Sprakebüll – A Pioneering Energy Community in Norh Frisia, Germany

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Highlights

- Over 20 years of experience with citizen participation models
- Village with the highest car e-mobility density in Germany
- Long-standing tradition of windmills, which served as a foundation for citizen acceptance of wind turbines

Background information

Sprakebüll is a small municipality in the district of North Friesland, situated within the state of Schleswig Holstein. With 247 inhabitants and an administrative office located in the town of Südtondern. The municipality has over 20 years of experience with citizen participation models. Primary economic activities in the region are based on agriculture. In the region there has been a long-standing tradition of windmills, which has been used for the production of electricity. The concept is nothing new, which translates to a high level of acceptance for wind energy within the local population. The majority of locals support the wind turbines, as the profits stay in their own pockets and the tax money remains in the municipality, instead of flowing to an external body. Schleswig Holstein is home to approximately 300 community energy initiatives. This is by far the highest number of community energy initiatives per person of any given state in Germany. The state also plans to reach a 100 % renewable electricity supply by 2020.

Brief description of what was done

In 1998 the villagers decided to set up the first wind park (5 windmills, each 1,65Mw), which are owned by the local villagers. The second locally owned wind park soon followed (1st wind farm with 22 citizens, 2nd wind farm with 183 citizens). In 2011 the Stadum-Sprakebüll wind park was further created with 3 windmills and a generation capacity of 2,5Mw each. In 2014 the first repowering project was conducted. Where the original 5 windmills, each 1,65Mw were replaced with ones producing 3,6Mw each.

After the initial investment in the wind turbines, one local family became especially interested in solar energy and in 2009 constructed a 100 MW PV installation on 7 hectares of land, with the intention of setting up a solar energy park. As they could not receive a permit for a commercially sized solar energy park, they started selling the solar panels to local investors.

In addition to the production of wind and solar electricity, the villagers utilized a privately owned biogas plant. They set up a district heating cooperative and with the help of the municipality received a pre-financing of investments, for a satellite CHP (combined heat and power), boiler and heating network. The municipality then leased it to the cooperative, to produce both heat and electricity. The biogas plant size is 1.7 MW with 3 heating grids. The heating network is installed in the village center, where the cooperative power supply Sprakebüll eG buys heat from the privately owned biogas plant, located at the end of the village and distributes it via the heating network to the inhabitants. There is a high connection density (over 90 %) to all households.

These three forms of renewable electricity production complement each other, as it can be sunny and windy at different times and the biogas production can be adjusted so that it runs higher at times when there is no sun and wind.

Project champions and motivations

The main project champions were five villagers who were especially keen in implementing the community wind farm project. This included the village Mayor. However, one of the five individuals was especially motivated to play a role in altering the fossil dominated energy landscape. By endeavoring into the then lesser known field of renewable energy production, he self-educated himself in the field of decentralized renewable energy production.

Decision making process

Once a year all shareholders of the wind park are invited for an annual assembly. Where retained earnings are discussed and how much dividends are expected in the coming financial periods. All new project applications must be submitted to the municipality. Competent advisors in the various fields of legislative framework, financial consultancy and technical know-how greatly aided the decision making processes.

Ownership model adopted

The community wind farm project adopted the GmbH & Co. KG model. It is suitable for larger projects with higher investment volumes that require a limitation of liability. Voting rights depend on the proportion of capital invested, not on the traditional "one member, one vote" cooperative principal. The allocation of shared ownership was important to the GmbH & Co. KG founders. The shares were not sold via a ‘first come – first serve’ principle, but on geographical criteria i.e. preference for local citizens investing in wind power.

Financing and economic viability

The wind park project originally costed 15 million Deutsche Mark (DM), from which the community was required to have 3 million (20%) equity. Initially the financing situation seemed condemned, until the project founder decided to offer a financial rent as payment, in exchange that the local landowners agreed to lease their land and also co-invest in the wind park. With successful participation, the project leader was able to go to the regional bank (Raiffeisen Cooperative) and borrow 700,000 DM, from an original base sum of 100,000 DM. In the following meeting the project manager had 700,000 DM capital and the support of the landowners. Upon realizing the potential of this venture, many local citizens decided to jump aboard and invest. In the second meeting 2,3 million DM was already at the disposal of the project manager. The primary investment motivation for most individuals was profit.

The doubling of production yields from the repowered windmills meant that the community was also financially better off. Increased profits translated into increased trade and income tax. The revenue from the project are distributed according to the level of investment (number of shares). Limited partners have to pay income tax, while the limited commercial partnership (KG) pays trade tax. Where the local municipality acquires 25 - 30% of it for its own use. Earned capital was partly reinvested into the district heating network, while external funding came from the KfW Entwicklungsbank (development bank). In addition, a local innovative e-mobility car project investment proposal of 60,000 euro, received a 75% government subsidy.

Project benefits

The municipality is doing economically healthy because of the increased trade tax revenues from the wind power. This proved to be a strong catalyst for communal projects and the utilization of other low-carbon systems. These include:

- Additional bicycle paths (6.5 km), new playground, joint-financing of a nearby swimming pool and purchase of a residual farm in the center of the village. Which will be demolished and in its place will be space for ten housing plots.
- Investment in district heating system, based on the production of the locally owned biogas plant.
- Ductwork was laid for the fiber-optic network. The state of Schleswig Holstein is the first state in Germany which guarantees a 100% glass fiber connection rate.

Barriers

- Strict environmental laws - building permissions for wind turbines are difficult to obtain. Ecosystem protection has a high priority within German building laws.
- Change of the German Renewable Energy Sources Act - meaning that renewable electricity produced will have to be marketed directly to customers. Including private households and industrial enterprises.
- Selecting suitable storage systems - for excess electricity produced.

Main lessons learned

- Keeping up to date about new technological developments and legal frameworks is crucial in keeping up with dynamic energy market conditions.
- Possess qualities such as mental determination and willingness to take risks.
- Inclusiveness, in an open and transparent dialogue with the community is critical in giving citizens the feeling of belonging to something bigger.

Project champions' recommendations to policy makers

- Expand the grid distribution network so that wind turbines do not stand idle and can distribute electricity further afield.
- Aid community energy projects to access viable marketing platforms for their clean electricity.
- Direct marketing support mechanisms should be further developed with adaptable support mechanisms.

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