

Cooperative Solutions for Renewable Energy Production

Weismeier-Sammer, Daniela; Reiner, Elisabeth

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Cooperative Solutions for Renewable Energy Production

The Case of *v-energie*

Daniela Weismeier-Sammer & Elisabeth Reiner

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This case study is part of the project

Energy cooperatives and local ownership in the field of renewable energy technologies as social innovation processes in the energy system

jointly carried out by the RiCC and the
IFZ – Inter-University Research Centre for Technology, Work and Culture

Project supervisor: Prof. Dietmar Roessl

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Background

With rising concerns over ecological sustainability as well as security of supply, the energy system has come under increasing pressure over the last years and various efforts have been made aiming at a transformation towards more sustainable systems of energy provision. At the grassroots level this has included the establishment of energy cooperatives and other forms of local or community based ownership. These initiatives and organisations can be viewed as a social innovation introducing new forms of socio-economic organisation of energy provision and also enabling a specific kind of governance process in the energy sector – in many cases channelling the interests of ‘green’ consumers and thereby attempting to contribute to a transformation process in the energy system.

Project Goals and research questions

The project aims to apply a dynamic perspective to the analysis of energy cooperatives and to develop a conceptual framework that helps understand activities in this area as innovation processes. – Both as a process of social innovation, involving alternative forms of socio-economic organisation in the field of energy provision and as part of a larger transformation process in the energy system towards more sustainable systems of energy provision. This will also help to assess the potential of these alternative forms of energy production and distribution.

The project thereby aims to investigate the following research questions:

- What different types of community ownership of renewable energy technologies can be distinguished, not only on the basis of legal structures, but also on the basis of pursued strategies and roles taken on in systems of energy provision?
- How do processes of network formation and the management of stakeholder relations unfold within cooperatives or locally owned enterprises in this field? How are strategies formed and resources mobilised at this micro-level?
- Which institutional barriers and incentives promote or impede the development of energy cooperatives and local ownership in the area of renewable energy technologies?
- What potentials do energy cooperatives and other forms of local ownership of renewable energy technologies have to contribute to a shift towards more sustainable systems of energy provision?

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1. INTRODUCTION

Rising concerns over ecological sustainability and security of supply put the energy system under increasing pressure. This situation has brought forward the development of energy cooperatives as well as other forms of local or community-based ownership of renewable energy technologies. Typical ways of energy provision usually bear highly centralized energy infrastructures, whereas locally and cooperatively owned models can constitute a different model of energy provision and distribution (e.g. Olesen, Maegaard, and Kruse, 2004).

In public-citizen-partnerships (PCP; Karner, Roessler, and Weismeyer-Sammer, 2010), local politicians and citizens try to adequately provide a public service, promoting a culture of self-help rather than a culture of dependency (Mayo, 1997; Pestoff, 2009). Citizen participation seems to be a fruitful approach not only for the provision of public services, but for the implementation of renewable energy in local communities as well. And with its specific governance structures and commitment to self-help (Spear, 2004), the cooperative represents a suitable form for promoting citizen participation (Somerville, 2007; Lang and Roessler, 2009).

Against this background, we pose the following research question: *How can organizations built on cooperative principles contribute to the diffusion of renewable energy in Austria?*

For our study we chose a qualitative research approach (Stake, 1995), particularly with regard to existing research gaps regarding cooperative governance structures (Cornforth, 2004; Spear et al., 2009), in order to gain insights into the structures of local energy cooperatives. Our case study is situated in the Austrian region of Vorarlberg. The energy cooperative under investigation, *v-energie*, was founded two years ago with the overall target to establish a platform for investors, activists, and customers in Vorarlberg. The analysis of our case study allows for deeper insights into several aspects of cooperative energy production on local or community level.

Our paper is structured as follows: First, we elaborate on the status quo in Austria and Germany regarding renewable energy provision with citizen participation. Second, we present the methodological approach and afterwards provide a detailed description of our case, the *v-energie*. The presentation of our case analysis builds the core section of our paper, and is followed by a conclusion and suggestions for further research in the field.

2. RENEWABLE ENERGY PROVISION: STATUS QUO IN AUSTRIA AND GERMANY

We focused on Austria and Germany as the renewable energy domain in the German-speaking part of Europe has developed under different circumstances as other European regions like Scandinavia (Schreuer & Weismeier-Sammer, 2010).

In Germany, energy cooperatives have already been established in the early twentieth century to ensure electricity provision in rural areas (Flieger & Klemisch, 2008). Wind parks emerged in the 1980s with citizen participation. A certain tradition of local energy activism in Germany is based on the anti-nuclear movement (Toke, Breukers, & Wolsink, 2008). In Austria, the renewable or alternative energy domain developed more slowly and in different forms – due to institutional restrictions that will be discussed in detail later on. In the mid 1980s, biomass district heating (BDH) emerged as a real innovation and is viewed as an important outcome of both, local initiatives and public policy (Madlener, 2007).

Today, especially Germany exhibits specific innovations in the renewable energy system, such as “bio-energy villages” (Bioenergiedörfer) and “citizen wind parks” (Bürgerwindparks), which improved the political profile of renewable and sustainable energy production (Toke, Breukers, & Wolsink, 2008). In Germany, more than 140 energy cooperatives have been recently founded (Müller & Rommel, 2010). Compared to other European regions and Germany, in Austria rural biomass district heating systems currently are the main locally owned renewable energy installations, which are typically organized as cooperatives (Schreuer & Weismeier-Sammer, 2010). Some exceptional cases are presented for example by Enzensberger, Fichtner, and Rentz (2003) in the area of wind power, although typically organized in the legal form of a “GmbH & Co. KG”, which can be described as a hybrid of limited private partnership and limited liability company, or totally private investor-owned (in form of portfolio companies, where citizens can buy shares from).

In a recent explorative study, Müller and Rommel (2010) identified several factors as being important for cooperatives compared to other organizational forms. Over all, the revised German cooperative law, product differentiation (green electricity, where does electricity come from?), rising interaction between consumers and producers, as well as increasing civil society activities turned out to be most important for the strong growth of electricity cooperatives in Germany. Additionally, framework

conditions in Germany are favorable for renewable energy projects especially regarding the following aspects (Schreuer & Weismeier-Sammer, 2010)¹:

- Feed-in tariff system
- Tradition of local energy activism
- General tradition of acting in political groups and associations
- Availability of loan capital at preferential conditions
- Sufficient number of investors

Unfortunately, the situation in Austria is much less favorable, as our case study will show. Regarding cooperative renewable energy projects, no best practice-example could be found in the literature (Schreuer & Weismeier-Sammer, 2010).

Nonetheless, the co-production of public services through public-private-partnerships (PCP) has recently increased in Austria and Germany (cf. Flieger, 2003 for German examples), although in different areas such as childcare, education, and recreational facilities. In general, the term PCP defines organizational forms of cooperation between municipalities and their citizens for the co-production of public services (Karner, Roessl, & Weismeier-Sammer, 2010). PCPs further seem to be a promising organizational form for the provision of renewable energy, as they are rather social capital-based organizations (Lang, Roessl, & Weismeier-Sammer, 2010), which is reflected by the social orientation of their governance principles such as mutual self-help, democratic control, voluntary and open membership or community orientation (Valentinov, 2004; ICA, 2006; Somerville, 2007; Spear, 2004).

3. METHODOLOGICAL APPROACH

The aim of this paper is to gain deeper insight in the contribution of organizations built on cooperative principles to the diffusion of renewable energy in Austria. Particularly with regard to existing research gaps regarding cooperative governance structures (Cornforth, 2004; Spear, Cornforth, and Aiken, 2009), we chose a qualitative approach in order to gain first in-depth insights (Stake, 1995) into the structures of cooperative energy organizations with citizen participation.

¹ Furthermore, Müller and Rommel (2010) give a detailed overview of the political, economical, social and technological factors impacting electricity generation and trading in Germany.

After a desk research to track suitable cases in Austria, we quickly got aware of a cooperative called *v-energie* in the Western Austrian province of Vorarlberg. In the following sub-sections we will present the history of the cooperative in greater detail.

We conducted four interviews with relevant actors in Vorarlberg. Basically, interviews were semi-structured with a mix of single and group interviews. Interviewee 1 is chairman of *v-energie* and member of the Green Party, Interviewee 2 works at the *Vorarlberger Energieinstitut* (Energy Institute of Vorarlberg), Interviewee 3 is owner of a consultancy and chairman of the *Talentegenossenschaft*, which is affiliated with *v-energie*, and the last interview was arranged as a group interview. Interviewees were the director of the *Arbeitsgemeinschaft Erneuerbare Energie Vorarlberg* and one member of the *Talentegenossenschaft*. Furthermore, we were able to access some archival data (mainly press articles and internal reports). Data was collected in May 2010, when also an on-site visit at the central office of *v-energie* took place. All interviews were tape-recorded and transcribed afterwards, in order to have a solid database available for the following qualitative content analysis in line with Mayring (2008).

In the following sub-sections we discuss results of our case analysis. First, we start with a description of the project under review, the *v-energie*, situated in Bregenz, Vorarlberg.

4. CASE DESCRIPTION: V-ENERGIE

4.1. INITIAL SITUATION IN VORARLBERG

Within this section, we present the initial situation in the Austrian province of Vorarlberg where our case study is located in. Afterwards, we present the different actors directly or indirectly connected with *v-energie*.

Vorarlberg is one of nine provinces in Austria. It is located in the West of the country, bordering Switzerland and Germany. It covers an area of 2,061 km² with about 370,000 inhabitants. In terms of size and population, Vorarlberg ranks 8th out of nine Austrian provinces. Energy consumption in Vorarlberg amounts to approx. 9,400 GWh per year. Currently, almost 30 % of energy consumed stems from renewable energy sources, such as wood, water or solar energy; an amount which bears the potential to be increased by 35 % (Land Vorarlberg, 2011).

In general, Vorarlberg focuses more on energy conservation than on the expansion of renewable energy systems, as the reduction of the energy-demand is considered

to exhibit a greater impact on the environment. Energy efficiency is aimed to be achieved through improving the thermal insulation of existing private buildings or by funding new buildings with energy-efficient insulation (Land Vorarlberg, 2010). Furthermore, for example the city of Bregenz (the capital of Vorarlberg) is heavily engaged in supporting a greater diffusion of renewable energy. Since 2008, Bregenz is member of the *e5-network* of energy-efficient communities, a project assisting municipalities in modernization and enhancement of their energy politics (e5-Gemeinden, 2011).

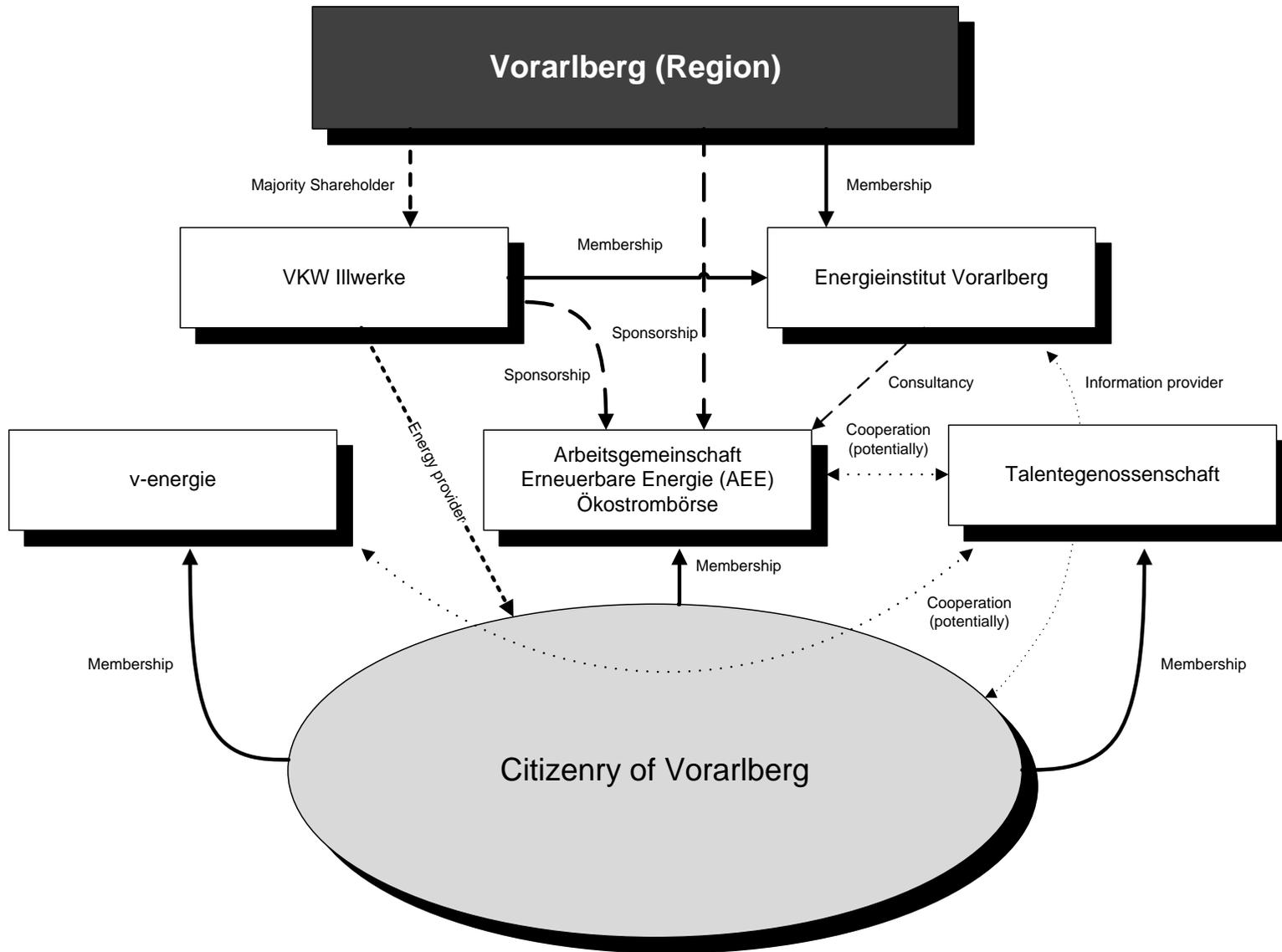
In 2010, the city council decided to promote the use of renewable energies. In doing so, small-scale biomass installations in residential buildings, district heating network lines, solar thermal systems in residential buildings, photovoltaic and other “green” installations are encouraged and actively supported. For the next 20 years, the city of Bregenz pursues a distinct energy strategy promoting and supporting renewable energy (Bregenz 2011). However, the explicit target of Vorarlberg is energy autonomy, achieved through both approaches: the development of renewable energy systems as well as through improvement of energy efficiency (Land Vorarlberg, 2011).

A big share of power production in Vorarlberg is delivered by large hydropower plants (90 %). In 2009, the following green-electricity plants were in use in Vorarlberg: 912 photovoltaic plants, 12 small hydroelectric power plants, 31 biogas plants, 8 (solid and liquid) biomass plants, and 7 sewage and landfill gas plants (Energiebericht, 2010). The largest feed-in capacity is delivered by biomass plants (44.3 GWh), whereas the big group of photovoltaic plants feeds in only 7.4 GWh.

4.2. V-ENERGIE AND RELATED ACTORS

Figure 1 gives a brief overview of relevant actors in our case study and their relations with *v-energie*. As it is to be seen, all actors aim at involving citizens in some way. The *Energieinstitut* plays the role of an intermediary between politics and the citizens. One of the most important actors is the *AEEV* (Arbeitsgemeinschaft Erneuerbare Energie Vorarlberg). The *AEEV* is also the operator of the *Ökostrombörse*, which is providing a platform for gathering donations to support of renewable energy facilities.

Figure 1: v-energie and related actors



Many people support green energy by using the *Ökostrombörse* or get their own small-scale energy generation facilities supported. Remarkably, it is also sponsored by the *VKW Illwerke* and the regional government. Nevertheless, the *Ökostrombörse* wants to actively change the energy policy of the region, which is quite surprising given such involvement of the main energy actors. At the moment, it is not clear if the “grassroots organizations” – which all have the same target group - will cooperate and if so in what way.

In order to untangle the network presented in figure 1, we present the relevant actors in greater detail in the following sub-sections.

VKW Illwerke

The *VKW Illwerke* is the largest energy service company in Vorarlberg. In 2001, it took over the *Vorarlberger Kraftwerke AG* (VKW, approx. 170,000 customers) and now acts as the main provider not only in Vorarlberg, but also in parts of Southern Germany. The principal owner of *VKW Illwerke* is the province of Vorarlberg, holding 95.5% of all shares.

In 2001, the *Illwerke Alternative Energie* (Illwerke Alternative Energy) was founded as a 100% subsidiary of *VKW Illwerke*. The company's strategic objectives are “the long-term use of indigenous energy sources in the province of Vorarlberg, the exploitation of the water as food and the regional implementation of measures of energy efficiency.” (Vorarlberger Illwerke AG, 2011).

Energie Institut Vorarlberg (EIV)

The *Energie Institut Vorarlberg* (Vorarlberg Energy Institute, EIV) was founded in 1985 and is registered as an association with a declared non-profit character. Currently, the *EIV* has 40 employees. The total budget in 2008 was 3.4 million Euros. The declared objective of *EIV* is: “We advise, educate and conduct research for sensible energy use and renewable energy sources.” Several Vorarlbergian institutions are members of the *EIV*, such as the province of Vorarlberg, the VKW, and the chamber of commerce.

In general, anyone may become a member of the institute, but particularly institutional memberships are aimed for. The work of the *EIV* is financed by

membership fees, fees for services, project funding, fees for programs of participants / members, other incomes and sponsor contributions.

ARGE Erneuerbare Energie Vorarlberg (AEEG)

The *ARGE Erneuerbare Energie Vorarlberg* (Consortium Renewable Energy, AEEV) was founded in 1999 to act as a regional advocacy for all producers of renewable energy. In other provinces of Austria, there are also spin-offs of the national parent institution *ARGE Erneuerbare Energie*, AEE, which was founded in 1980 to promote solar energy. The *AEEV* is organized as a charitable organization, funded by membership fees, services and sponsorship (primarily from the province of Vorarlberg and the *VKW Illwerke*). Supporters of the association are also the *European Agricultural Fund* and *leader austria* (a funding scheme for regional development by the European Union in collaboration with Austrian counterparts).

The *AEEV* is politically independent and thus tries to cover a wide range of interests. The areas of engagement of *AEEV* are diverse: public relations, networking, education and the implementation of the projects. It also acts as an operator of the *Ökostrombörse Vorarlberg*.

Ökostrombörse Vorarlberg

The *Ökostrombörse* (an exchange for green electricity) is an essential pillar of the *AEEV*. Currently, there are three such energy market institutions in Austria: Besides the *Ökostrombörse Vorarlberg* there are the exchange of the province of Salzburg and the nation-wide *Ökostrombörse Austria*. The *Ökostrombörse Vorarlberg* is the oldest and most established one.

The main idea behind the set-up of the exchange is to enable the financing of green power plants and to provide transparency in funding issues. This is achieved through voluntary surplus payments that customers make with respect to their electricity bills. This money is used for supporting small-scale producers of green electricity. It is important that customers can decide which system they want to support with their additional payment. The *Ökostrombörse* serves as the respective marketplace, where such payments are settled and cleared. (*ARGE Erneuerbare Energie Vorarlberg 2011*).

v-energie

The *v-energie* was founded in 2008 as an association by two politicians of the Green Party. It has been designed as a project to promote the use of renewable energy. For a short time, it was considered to set up an own cooperative. The establishment of such a cooperative failed though because of the excessive costs that would originate from an appropriate set up process, particularly at the legal level.

Thus, from the start an association proved easier to handle. Another reason that worked against the set up of a cooperative was the fact that at the same time in Vorarlberg there was a so called *Talente-Genossenschaft* (talent cooperative) that was appealing to a similar group of (potential) members. It was considered unfavourable if there were two similar cooperatives. Nevertheless, it was considered to merge in order to “join forces”. Meanwhile, cooperation between the *Talente-Genossenschaft* and the *v-energie* exists. The association *v-energie* is now responsible for developing project-ideas which are then wind up by the cooperative. The main field of activity is the support of pv-systems and small hydro power stations.

5. CASE ANALYSIS

Our case study aims at answering the research question: How can organizations built on cooperative principles contribute to the diffusion of renewable energy in Austria? Therefore, we analyzed the data gathered from qualitative interviews with members of *v-energie* by applying content analysis (Mayring 2008) along the following categories:

- General framework conditions (5.1)
 - Situation in Austria (5.1.1)
 - Changes needed (5.1.2)
- Resources (5.2)
- Actor roles (5.3)
 - Promoters (5.3.1)
 - Investors (5.3.2)
 - Cooperative members (5.3.3)
- Organization of renewable energy projects and initiatives (5.4)
 - Objectives (5.4.1)
 - Supporting factors for renewable energy projects (5.4.2)
 - Problematic areas in renewable energy projects (5.4.3)
- Cooperative (5.5)
 - Problematic areas concerning cooperatives (5.5.1)
 - Comparison of the cooperative with other legal forms (5.5.2)

The analysis of our case study allows for deeper insights into several aspects of cooperative energy production on local or community level. Therefore, we focus on determinants of the developing process of *v-energie*, by describing the relevant *framework conditions* for the establishment of the *v-energie* project. After that, we elaborate the *resources* relevant for this development and identify different *roles of actors involved* in this process. Furthermore, we concentrate on the *organizational forms* renewable energy projects might exhibit, and elaborate on objectives, as well as supporting factors and problematic areas in this field. Finally, we focus on the legal form *cooperative* in order to elaborate distinct requirements occurring for energy projects from choosing this legal form.

5.1.1. SITUATION IN AUSTRIA

In general, renewable energy in Austria comprises a great investment volume (BR28²). Nonetheless, projects in this area are facing a rather hostile environment, with many decision makers criticizing the general conditions they are embedded in (in our case this is the energy market in Vorarlberg/Western Austria). This is mainly true for pv-panels. Contrary to this fact, Austria plays an important role in the field of solar energy and biomass.

However, by now there is no really free market for electricity available, as large energy providers try to defend their position in the market and possess great influence on it (BR2). Additionally, the federal state policy of Vorarlberg is affected by its business actors, which means that large companies also influence energy policy in Vorarlberg (BR21). Although the federal state government does not avert alternative energy projects, it does not support them intensely either. In general, it does not seem to support such projects until they are successful (BR45). Therefore, it is not surprising that projects in their initial phases (without having a solid basis) are facing problems getting funds from the provincial government (BB61). Although there are initiatives possible like the *v-energie* or the *AEEV*.

Compared to other European countries (e.g. Germany, Italy or Switzerland), the conditions for green electricity projects are underdeveloped due to hold-ups in the development of renewable energy alternatives over the past decades (BB39). The basic conditions in Germany are interpreted as being completely different (JM18), due to attractive feed-in tariffs. For example pv-plants boomed over the last years (BR24) and therefore initiated a whole new line of business (e.g. installation, maintenance). The underdeveloped situation in Austria already shows negative impacts on the national economy: German installation businesses provide better conditions for private pv-plants, which has already been recognized by Austrian consumers (BR25).

Regarding the legal conditions for green electricity in Austria, or more precisely in Vorarlberg, it can be noted that the Austrian *Ökostromgesetz* (green electricity law)

² Initials and numbers in brackets after statements refer to interpretations of the single interviews.

constitutes a major obstructive factor for the diffusion of renewable energy plants and the development of a free energy market (BB4, BB38, BR3). Furthermore, legal conditions in Austria seem to block out private initiatives in renewable energy (BB37). Legal conditions constrain the diffusion of alternative energy projects and policy actors show a low level of interest in topics like renewable energy or energy efficiency (BB51). For Austrian supporters of renewable energy the motivation of political actors is incomprehensible, as other countries (like Germany) provide evidence that capital spending in renewable energy can be profitable in the long run (BB74). Therefore, activists blame political parties for being “short-sighted” regarding renewable energy projects (BB74). One interview partner, working for AEEV describes the problem as follows:

„The problem is not the feasibility [of renewable energy diffusion in Vorarlberg], as this has been proved several times. It is the allocation of power. [In such cases] it's about new power structures, new power dispersion and new dependencies” (BR29).

Although amendments and alignments of the Austrian law to the German example are planned, their implementation is not intensely supported so far as there are in fact no influential lobbies for renewable energy available (BB41). Large energy suppliers in Vorarlberg possess a kind of monopoly in the state and are intensely intertwined with the federal state government, which affects the development of a market for renewable energy negatively (BR21). The large energy suppliers in Vorarlberg have a long tradition in the state and are interested in assuring their strong position, as the energy market in Vorarlberg is built around them. Therefore, they block out approaches for decentralized supply and show no interest in a change of the market situation they are embedded in. Decentralization seems to be only favorable for these large suppliers if it is arranged by means of their own supply channels (BB72). At the same time, private energy suppliers are dependent on them, as they do not possess direct market access for their green electricity (BR7). The chairman of *v-energie* describes this as “building a glass-ceiling” by the federal state government and large energy suppliers (BB73):

“This dispute is located behind the scenes. On the one hand [large energy suppliers] allow for decentralization to some degree, in order to prevent a ‘bad mood’ of people actively engaged in energy initiatives. On the other hand, they try to delimitate it, so that the admission [of alternative projects] does not endanger their position.”

Therefore, the relationship between private energy initiatives and traditional energy suppliers is problematic (BB34), as the latter view private suppliers as an immediate threat (BB35).

Besides institutional constraints for private renewable energy projects, several other obstructive factors could be determined:

- Citizens notice little emotional pressure to assume responsibility for the diffusion of renewable energy. Energy is cheap and unlimited available, so the great proportion of the population does not recognize any need for a change in the energy system (BS2).
- Investment in pv-panels in Austria seems to bear no economic benefit (JM5), which is probably due to the limited public subsidies.
- Furthermore, Austrian politics focus more on energy efficiency than on renewable energy (BS7).
- Finally, in economically difficult times it is difficult for alternative energy suppliers to find sponsors for their projects (BR50).

5.1.2. CHANGES NEEDED

The general conditions for renewable energy in Austria described above imply a number of proposals for change.

Currently, it seems as if the legal conditions for renewable energy projects will not change significantly within the next years. Therefore, such projects require promotion on a federal state- or community-level in order to enable their implementation (BB60). There have been many changes of the Ökostromgesetz in the past, but they were not appropriate to support green electricity. Furthermore, a broad change in perception of the population as well as a certain linking-up of activists will be needed (BB70) to build a “strong backbone” for renewable energy diffusion in Austria.

Another approach for sustainable energy usage is to first and foremost increase energy efficiency, as the responsible usage of energy shows immediate outcomes (JM21) and will be able to provide a solid basis for further discussion of the implementation of renewable energy throughout the country. It will be important to start a broad public discussion and of course controversy about renewable energy (BB71) in order to change conditions for such projects. At the same time, the

installation of best practice plants may as well encourage political actors to join the discussion about renewable energy. Furthermore, positive examples for renewable energy bring forward follow-up projects in this area (JM21).

Nonetheless, small private suppliers need to actively contribute to a change in conditions for renewable energy, instead of passively wait for this change to come (BB31). Additionally, a change in the general conditions is dependent on the support of large energy suppliers on the federal state level. Support is especially needed in the formation of a decentralized energy supply-system which includes small private suppliers as well (BR59). Nonetheless, a change in the general conditions for renewable energy needs to be initiated by politics in the first line. Instead of staying dependent on conventional energy, resources of regional renewable energy have to be made useable (BR22).

5.2. RESOURCES

Analysis of the interviews conducted in the case of *v-energie* yielded to a number of resources required for the implementation of renewable energy (with citizen involvement) in Austria.

First of all, social resources play an important role for projects initiated by citizens as alternatives to conventional energy supply. Social capital, which in the case of *v-energie* is defined as the intensive interconnectedness of activists and people interested in the topic, serves as a crucial prerequisite in order to ensure guidance, for comparison of perspectives and for the evaluation of options for implementation (BB49). Furthermore, networks of promoters and other activists are needed to attract investors in alternative projects (BB59). Nevertheless, it is difficult to include institutions dependent on the (federal state) government in such networks, as governmental and non-governmental groups regularly have different views on what changes in the general (legal) conditions for renewable energy are needed (BB70).

Regarding technological resources needed for the diffusion of renewable energy, it can be noted that in general the technical implementation of renewable energy plants or tools for single households is not problematic (BR51), as the technologies needed are already available. Especially photovoltaic systems can be implemented easily (BB52, BB66). Nonetheless, it is important to involve architects in the issue of renewable energy, in order to ensure that photovoltaic systems are included in the concept for new buildings from the beginning (BR5). In Vorarlberg there is a large

market for single family houses with high design standards, but aspects of green electricity such as the integration of photovoltaic panels have often been ignored by architects so far (BR5). There is also a big market for passive houses.

Besides the installation of photovoltaic panels in individual housing, small-scale hydro power might serve as an interesting and reasonable alternative in Vorarlberg (BB65). Nonetheless, small-scale hydro power does not seem to be suitable for projects like *v-energie*, as it requires high financial investment, which cannot be guaranteed by initiatives in their start-up phase (BB67).

Furthermore, it has to be said that Vorarlberg would also have the potential for wind energy projects (cf. Dobesch et al. 2003). The interviews and the case study still focus on pv-panels, since these are the most important renewable energy sources used in the small-scale segment yet.

Projects in renewable energy require high financial investment in the beginning and are expected to amortize after approx. 15-25 years or later (photovoltaic systems) (BB29, BR52). Therefore, projects need a long-term financial background and require investors who are willing to provide capital for the long run (BR46).

5.3. ACTOR ROLES

In general, analysis of the case of *v-energie* resulted in the differentiation of three different types of actors fulfilling different roles in the formation process of renewable energy projects:

- (1) *Promoters* are people who initiate projects in renewable energy and are highly involved in the (pre) start-up phases of energy cooperatives. They promote the idea of renewable energy and support projects by using their personal networks to attract members and investors.
- (2) *Investors*: Their main task is to provide a solid financial background for new projects. Investors in renewable energy are predominantly driven by the idea of renewable energy, and not solely motivated by possible profits.
- (3) *Cooperative members* join the energy cooperative and are personally interested in consuming renewable energy.

Promoters, investors and cooperative members in renewable energy projects can frequently not be separated accurately. Hence, promoters can act as investors and

cooperative members at the same time or vice versa. In this case study, we decided to separate the different actors from each other analytically, which enables us to present the characteristics of each type more precisely. They share three basic characteristics:

- First of all, the three types of actors involved have a high level of dissatisfaction with the current situation on the Austrian energy market (BB2).
- Second, they all seem to feel an urgent “need for achievement” and are ready to get their projects started (BB8).
- Third, it seems that a politically predominant “green” attitude can be found in all of the three types (BB2).

Additionally, each type of actor exhibits distinct characteristics which are described in the following sub-sections.

5.3.1. PROMOTERS

Promoters of renewable energy projects possess certain alertness for urgent problems in their surroundings and have a “feeling” for attracting the right people for their projects (BB5). New projects are dependent on the active commitment of promoters, especially in their (pre)start-up phases (BB20). If the commitment of promoting people gets lost, the whole (new) project is at risk (BB20). Promoters of projects may not be single person, but occur in teams (BB9), who need to have a high degree of interconnectedness in order to build up and make use of social capital (BB49). This social capital, e.g. in the form of personal contacts of promoters, can be used to acquire investors for new projects (BB59), in order to assure a solid financial background. Furthermore, members (activists or potential cooperative members) can be found via the promoter’s network (BB53). Therefore, promoters need to extensively make use of their personal contacts to attract enough activists and members for new projects.

The involvement of political parties (or members of political parties as promoters) might be a special challenge for projects in renewable energy, as even projects (or promoters) initialized by political parties need to prove their reliability to people interested in the topic and of course in the project (BR46).

5.3.2. INVESTORS

Attracting investors (and activists) for new projects is a main task of promoters (see above), although this seems to be one of the most difficult tasks, particularly in the beginning of new projects (BR52).

Investors share a common attitude towards renewable energy projects: They are convinced that green electricity (*Ökostrom*) “makes sense” and that quick, decentralized and independent energy supply is important (BB45). Investors know about the problems regarding the general (legal) conditions concerning renewable energy; they know that their investment will not lead to high earnings (BB30). Summarizing, the idea of producing renewable („green“) electricity is a general attitude in their life (BB45). To put it in the words of the chairman of *v-energie*:

“Investors say: ‘It [renewable energy] is so important for me, it is worth to me.’ Therefore, they have a certain readiness – well, that’s the main thing for them” (BB45).

Therefore, investors show great idealism when it comes to renewable energy, high earnings and profit is no important reason for their commitment (JM4), as projects amortize after 15-25 years at the earliest (BB29, BR 52). Nonetheless, some investors hope that energy tariffs will rise significantly over the next years and therefore invest in renewable energy (BB31).

Comparing investors to “normal” members of energy cooperatives or activists in renewable energy projects, it has to be noted that investors might also be persons who do not directly benefit from the energy produced (as consumers) (JM3). As mentioned above, they simply want to financially support such projects because of a “shared vision” for the future.

Renewable energy projects require a great number of investors willing to financially support them in order to ensure an appropriate financial background for the construction of renewable energy plants (BR46). Therefore, projects in their start-up phase need to be built on a solid basement (promoters, supporters); the involvement of political parties might be helpful to attract investors (BB59).

5.3.3. COOPERATIVE MEMBERS

First of all, cooperative members are interested heavily in renewable energy and energy efficiency (BB2). It seems that activists (like investors) are first and foremost

attracted by the idea of renewable energy and do not have concrete expectations beforehand (BB16, JM4). Of course they act as investors by paying a certain membership fee. Cooperative members can choose between two alternatives of earning a profit from the project: (1) their membership enables them to directly obtain electricity (e.g. from their own photovoltaic system installed – extra electricity not consumed can then be compensated by feed-in to the main electricity network or (2) enhancement in value of their cooperative share (BB32), which puts them into the role of investors (see above, JM3).

5.4. ORGANIZATION OF RENEWABLE ENERGY PROJECTS AND INITIATIVES

In order to organize renewable energy initiatives with citizen participation, first of all an organizational framework for coordination and planning is needed (BB13). In this respect, it might be helpful to found a platform, giving investors and other interested people space for information exchange and project planning (BB7), as otherwise the forming of a tight network structure cannot be ensured. Furthermore, it seems to be fruitful in terms of cost efficiency to combine related projects (BB19); special care has to be taken that this step takes place only when the platform is already established and “built on solid ground” (BB21). In doing this, special care must be taken to ensure balance between weaker and stronger projects and initiatives (BB20). Platforms organizing renewable energy projects furthermore need to ensure that all institutions involved have the same goals and do not perform as “solitary actors” (JM22), although they need to beware their own identity (BB28) and maintain a strict regulation between investors and plant owners (BR68).

5.4.1. OBJECTIVES

Platforms for renewable energy projects can be viewed as networks, containing single projects and initiatives, which share one vision and combine their resources and contacts in order to achieve their goals. In the initiating phase of such platforms, this goal might be to realize a certain amount of plants and of course cost recovery (BB14). Further objectives might be:

- Establishment of flagship projects to show a broad public what renewable energy is able to achieve (BB50).

- Kicking-off a political discussion about renewable energy (BB50), enabling citizens to participate the design of general conditions (BR16).
- Overcoming political shortfalls by initializing new models and instruments for renewable energy-production (BR3).
- Enabling successful private initiatives to gain a better basis for negotiation against big energy suppliers (BR16).
- Changing structures in a way that cooperation with private energy suppliers becomes a real alternative for energy customers (BR16), so that market structures change as well (BR 21).
- Achieving renewable energy facilities to become a “matter of course” for individual housing (BR6).

Summarizing, it can be noted that initiatives like *v-energie* do not primarily focus on nation-wide (or federal state-wide) diffusion of renewable energy, but target an advancement of general conditions and acceptance towards renewable energy projects by setting a positive example (BB68).

5.4.2. SUPPORTING FACTORS FOR RENEWABLE ENERGY PROJECTS

First of all, cooperation between interested citizens and institutions seems to be a crucial prerequisite for achieving a common goal in renewable energy (BR48). Additionally, the interviewees considered it to be of utmost importance that citizens start to demonstrate their values concerning renewable energy in public, in order to enable a change of values and initiate the involved dynamics (BR58). Regarding renewable energy projects it is of utmost importance to underline the common ground that connects interested citizens and officials (BR73): First, this independence from other forms of energy (nuclear power or oil). Second, ecological aspects play a crucial role, too. Especially regarding the current situation in Japan and the resulting discussion on energy efficiency and nuclear power, might present a promising starting point for renewable energy.

Another factor supporting renewable energy project is seen in the participation of women in related initiatives: A great proportion of voluntary services (especially regarding citizen participation) is dominated by men (BS3). Women might be able to contribute a different perspective on the topic (BS4). Therefore, it is recommended to aim for an according women’s quota in renewable energy projects, as this seems to

be a fruitful approach for the success of such projects (BS3). Furthermore, women are said to embrace the “cooperative thought” more than men, and appreciate solidarity (BS5).

5.4.3. PROBLEMATIC AREAS IN RENEWABLE ENERGY PROJECTS

In first line, projects need to be autonomous, as dependence from official funds puts projects on a politically influenced level, which might affect processes negatively (BR57). Furthermore, initiatives have problems capturing a clear position towards renewable energy, as the initiatives are dependent on the “good will” and/or funds from communities or the federal state (BB70), as political institutions might stop funding without further notice, if they do not agree with the project’s goals or the initiative becomes too powerful (BB58). Additionally, political influence might result in disturbance through “oppositionelle Machtspiele” (“power games of the opposition”, BB70). On the other hand, assistance from political parties or institutions might of course help to put the project on a higher established level (BB70).

In renewable energy projects, because of the close cooperation among different people and institutions involved, some social problems on a personal level might occur (BR49), especially regarding mutual trust and the formulation of common targets (BR70).

5.5. COOPERATIVE

In general, common objectives do not necessarily need a strict contract, even though it may be helpful in many cases. For renewable energy projects it is important to build mutual trust early. Nonetheless, in case of conflicts it may of course be useful to use a contract to support the initiation of a larger project (BR71). The legal form of a cooperative might be such a kind of “contract” to ensure common achievement of objectives (BR40).

The cooperative bears huge potential for the organization and governance of renewable energy projects (BB10, BB17, JM12). Especially, it enables collective decision making (BR33) within a large number of members. One big advantage of the legal form cooperative is the easy handling of the access /emission (without extra costs) of their members. Hence, the cooperative offers valuable opportunities for public participation, which is a big issue in the field of energy cooperatives.

Anyhow, it is without doubt that the costs of the legal form are a critical point. Regarding the annual costs of a cooperative in Austria (approx. € 3,000), cooperatives in the area of renewable energy need a certain “critical size” in order to ensure cost efficiency and the building of a useful structure aligned to its objectives (BB53). If this critical size is reached though, the opportunities to generate involvement are relatively high compared with other legal forms. Each member has to sign at least one cooperative share and participates thus in the value of the cooperative. The cooperative share enhances the members’ commitment to the project.

In Austria, only little interest in the legal form of the cooperative exists (JM9). This is mainly the result of an antiquated image (BR33) and the relatively high costs of the legal form. Furthermore, there are particular advocacy groups behind the cooperative in Austria (the so called *Genossenschaftsverbände*) that also act as a one-stop shop in services for the foundation and development of already existing cooperatives. This makes this legal form rather unique compared with other options like various forms of companies or associations.

The auditing associations (*Revisionsverbände*) of course would have the opportunity to reduce these costs and thus to contribute in making this legal form more attractive even for smaller projects, e.g. in renewable energy (JM8, see below). Naturally, the many cooperatives in the field of biomass mainly in rural areas where cooperatives have a long tradition should keep in mind.

5.5.1. PROBLEMATIC AREAS CONCERNING COOPERATIVES

In general, it seems that regarding cooperatives as legal forms for renewable energy projects two main problem areas arise: (1) Costs of the legal form, and (2) cooperative law and auditing associations.

a) *Costs of the legal form*

The Austrian cooperative law (*Genossenschaftsgesetz/GenG*) stipulates that each cooperative has to be member in an auditing association. In general, cooperatives have high fixed costs for annual auditing and membership fees in these auditing associations (BB11). These costs amounting at approx. € 3,000 per year are obstructive for smaller renewable energy projects (JM1) when choosing a legal form (JM11, B11). The obligatory membership in the auditing association acts as an advantage and disadvantage of cooperatives simultaneously: On the one hand, the

legally intended audit guarantees reliability for the cooperative members and their business partners. On the other hand though, in comparison to other legal forms the fees sometimes may cause a problem, in particular for small cooperatives. Nevertheless, it has to be considered that each legal form causes certain fees. E.g. most of the registered associations or companies of limited liability also need cost-causing legal and tax advices or marketing consultancy, although they have not to be member in an association.

This in turn means that even if the cooperative principles provide an adequate governance structure for renewable energy projects, initiators or responsible persons might choose another legal form (e.g. an unincorporated association, cf. 8.2).

b) Cooperative law and auditing associations

The cooperative law in Austria is viewed as being obstructive in the area of renewable energy projects (BB11) or in areas with citizen participation in general. Furthermore, auditing associations are said to impede the foundation of cooperatives in innovative areas, like in renewable energy (JM3) because of antiquated structures (JM7). The founding of a cooperative in Austria is time-consuming, although founders get support from auditing associations (JM6).

5.5.2. COMPARISON OF THE COOPERATIVE WITH OTHER LEGAL FORMS

The cooperative as a legal form bears some advantages over other legal forms (JM15, JM16):

- Members can easily join the cooperation (entry and exit of members)
- External control through auditing associations
- Lower capital assets necessary in the founding process (compared to other legal forms like limited companies; in future, the so-called “small limited company” might become a “rival” for cooperatives in renewable energy (JM14))

On the other hand, it turned out from our interviews that founding an unincorporated association is viewed as being superior to the cooperative (BB12). For instance, cooperatives are interpreted as being more “formal” or “official” than associations, and interested people are frightened off because they fear responsibility (BR35). Furthermore, unincorporated associations are rather typical for citizen initiatives in a broad range of areas (BR36). Nonetheless, cooperatives and unincorporated associations are sometimes viewed having long and complicated ways of decision making due to member participation (BR38).

6. DISCUSSION

Results of our case study show that there are a lot of different problematic areas that impede the dispersion of renewable energy plants and projects in Austria.

Although Austrian municipalities claim to increasingly seek the support of citizens in the delivery of public services (Moedlhammer, 2009), it seems as if the production of renewable energy is heavily affected by “big players” in the electricity sector, trying to maintain their market share and influence. Members of alternative projects like *v-energie* therefore call for more support from the federal state. Furthermore, legal restrictions for green electricity seem to block out private initiatives and therefore constrain the diffusion of alternative energy. Results show that a number of changes in the general framework conditions of Austria are needed to support the installation of alternative electricity plants. Most prominent, a call for a change in the legal conditions (*Ökostromgesetz*) could be noted.

Concerning an appropriate resource basis for energy projects, our results show that social resources (e.g. in the form of social capital) play an important role for the participation of citizens. Furthermore, this holds true if energy projects are to be organized based on cooperative principles. In the case of *v-energie*, social capital serves as an important prerequisite for the linking-up of interested people, as it is of utmost importance for citizen-based organizations whether citizens who are initially involved can access complementary resources through their own personal networks (Lang & Roessler, 2009). In doing so, initial members – promoters – use their networks to attract members and investors, helping to build a solid basis for future work.

Results of our case study demonstrate the importance of considering the personal component of PCPs in the renewable energy sector. Actors in renewable energy projects share common characteristics, no matter if they are promoters, investors, or “just” cooperative members. Together with a commonly shared high level of dissatisfaction with the current energy market, actors feel an urgent “need for achievement” and share a predominantly pro-green political attitude. The production and consumption of green energy collectively gives a certain additional “sense” in their lives, as Müller and Rommel (2010) note: “Producing one’s own electricity seems to make a difference. The electricity produced by a cooperative feels different from electricity purchased from a private company” (p. 9). A change in consumer-producer relations can be noted, and the cooperative might provide an adequate organizational framework for reducing information asymmetries, giving members and consumers the possibility to know *how* and *by whom* their electricity is produced (Müller & Rommel, 2010).

Summarizing, our study provides evidence that cooperatives provide an adequate legal form for the organization of renewable energy projects. The easy handling of entry or exit of members offers important opportunities for citizen participation. Nonetheless, little interest in founding cooperatives in Austria exists, due to an antiquated image and high costs of the legal form. But empirical studies (e.g. Karner, Rößl, & Weismeier-Sammer, 2010; Lang, Rößl, & Weismeier-Sammer, 2010) provide evidence, that citizen participation in the form of cooperatively organized public citizen partnerships (PCP) bears a huge potential in public service delivery. As our case study of *v-energie* shows, this seems to hold true for the provision of renewable energy as well.

7. IMPLICATIONS FOR PRACTICE AND FURTHER RESEARCH

The organization of renewable energy projects with citizen participation is a quite new field of cooperative research. Furthermore, especially regarding the situation in Austria, little to no empirical evidence for cooperative energy projects exists. Therefore, our case study has an explorative character in order to elaborate generally how cooperative principles might contribute in diffusing renewable energy projects with citizen participation in Austria. Furthermore, results of the case study might be helpful for other countries or areas, where the initial situation in the area of renewable energy cooperatives is comparable to the one in Austria (especially regarding problematic general framework conditions).

Analysis of our qualitative data collected showed that in general five major subject areas demonstrate relevant areas for the diffusion of renewable energy with citizen participation in Austria. These categories might provide important input for other regions or countries as well, by raising the following questions:

- *General framework conditions*: How do legal and political circumstances impact the foundation of cooperatives in the renewable energy sector?
- *Resources*: How does social capital support the development of cooperatives in the renewable energy sector and to which extent might it be useful?
- *Actor roles*: What are the characteristics of actors involved in renewable energy cooperatives? How might they be attracted to join projects?
- *Objectives*: Which objectives might platforms or networks for renewable energy provision follow? Which objectives seem to be fruitful in order to push the diffusion of renewable energy projects?

- *Cooperative*: How can cooperative governance structures support the organization of projects for renewable energy production and consumption? Which problematic areas arise regarding the legal form of cooperatives?

As can be seen from the categories above, results of our case study bear implications for practice as well. For example, it seems to be fruitful to concentrate on the legal conditions in Austria to support renewable energy provision. Therefore, a revision of the Austrian cooperative law might encourage more activists to choose the cooperative as an appropriate legal form for their projects. Furthermore, auditing associations (*Revisionsverbände*) might initialize campaigns assuring citizens that cooperatives are a modern and democratic way for organizing citizen participation.

Nonetheless, our case study has a strong explorative character. For further research, it might be fruitful to analyze other good practice examples, e.g. in in-depth multiple case studies to draw a more fine-grained picture of the role of cooperatives in renewable energy production.

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