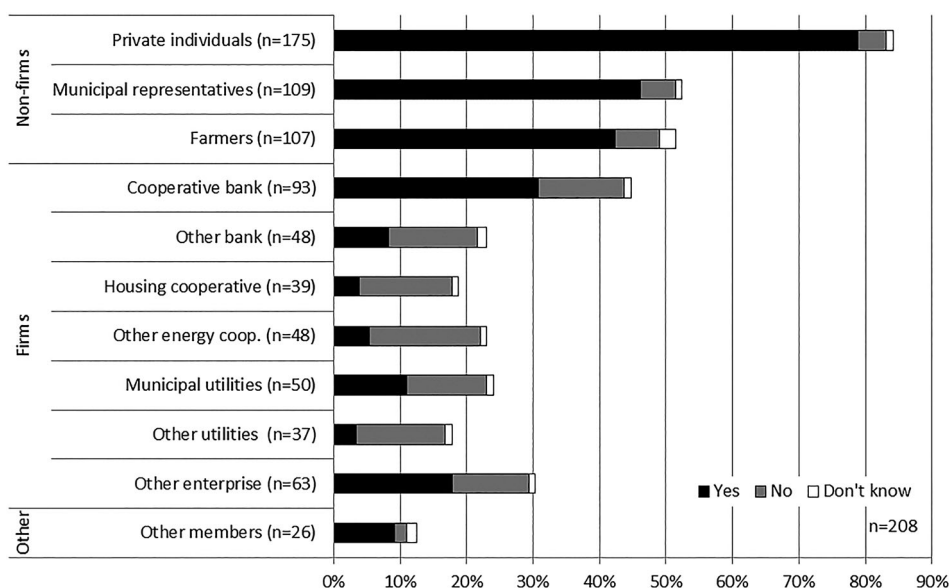
taking a closer look at the issue of growth, we will analyse their membership and distribution channels.

#### 4.3 Size, structure and geography of membership

Large numbers and geographical dispersity of members can be seen as factors which might impair direct democracy (cp. section 2.3, Property), as they require more professional and hierarchical governance structures, thus obstructing the characterisation as an alternative. The member size of our cooperatives varies between 3 and 3000 members. The average number is 217 members, and older cooperatives tend to have more members than younger ones. The results also show that members of the surveyed cooperatives are mainly between 40 and 60 years old and – as other studies show – “predominately male, well educated, and have above average incomes” (Rommel et al. 2016). While this suggests that energy cooperatives cannot be regarded as socially balanced or particularly inclusive, it is consistent with the idea that engagement in alternative organisations is often biased towards the group just specified (Radtke 2014). There are significant size differences between the six categories of cooperatives. While the average number of founding members is rather similar in most categories (between 40 and 50), the current average number of members varies between 75 for heat-focused energy cooperatives (HGO&noEL) and almost 500 in category ELsup+. Generally, electricity-producing cooperatives with a broader activity spectrum (ELreg+, ELsup+, HGO&EL), but also those in the residual category OTH tend to have more members.

An analysis of the membership structure shows a strong involvement of private individuals (Figure 7), not only as members but also as initiators.<sup>3</sup> In addition, roughly half of all surveyed energy cooperatives have municipalities or representatives thereof (52%), farmers (51%) and cooperative banks (45%) as their members, with a rather similar pattern for the different categories.<sup>4</sup> In contrast, other enterprises (incl. utilities) are much less important as members. Regarding their geographical structure, private citizens, municipalities and farmers are mostly localised in their own or a neighbouring municipality in the vast majority of energy cooperatives with such members (>80%).

Overall, the membership analysis confirms that there is not only a large range in cooperatives' sizes, but also a variety of different member groups. The much higher incidence of member

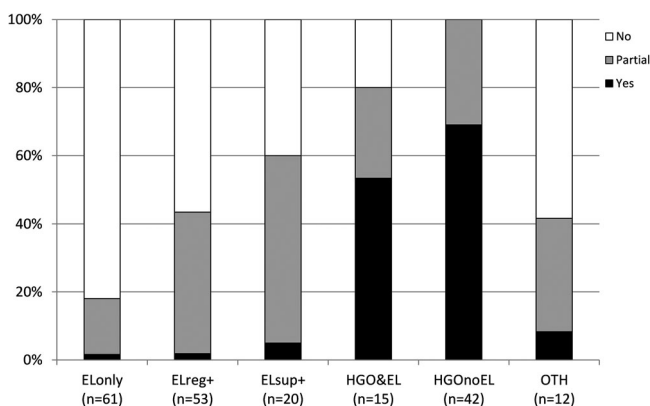


**Figure 7.** Member groups and their regional orientation, i.e. whether they are localised in their own or a neighbouring municipality (Source: Own survey).

groups other than firms, especially private persons, municipalities and farmers, together with their strong regional orientation, supports the alternative-economy characterisation of energy cooperatives. Especially the fact that almost half of all surveyed energy cooperatives are closely linked to one or more municipalities in their region, and quite often also or alternatively to a cooperative bank, clearly shows that most energy cooperatives have strong regional ties. In sum, most energy cooperatives can, regardless of their size and geography of activities, be regarded as regionally driven organisations with private citizens as important share- and stakeholders. The following section will examine to what extent this regional bias is reflected in the distribution channels.

#### 4.4 Members as consumers, reliance on FITs and relevance of other distribution channels

One of the core principles of cooperatives, the identity of producers and consumers, is not or only partially fulfilled by most energy cooperatives. In our survey, only 21% clearly and 31% partially



**Figure 8.** Members as consumer by activity-based category (Source: own survey).

see their members as their consumers. However, the results vary greatly between the six categories with cooperatives owning and operating heat grids featuring much higher values than other cooperatives (Figure 8). Obviously, these cooperatives follow much more closely the original cooperative idea of self-help where members join to procure a good or service (here most likely heat) for themselves together. It is therefore not surprising that in these categories handing out dividends is far less prominent than in other cooperatives (cp. section 4.2).

Most detached from their own produce are electricity-production-only cooperatives (ELonly) where more than 80% do not see their members as consumers at all. Within this category, 60% sell the generated power to the grid in exchange for FITs and do not use any other distribution channels, thus following the most simple business model of renewable-energy production. In contrast, other electricity-producing cooperatives – while having equally high shares of using FITs – have additionally tapped into other distribution channels more actively. This is especially the case for diversified electricity-producing cooperatives (categories ELreg+ and ELSup+), where more than half directly sell electricity to local customers without grid transmission charges (in-place-marketing), thus illustrating their local embeddedness regarding production and distribution/sales.

#### 4.5 Future development and growth

A majority of energy cooperatives (61%) say that they will be negatively affected by the recent institutional changes resulting from the 2014 EEG amendment. This is especially the case for electricity-producing cooperatives in categories ELonly (85%), ELreg+ (74%) and ELSup+ (79%) and much less so for heat-focused cooperatives in HGOnoEL (5%). To explore possible changes in their strategic orientation, we asked our respondents how likely it is that they will react to the new institutional context by developing new business fields which are independent from public support or by expanding their activities geographically, i.e. becoming (more) supraregional, and also by focusing on stronger growth.

The answers show that the majority of responding energy cooperatives will very or rather likely pursue diversification strategies (60%), whereas expanding geographically is seen as less likely (46%) or even excluded (26%). However, diversification strategies are much less prominent in category HGOnoEL (19%), whereas in categories ELreg+ and ELSup+ 81% and 82% respectively are developing new business fields as a reaction to the institutional changes. Interestingly, in these two categories, the rejection of geographical expansion is much lower; especially in the already regionally diversified category ELSup+, 65% want to become (more) supraregional. Nonetheless, as for cooperatives in general, in these two categories strengthening local networks is ranked as more important than increasing supraregional networking.

Stronger growth as a reaction to the institutional changes is anticipated as very or rather likely by just above a third of all cooperatives (36%), with much higher values for categories ELreg+ (49%) and ELSup+ (59%) and, again, a very low value for HGOnoEL (6%). As discussed in section 2.3, growth is a difficult concept in the alternative-economy debate. It is therefore not surprising that most growth-oriented cooperatives pursue only moderate, and not strong, growth in the coming five years, again with a much higher prevalence of strong-growth strategies in categories ELreg+ and ELSup+ as well as significantly lower values in category HGOnoEL, but also ELonly (Figure 9). Generally, the pursuit of strong or moderate-growth strategies focusses on turnover (71% of all responding cooperatives), production capacities (68%), number of members (64%) and customers (56%), with less emphasis on borrowed capital (32%) and salaried positions (28%) (Figure 9). The expansion of activities is also a strategy pursued by almost half of the surveyed cooperatives (45%), most of them in categories ELreg+ (67%) and ELSup+ (89%). Generally, cooperatives in these categories, and to some extent in HGOnoEL, are more growth-oriented and at the same time more willing to borrow additional capital than cooperatives in other categories (esp. in categories ELonly and HGOnoEL).

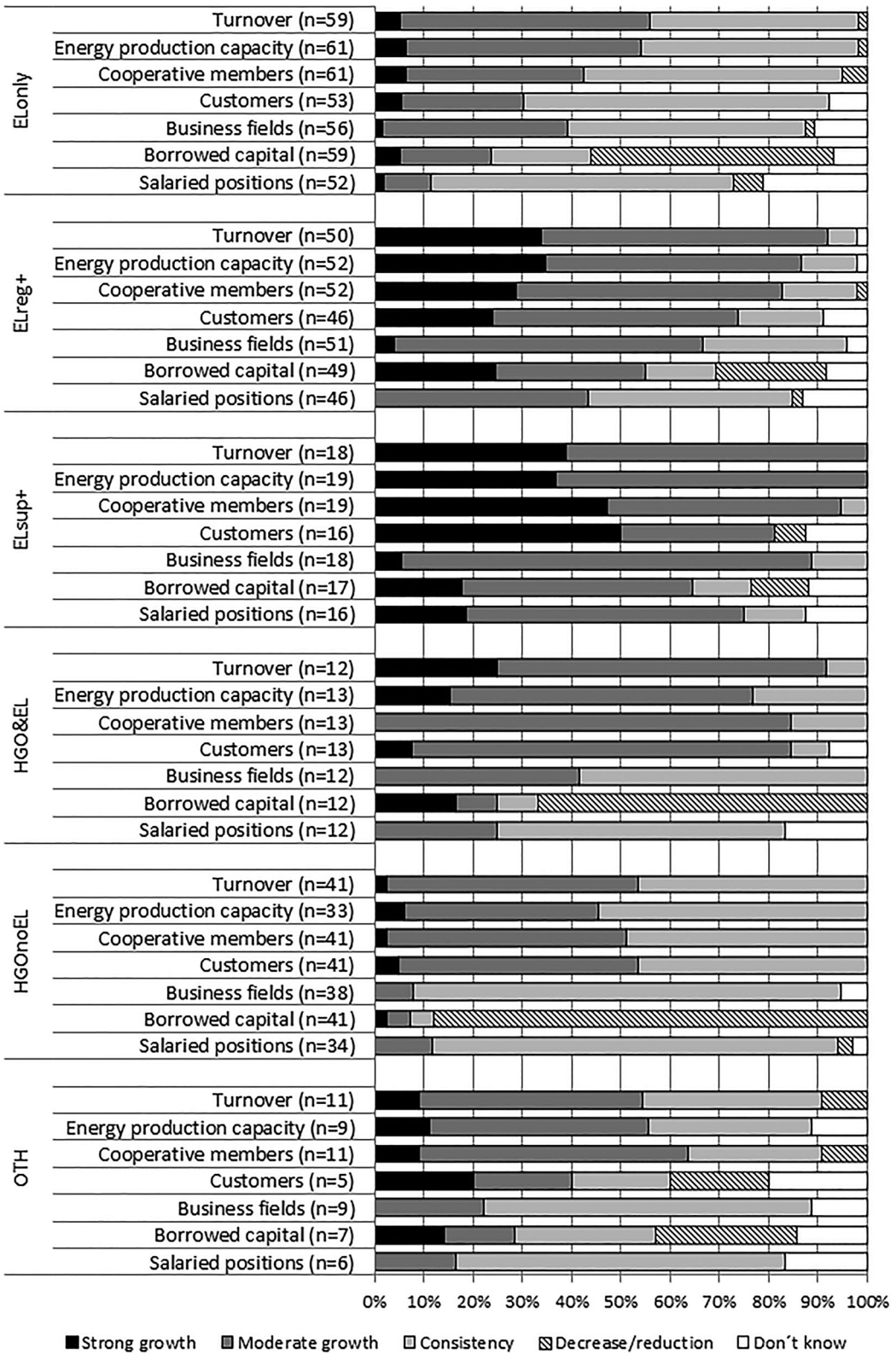


Figure 9. Pursuit of growth strategies by activity-based category (Source: own survey).



## 5. Discussion of results: cooperatives as alternative economies?

In our survey, energy cooperatives show a wide variety of different characteristics, some of which clearly mark them as alternative-economy organisations. Using the analytical dimensions of Gibson-Graham's diverse-economy framework, we derived a set of criteria which allowed us to develop a differentiated view on different types of cooperatives and their activities. Especially with regard to the dimensions of labour and finance, the strong reliance on voluntary work and the finding that energy cooperatives borrow money from cooperative banks more often than from other sources support this claim. Also, in their stated goals the surveyed energy cooperatives generally mark non-financial goals as more important than financial and growth goals and thus qualify their enterprise as different from "normal" firms. However, the evidence in other dimensions and criteria is less clear and has to be viewed in a more differentiated way. In this regard, it has proven helpful to distinguish between energy cooperatives according to their activity spectrums (Table 3).<sup>5</sup>

Heat-focused energy cooperatives with no electricity production (HGO<sub>noEL</sub>) most clearly fulfil the criteria set up in section 2.3, not least because they are significantly less financially oriented than other cooperatives and mostly do not hand out dividends. Their members are important users or consumers of the produced goods and services, and – related to this – they are rather small and have a very strong local orientation and rarely growth ambitions or strategies. Energy cooperatives in HGO&EL can be viewed as a somewhat diluted version of this, but are much larger and also show some similarities with other electricity-producing cooperatives.

Electricity-producing cooperatives with not heat-grid operation (EL<sub>only</sub>, EL<sub>reg+</sub>, EL<sub>sup+</sub>) are different from heat-focused cooperatives in various respects. Members as users are much less prominent, and handing out dividends is the norm rather than an exception. However, they also rate non-financial goals higher than financial goals and most of them rely on voluntary work with no salaried positions. Nonetheless, especially in categories EL<sub>reg+</sub> and EL<sub>sup+</sub>, i.e. those with a larger activity spectrum, some are quite large, actively pursue diversification and growth strategies and are more open to geographical expansion than cooperatives in other categories. In contrast, electricity-production-only cooperatives (EL<sub>only</sub>) are smaller and less often have salaried employees or pursue strategies to grow, to diversify their activities or expand their activities geographically as a reaction to the institutional changes. These cooperatives relied much more heavily on FITs than other electricity-producing cooperatives, and at the same time had, albeit by a small margin,

**Table 3.** Generalised results regarding the five plus one dimensions and special features of activity-based categories (Own compilation).

	General structures and trends	Special features of activity-based categories
Labour	Strong reliance on voluntary labour, salaried positions vary	Low number of employees in EL <sub>only</sub>
Enterprise	Non-financial goals more important than financial ones, but almost half have handed out dividends	HGO <sub>noEL</sub> significantly less financially oriented; only very few handed out dividends
Property	Size of membership varies related to age and activity spectrum: 3–3000 members; avg. 217 Most important member groups beside private individuals are municipalities, farmers and cooperative banks (~50%), mostly localised in the same region	HGO <sub>noEL</sub> much smaller than EL <sub>reg+</sub> and EL <sub>sup+</sub>
Transactions	Members as users are not a prominent feature of most cooperatives, but with large variation Most electricity-producing cooperatives use FITs	HGO <sub>noEL</sub> mostly members as users EL <sub>only</sub> strong reliance on FITs EL <sub>reg+</sub> and EL <sub>sup+</sub> often with local orientation in distribution
Finance	Most cooperatives (75%) have borrowed capital with cooperative banks as most important creditor	
Geography	Moderate to strong local/regional orientation with respect to non-firm member groups and also regarding core activities	

the highest average dividend of all categories in 2015. The findings suggest that many of these cooperatives – with the discontinuation of public support – do not have a feasible business strategy anymore and might not develop beyond selling the electricity from existing facilities (FITs are guaranteed for 20 years).

Most cooperatives in categories ELreg+ and ELSup+ are more ambitious and pro-actively try to adapt to the new institutional conditions. This includes becoming more market-oriented and means that they have to adopt riskier business strategies. They thus behave, at least in some respects, more like “normal” firms and therefore are a very good example of alternative organisations which develop – and try to thrive – within existing capitalisms. Our survey results suggest that they mostly seek to maintain, at least some of, their alternative characteristics. This includes the reliance on voluntary work and a continued local or regional orientation which might even be strengthened by expanding their direct sale activities to local customers in order to replace out-phasing FITs. It will be interesting to see, in the planned case studies, whether and how they can successfully survive and possibly thrive without, or much less, public support and with what strategies. The survey results suggest that their relationship with municipalities is an important point here, as more than two-thirds are supported by and cooperate with municipalities, especially when it comes to securing land or roofs for their photovoltaic facilities.

## 6. Conclusion and outlook

With their collective orientation, focus on renewable energies and overwhelmingly value-driven approach German energy cooperatives contribute to a more just sustainable development and integrate economic, ecological and social agendas and goals. They provide an interesting example of alternative-economy organisations within capitalist economies. Many of them were founded to support and to realise the German energy transition when existing utilities and other large players in the energy sector were reluctant to invest in renewable energies or even worked to obstruct it. Their development gained momentum very fast and thus serves as a vivid illustration that the hegemony of large incumbents can be successfully challenged by alternative-economy organisations. Moreover, the conventional wisdom that energy issues are best handled in a centralised way and by large organisations has meanwhile been proven wrong by cooperatives and other smaller players. Due to their success, Germany’s energy system is today much more decentralised, and its decentralised structure – and geography – is regarded as an important achievement which many do not want to give up again. This is, for example, illustrated by the legal changes to accommodate smaller players’ interests and concerns in 2016. While there is criticism that these changes are not enough and large players will probably continue to be important, the changes still show that Germany’s energy system and its perception are fundamentally different from 20 years ago. Cooperatives have made a significant contribution to this shift from a hierarchical and centralised system characterised by large-scale players to a much more diversified system with a great importance of smaller scale, decentralised and bottom-up structures.

The conditions for this development were laid by institutional changes and a generous public support scheme. Like other firms, many energy cooperatives benefitted from the Renewable Energy Law which provided the seedbed for their development. Once operating successfully, they are (mostly) ready to adapt to new institutional conditions and become more market-oriented. To what extent the increased competition will obstruct their future development or make them more similar to “normal” firms remains to be seen. However, their past success and appreciation in the general population and among proponents of the German energy transition provides them with a favourable disposition regarding their future business activities.

The future development of energy cooperatives in Germany will very likely be as diverse as their recent history. In this way, energy cooperatives illustrate very well the diversity of alternative-economy organisations as stipulated by Gibson-Graham. More concretely, there is a great variation in why and how alternative – or different from “normal” firms – they are, but the great majority

fulfils more than one and often several of the criteria developed in our conceptual framework. Of the six dimensions, (voluntary) Labour, (cooperative) Finance, (regional) Geography and, to some extent Enterprise (goals) are the ones where most cooperatives, according to our survey, fulfil the developed criteria, whereas the evidence for Property and Transactions is mixed (with strong alternative characteristics for heat-focused cooperatives).

Whereas heat-focused cooperatives are less affected by the institutional changes, they are a game changer for electricity-producing cooperatives. Interestingly, the smaller electricity-production-only cooperatives with less salaried employees are least ambitious and can be characterised as opportunity-driven and by a lack of pro-active engagement with no ambition to contribute to the energy transition in the long term. The assumption that they might only be rent seekers in cooperative camouflage, however, is not confirmed by our empirical findings. Least of all, they were important in familiarising citizens, firms and local policy makers with the energy transition – and also with cooperatives and their way(s) of doing business.

The cooperatives with larger activity spectrums might at first glance fulfil less of the developed criteria than electricity-production-only cooperatives, but most of them have strategies for future activities and often growth. Their future development can serve as a test case – and thus an interesting research topic – for how alternative-economy organisations can become independent from public support, but at the same time remain important players of the German energy transition, while keeping (some of) their alternative characteristics. This will very likely require the active development of alternative support structures, for example at the local or regional level and/or through civil-society initiatives, and thus depend on the engagement of involved members, municipalities and firms. Research on the development of German energy cooperatives will therefore remain exciting. It promises interesting contributions to alternative-economy debates, especially on how alternative-economy organisations can adapt and possibly thrive in capitalist economies in which the interfaces of market, state and civil society are shifting.

Conceptually, our study highlights the importance of institutional conditions at both local and national levels to better understand the different forms and varieties of the economy, both capitalist and alternative economies as well as existing intermediate forms. While the five criteria derived from Gibson-Graham's diverse-economy framework provide a useful analytical heuristic for empirical analysis, the results show that alternative-economy manifestations differ, among others, depending on activities and institutional conditions. Therefore, the interpretation of results requires contextualisation and careful reading of "potentially positive futures" (cp. Gibson-Graham and Roelvink 2009, 342). Specifically, the ethical dimension of alternative, as well as community, economies can only be assessed when such analysis and interpretation is complemented by qualitative work, for example in-depth case studies, which is the next step in our research on energy cooperatives.

## Notes

1. For an overview on the dynamics of the German energy transition from a geographical perspective, see Klagge and Campos Silva (2018).
2. Two out of 208 cooperatives did not provide information on their activities and are therefore excluded from the category-based analyses.
3. Their importance is also reflected by the fact that nearly 70% ( $n = 145$ ) of the respondents described them as important actors involved in the initiation to establish the cooperative. Even more – over 73% ( $n = 152$ ) – considered private individuals to be of importance in the foundation itself.
4. Farmers are an exception as they are especially prominent in cooperatives with heat grids (HGO<sub>no</sub>EL, HGO&EL) and less so in other categories. In contrast, municipalities feature as member group in roughly half of all cooperatives, regardless which category.
5. In the following, we will focus our discussion on heat-focused cooperatives, especially HGO<sub>no</sub>EL, and electricity-producing cooperatives with no heat grids (EL<sub>only</sub>, EL<sub>reg+</sub>, EL<sub>sup+</sub>), as these categories are most coherent internally and account for the majority of all cooperatives. Specifically, category OTH is rather heterogeneous with many quite specific cases which will be analyzed in greater detail elsewhere.

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