

RIFS-Blogpost

Datum:

Autor*innen:

Projekt:

Rural Areas - Pioneers of the Energy Transition?]

Fließtext



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The delegation of researchers at the wind heat storage system.

The municipality of Uckerland in northern Brandenburg has embraced renewables like few other towns in Germany to become a model region. On 8 October, a group of RIFS researchers visited this energy transition frontrunner and

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Zitation: [Auerswald, Dajana;Beste, Katharina] (2024): [Rural Areas - Pioneers of the Energy Transition?] – RIFS-Blogpost, 28.10.2024.

URL:



spoke with representatives from local government, utility companies, and local politicians.

Renewables are crucial for the energy transition. Despite this, the build-out of electricity grids and efficient storage technologies is lagging behind the rapid growth of wind and solar energy capacities in Germany. This leads to an oversupply of electricity on particularly windy days in regions with high wind power capacity, such as the northern Uckermark in Brandenburg. This surplus power causes the become unstable and wind turbines have to be switched off to avoid grid overloads.

Together with energy company Enertrag, the municipality of Uckerland has found an innovative solution to this problem. In 2021, a wind heat storage system was installed in Uckerland to provide a local heat supply.

During their visit to Uckerland, the delegation from the research group "Democratic Governance and Agency" sought answers for three questions in particular: **What potential do rural areas harbour for the energy transition? What challenges do they face? How can citizens in rural areas be involved in energy projects and what political hurdles impede this?**

Signage directs visitors to the wind heat storage system.

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The research group "Democratic Governance and Agency" conducts problem-driven research about the transitions to climate-resilience and investigates the prerequisites for sustainability transformations, mechanisms for political and the design of climate and energy policies.

1.1 Harnessing 'surplus' electricity

Mayor Matthias Schilling invited the RIFS delegation led by research group leader Dr Franziska Mey to visit the municipality of Uckerland and gain an impression of the region and its flagship project. The group was welcomed to the local government offices in Lübbenow by Mr Schilling, who delivered a brief presentation on the municipality, its wind energy and heating projects and future plans for climate neutrality. The discussion that followed focussed on the topic of energy justice and achieving a fair balance between costs and benefits for the rural population in the energy transition. While the Uckerland region is a significant electricity producer, customers in the region pay some of the highest electricity prices in Germany – largely due to high grid fees.

With a population density of 15 inhabitants per square kilometre (Amt für Statistik Berlin-Brandenburg 2024), Uckerland is extremely sparsely populated compared to the German average of 233 in 2021 (Deutschlandatlas). 87 per cent of the land area is used for agriculture, while only 2.3 per cent is occupied by a permanent structure.

In Uckerland, 9 per cent of the land area has been designated as suitable for wind power generation. Wind turbines dot the landscape and the 100th turbine was erected this year. However, because all of these installations are privately owned, neither the municipality nor the local population benefit directly from value they create. Since 2021, 'surplus electricity' from the neighbouring Nechlin Wind

Farm has been used to power an innovative solution. On particularly windy days, when the renewable electricity generated cannot be fully fed into the grid, excess electricity is diverted to a power-to-heat plant. This system supplies cost-effective heat to a decentralised local heating network to which around 40 households - 90 percent of the total population - are connected. As a consequence, residents can save between 1,000 and 1,500 euros per household in heating costs per year. Mayor Schilling emphasised that in structurally weaker regions like Uckerland, enabling locals to share in the financial benefits of renewables is crucial to building acceptance.

Jörg Müller, Chairman of the Supervisory Board of the local energy operator Enertrag, emphasised during the discussion that low-cost heat and mobility are important to locals. The plant shows how energy justice can be achieved.

Jörg Müller (right) explains the wind heat storage system.

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The storage system consists of a large water tank with a capacity of one million litres, which covers the supply for up to 14 days during the main heating period. When the wind farm produces enough surplus electricity, it is used to heat the water in the tank, a solution that is often referred to as “power-to-heat”. This hot water is distributed via a heat network that was installed years ago and operated using a wood chip boiler.

If Mayor Schilling has his way, the system will set a precedent for other districts of his municipality. However, the success of the Nechlin wind energy storage system is also due to a special legal exemption granted to the municipality. Under the current provisions of the Renewable Energy Sources Act (EEG), operators are compensated in full for the curtailment of surplus electricity from wind power. However, if this electricity is diverted to the local heat supply, the Federal Network Agency is no longer liable to provide compensation and the EEG feed-in tariff applies. This would make the plant unprofitable for the operator and local residents.

For now, this legislation hinders the installation of heat storage tanks in neighbouring villages, which cannot benefit from the Nechlin heating network as the municipality’s eleven districts are too distant from one another. Jörg Müller explained more about the system during a tour of the facility, which is permanently accessible to visitors, even without a guided tour. The plant is encased in a glass structure, showcasing the technology and adding to the project’s transparency.

The glass front of the heating plant.

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1.2 Price as a communication strategy

During a short refreshment break, the group was joined by Roland Klatt and Tobias Kersten, Mayor and Climate Protection Manager of the municipality of Nordwestuckermark, Annett Hartwig - District Director of Brüssow, and Wenke Möllhoff, a farmer at Pflanzenbau Hof Fichtner.

Harald Jahnke, Managing Director of regional utility company Stadtwerke Prenzlau, then presented geothermal and hydrothermal projects in the Prenzlau regional. In the subsequent talks, we shared our views on key aspects of the energy transition in rural regions, citizen participation and its opportunities and hurdles, with one aspect in particular standing out: "You can talk about transformation all you like, but what counts for us Uckermarkers is the price" – a quote from a local farmer that cuts to the heart of the debate. As mentioned earlier, money helps to build acceptance for renewable energies. One participant suggested that communications with citizens should focus substantially on pricing rather than the energy transition, as "sustainability" is not a tangible good in everyday life in the way that low-cost mobility or affordable heating are. Pricing is also perceived as a hurdle within the broader process of the transformation towards sustainability.

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1.3 Between politics and the energy transition

Finally, the RIFS researchers were particularly interested to learn about the changing political climate following the recent elections, which saw the populist far-right "Alternative für Deutschland" (AfD) claim 29 per cent of the vote. The picture was very mixed. While Harald Jahnke from Stadtwerke Prenzlau reported that all of the parties were pulling together on the issue of geothermal energy,

Mayor Klatt reported that members of the AfD on the municipal council had vowed to prevent the development of new new open-field solar parks. The participants noted that there is widespread discontent in the region with inconsistent decisions taken by the Federal Ministry of Economics – particularly with respect to the Heating Costs Act – which unsettled citizens and hampered utility companies’ customer relations and communications. Overall, the participants in the discussion would like to see a more fact-based debate in which companies and energy experts take a leading role.

The trip to Uckerland showed us that rural areas play an important role in the energy transition and are already leading the way with innovative projects such as the wind heat storage system. But we need more projects like this that enable citizens to share in the benefits of Germany’s growing wind and solar sector – the opportunities for this are too few and far between and this prevents people from seeing how their community fits in the energy transition. Tangible financial incentives can generate support for sustainability projects – even where sustainability does not take centre-stage in communications and debate.

The water tank of the wind heat storage system.

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1.4 Literature:

Amt für Statistik Berlin-Brandenburg (2024): Statistischer Bericht. Bevölkerungsentwicklung und Bevölkerungsstand im Land Brandenburg Juni 2024. URL: <https://www.statistik-berlin-brandenburg.de/a-i-7-a-ii-3-a-iii-3-m> [zuletzt 22.10.2024].

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