

Raiffeisen's cooperative idea and the NIMBYism syndrome

The meaning
of citizen energy
cooperatives for
the Energy Transition

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Introduction

In the 19th century, small farmers in German rural areas were heavily dependent on moneylenders. Reasonable bank loans were not available at that time. So-called usurers gave loans with very high interest rates. Subsequently, many farmers went bankrupt and lost their farmstead. The German cooperative pioneer Friedrich Wilhelm Raiffeisen was the mayor of several communities in the Westerwald region. He was confronted with extreme poverty in rural areas. At first, he wanted to change the situation with welfare policy and a charity organization. Later he recognized that successful poverty reduction requires a common self-help organization owned by the individuals concerned. The Heddesdorfer Darlehnskassen-Verein was the first credit union advanced by Raiffeisen in 1864. They managed deposits and provided loans for the local population. The Raiffeisen banks accepted local members only and had better knowledge about the borrowers and their credit rating. Moreover, the local member group of the banks was able to exercise social control of the debtors. In turn, this resulted in higher confidence in the bank among local population. Better knowledge about creditworthiness and control were the advantage over the moneylenders then.

Raiffeisen's cooperative idea has been revived in renewable energy cooperatives worldwide now. Local knowledge, trust and social control are also essential for this kind of community energy. Many people join renewable energy cooperatives in their communities in order to get the opportunity of taking part in the energy transition. Supporting the local economy is another motivation to set up and run energy cooperatives on a voluntary basis. Regarding the energy transition as a whole, cooperative ownership and common responsibility increase acceptance of renewable energy power plants among the residents. This role of local energy cooperatives is currently acknowledged by

the European Union. In the end of 2018, the EU released the Renewable Energy Directive and defined an explicit role for citizens and communities in the European energy transition. Cooperatives should have the right to produce, consume, store and sell renewable energy in all member states. Renewable energy communities should be considered when designing national support schemes. Although it was not intended, the EU acknowledges Raiffeisen's idea of local cooperation and common responsibility.

This article sets out to explain the role of renewable energy cooperatives in detail. The focus is on the acceptance of renewable energy by overcoming the 'Not in My Backyard' (NIMBY) syndrome.

I. The German Energy Transition

The German Energiewende (Energy Transition) is well-known as one of the most successful energy transition policies in the world. The German government set ambitious targets of 80% of electricity supply from renewable sources by 2050, and 18% of the overall energy supply from renewable energy by 2020.¹³ Currently, approximately 35% of electricity production comes from solar, wind or biomass energy sources.¹⁴ In peak times, this share increases up to 85% as of 2017.¹⁵ All across Germany, wind turbines have been erected, solar panels have been installed on roofs and biomass generation facilities have been built in the last years. The main driver of this development is the national energy law which entails a Feed-in Tariff system¹⁶ and grid priority for renewables. Not only investors and project developer, but also many craftsmen, small and medium size service companies, and regional banks benefit from this development.

Despite the successful results up to now, there are still many challenges ahead to overcome. Most of the questions are about technological issues,

13 http://www.gesetze-im-internet.de/eeg_2014/_1.html.

14 <https://www.unendlich-viel-energie.de/mediathek/grafiken/der-strommix-in-deutschland-2018>

15 <https://www.agora-energiewende.de/de/presse/agoranews/news-detail/news/ein-sonntag-fast-ohne-kohlestrom-1/News/detail/>

16 The Energy law EEG 2017 has been changing the Feed-in Tariff system for different energy sources to auctioning (http://www.gesetze-im-internet.de/eeg_2014/BJNR106610014.html#BJNR106610014BJNG000901123).

such as how to deal with the fluctuation of electricity production, the right capacity of the grid or the development of energy storage. They do not necessarily develop at the same time. Another challenge is the financing of the energy transition investments and the increase of energy cost. In Germany, private households and small companies cover the cost of the expansion of renewable energy. In other words, energy consumers are paying the bill. In addition, the roll-out of renewable energy takes place in rural areas. Although the majority of German citizens is in favour of the Energiewende,¹⁷ most of them would say “please, not in my backyard”, if asked directly. However, local citizens’ opposition to renewable energy is likely to decrease, if the residents own the plants and share in the economic benefits of the development.

Renewable energy cooperatives can contribute to solve the aforementioned problem of social acceptance. The reason is that energy cooperatives could bring citizens, local businesses or farmers together to pull resources for constructing and owning renewable energy facilities with positive effects on local income, jobs or tax payments to the community. Cooperatives have a long history of playing an important role supporting local economies in Germany and the cooperative model has been successfully utilized for renewable energy production.

The following examples will describe how renewable energy cooperatives have helped German citizens realize the economic benefits of renewable energy, how cooperatives have fostered public acceptance and, consequently, how renewable energy cooperatives advanced citizen and community involvement in the German energy transition.

II. Data about energy cooperatives

The number of renewable energy cooperatives has increased enormously in recent years.¹⁸ The

foundation of this kind of citizen energy organizations has been growing at an impressive rate. Since 2006, almost 860 energy cooperatives with more than 180,000 members have been formed. 95 % of the members are private citizens. Most of them participate with small amounts (average shareholding value is 3,900 Euro). On average, the members get a dividend of 3.98 % or 155 Euros back. Arithmetically, this is almost the same amount of money a private household pays for the renewable energy surcharge in Germany. However, anyone can participate in energy cooperatives with small shares because the minimum participation share is very low. To become a member, 34 % of the energy cooperatives claim up to 100 Euros. All in all, energy cooperatives have already invested around 2.7 billion Euros in community power plants and they already produce around 1 Gigawatt of clean power. This is double the amount of electricity that the 180,000 households need annually. It means that renewable energy cooperatives already produce more electricity than their members need for their homes.

New energy cooperatives operate with a high equity ratio of around 50 percent. Citizens are keen to participate in the energy transition with their own money and to support the regional added value. Photovoltaic cooperatives, for example, enable many citizens to make a modest financial contribution to developing renewable energies in their own local area. Solar energy plants are often launched jointly by communities, public institutions, local service companies and regional banks. Cooperatives facilitate the collective commitment of various local players and bring together broader social, business, municipal and environmental interests. Mostly these plants are installed and maintained by craftsmen based in the region. So, the regional added value is strengthened too, which increases public acceptance even more. Besides solar and wind power, cooperatives also run district heating systems and electricity grids.

In the following chapter three typical cases of

¹⁷ 93 % of the German citizens support the further expansion of renewable energy (<https://www.unendlich-viel-energie.de/themen/akzeptanz-erneuerbarer/akzeptanz-umfrage/klares-bekennnis-der-deutschen-bevoelkerung-zu-erneuerbaren-energien>).

¹⁸ <https://www.dgrv.de/en/services/energycooperatives/annualsurveyenergycooperatives.html>

renewable energy cooperatives will be presented. Their stories tell us how to create regional added value with renewables, how to achieve acceptance for renewables and how to develop a renewable energy system at lower costs.¹⁹

III. Example 1: Boosting local economy

What can we do locally to engage in Germany's energy transition? And how can environmentally friendly and sustainable solutions contribute to regional development? "This is something we have to tackle together at a local level. The best option would be a cooperative", says Michael Diestel, board member of Friedrich Wilhelm Raiffeisen Energie eG (FWR). The founders of the cooperative consciously focused on the self-help approach of the German cooperative movement's pioneer Friedrich Wilhelm Raiffeisen.

FWR was founded in June 2008 in the city of Bad Neustadt (Federal State of Bavaria). The cooperative provides citizens wishing to support renewable energy through modest financial investments with the chance to link up with like-minded people. This not only accumulates regional capital, but also legal and economic expertise. Not everyone has the necessary expertise and experience required for the construction and operation of such facilities. An energy cooperative also motivates the owners of suitable rooftops to have photovoltaic systems installed. A farmer may toy with the idea of installing a system like this on one of his barns, but frequently the effort and risk required is too great to consider going it alone, especially if the project is likely to entail considerable investments, in addition to his farming costs.

The investment would also involve administrative and insurance costs. These responsibilities are more easily and more effectively handled in a cooperative context. In this respect cooperatives offer a major advantage in that they can tap into the potential of sites to which private individuals would never gain access on their own. "In rural

areas there are plenty of unused rooftops. Lots of churches, supermarkets, farm or community buildings could be fitted with solar systems", Diestel says. The owners of these rooftops can either allow the FWR to use these areas for free, or rent them to the FWR, even if they themselves do not wish to be financially involved.

The FWR's first photovoltaic system was installed on roofs belonging to the Bad Neustadt municipal works yard in November 2008. Its peak capacity is 270 kilowatts and it has been producing about 235,000 kilowatt hours of electricity per annum. The average annual electricity needs of 60 private households can be covered by a facility of this size. With a service life of 20 years, the system has been saving approximately 4,150 tons of carbon monoxide (CO₂). Those who invested 4,000 Euros in the facility contribute directly to the production of green electricity in an amount approximate to that which they consume annually in their own home. Overall, nearly 1.1 million Euros have been invested in the project. Two thirds have been financed by loans and one third by equity. Every resident was entitled to be involved in the energy project, the minimum share in the investment being 2,000 Euros.

The production of renewable energy is also intended to support the region. "Our motto is to use local resources and feed the profits generated back into the local community and for the benefit of the residents", explains Diestel. Accordingly, local craftsmen are responsible for installing and maintaining the technical facilities. A regional bank provided the loan. The shares in the solar system too were offered first to Bad Neustadt residents, then to residents in the outlying area, and only then to investors from outside the region. The community also benefits from additional trade tax income.

Boosting the region's profile is also central to a project in the community of Großbardorf where a photovoltaic facility is financing the roof of the local football team's home playing field. The German Football Association (DFB) requires cov-

¹⁹ The following examples are extracted from <https://www.genossenschaften.de/gr-nderfibel-energie>.

ered seating in the stadiums of the teams in its upper divisions. The home team, TSV Großbardorf, faced a dilemma when it qualified for upper division play: Who will pay for the roof over the stands? The solution came from a local energy cooperative, who offered to rent the rooftop after it was built and use it as an energy-generating location by installing solar panels. Even after paying the rent for the rooftop, the cooperative is able to make a financial return on its investment. So, in the end, the entire community wins: the fans, the team and the environment.

IV. Example 2: Solving the NIMBY (Not-in-My-Backyard) problem

In Germany, many people support the expansion of renewable energy. But whenever an energy project is planned right outside someone's front door, consent can start to disintegrate. Wind power in particular is unpopular with residents in many regions. In the southern part of the Federal State of Hesse a cooperative was founded to counter the NIMBY problem. "If you've got to look at it, you might as well get the benefit", says Micha Jost, board chairman of the Starkenburg eG energy cooperative. Jost had long been committed to the idea of using a cooperative to run wind turbines,

which entail a lot more financing, planning and construction effort than solar systems. The first cooperatively owned wind turbine was a chance affair: financing was still needed for a wind farm which had already been approved near the community of Seeheim-Jugenheim.

Two wind turbines had been planned on a small hill called "Neutscher Höhe" for some time. "Public opinion in the direct vicinity was clearly against the project and the local newspapers too were very lukewarm", explains Jost. But as soon as the residents of the neighboring communities got the opportunity to invest in the new wind energy cooperative, acceptance for that project began to increase: 230 residents from the region have invested in the wind turbine. Almost half of them are people who live in its direct vicinity. Finally, the wind turbine was entirely financed by equity, that is to say, by the money of the residents.

The energy cooperative was founded in December 2010. "In the first place, we are keen to involve the people who live close to the project sites", continues Jost. "We particularly want to target those residents who either didn't own their own property or had no funds to install a system of their own." Since the focus from the outset was on wind energy – which requires a comparably high level of equity – they deliberately opted for a regional approach. The idea was to reach as many people



Fig.: Members of the energy cooperative Starkenburg eG in front of the citizen's wind turbine "Gute-Ute" on the Neutscher Höhe in the Forest of Odes

as possible in many different villages. “We were extremely surprised by how much private capital there proved to be in the region and by the willingness of people to invest in their own new cooperative”, reveals Jost. The funding volume for the wind turbine was 3.5 million Euros.

On 30th July 2011 on the Neutscher Höhe, a ground-breaking ceremony was held for the first wind turbine. Every year the turbine has been generating some five million kilowatt hours of electricity. Statistically speaking this is enough to supply 1250 households with their annual electricity needs. The facility has been saving some 2,800 tons of CO₂ per annum.

Another aspect of the cooperative’s philosophy is the conservative nature of its calculations: Jost says “we would rather guarantee people a little less than disappoint them later – if the return on investment doesn’t turn out to be as high. Since we all live in the area, that’s really the only option anyway.” The cooperative is not the place to make a fast buck. Any involvement represents long-term and sustainable investment in renewable energy – while being an incentive for members to address the topic at a local level. To become a member, you only need to purchase two shares at 100 Euros each.

A short summary of coming energy projects is published on the cooperative’s website.²⁰ Interested parties can request a brochure featuring a comprehensive description of the project. Those who are serious about investing can then register their interest, stating how much they wish to invest. If there is sufficient interest, the paperwork – that is, the membership application and loan contract – is dispatched to make involvement in the project official. “This enables us to attract interested parties to our projects step by step. We want people to track the projects and their progress over years”, Jost sums up.

V. Example 3: Low energy costs through cooperation

Autumn 1997: In Lieberhausen, a satellite of Gummersbach in the western German region Rhineland, the board of the village association was holding a meeting. The community was planning to update its sewage system. The discussion centered on whether the opportunity could also be used to install a new heating system based on renewable sources. But how do you get from a freshly dug ditch to an energy supply for the entire village? Where do you start with such a project?

“The first step was to approach our regional utility” recalls Bernd Rosenbauer, chairman of the Lieberhausen eG energy cooperative. “We asked how much the construction of an environmentally friendly heating system would cost each resident. When we heard the price, we dismissed the idea immediately.” Each household connection would cost approximately 12,000 Euros. Another way had to be found if the original vision was not to simply disappear. So it was important to get the residents of the community of Lieberhausen actively involved.

A feasibility study was conducted – and the project was approved at the very next annual meeting of the village association. At least 40 households would need to take part for the system to pay off. To the surprise of the initiators, 42 households agreed to be involved, although the calculated energy price was more than the current cost of their own oil heating. But even then, it was obvious that the price of fossil fuels was going to continue increasing. “Our neighbours reached a very rational decision. All those involved agreed that this wasn’t about a political debate, but about the common future of our village”, explains Rosenbauer. These days, 92 of a total of 108 houses in Lieberhausen are connected to the local heating network.

In April 1999 the Lieberhausen eG energy cooperative was founded as the body responsible for the heating plant and district heating system. “The villagers themselves needed to have a direct say – after all we wanted to get everyone actively involved. A project by residents for residents, where no-one could come from outside and tell us

²⁰ <http://www.energiestark.de/>

what to do”, continues Rosenbauer. Thanks to the villagers’ own initiative, they saved themselves a great deal of money during the planning, construction and operation of the plant.

The bio-heat is generated by a woodchip-fired heating plant, fed by material from local forests. The idea was Rosenbauer’s, who had asked himself ever since he was an apprentice forester whether it would not be possible to change from oil to wood as a source of energy. Lieberhausen has proved that this is possible. In the run-up, several residents were worried that the local forest would have to be felled to provide enough wood for the plant. But that is not the case: enough wood is made available from the region’s forests by regular forestry maintenance.

The members bought shares in the cooperative to the tune of 90,000 Euros. The cooperative fee for each member was set at 1,050 Euros, and an additional network fee of 1,500 Euros also had to be paid. Each house connection cost approximately 3,000 Euros, meaning that each household had to invest a total of 5,500 Euros in the project. The network enables a family living in an older property to save approximately 1,000 Euros a year in energy costs. By the sixth year the plant has already started to pay its way.

Thanks to the dedicated involvement of the Lieberhausen residents, it was possible to complete the project swiftly and affordably. They spent more than 5,000 hours assisting voluntarily in the construction of the plant, and dug the ditches for the pipeline connections to the houses themselves. Much of the plant operations and accounting are also in voluntary hands. In addition, the furnace needs to be cleaned every three months; this work is also done by the members. This keeps running costs down and strengthens the sense of community within the village.

And now the villagers of Lieberhausen receive visits from other interested villages and interest groups. The transfer of knowledge and the preparatory planning for other villages represent additional sources of income for the cooperative. The village guesthouse and B&Bs are delighted by the influx.

VI. Short summary

The development of Germany’s renewable energy cooperatives is a success story in many ways. Cooperatives enable citizens’ participation in green energy projects and ensure the economic impacts benefit the local citizens. Additionally, citizens’ participation stimulates acceptance for renewable energy and the motivation of the people on site in many cases. Local citizens’ opposition to green energy development decreases, if they have ownership. They become more motivated to think about their own energy consumption and to change their behaviour. The move to a new energy system is a complex learning process which depends on the activities of the people on-site. Last but not least, energy cooperatives not only contribute to the clean energy future, but also revitalize rural communities. The examples presented above show how the local economy can benefit from renewable energy investments. For this, the energy transition should be achieved locally.

To sum up, despite all the legal, economic or cultural specifics in different countries, there is a good experience from Germany to share: Citizen energy and local cooperation is the key for acceptance, motivation and widespread economic benefits. That is what Raiffeisen taught us already.