

# Renewable Energy Communities: Ollersdorf study case

Energiesystem- und Klimamodellierung

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## Motivation und zentrale Fragestellung

Energy communities has huge potential to meet the EU energy transition targets. Individuals, communities and local authorities are at the vanguard of EU's energy transition: they are increasingly controlling and producing their own renewable energy and fostering the transition to fairer and decentralised energy. This work assesses future possible scenarios in the municipality of Ollersdorf (Austria) for the development of the energy communities and foresee how the local resources as well as flexibility measures will support energy and decarbonization 2030 targets as well as blackout prevention.

## Methodische Vorgangsweise

Figure 1 shows the overall view of the methodology used to assess the future scenarios for the Municipality of Ollersdorf. Balmorel modelling tool is used to analyse how flexibility measures (such as demand-side-management, P2Heat, smart e-vehicles and energy storages) as well as local energy production sources can contribute to the energy and decarbonization targets.

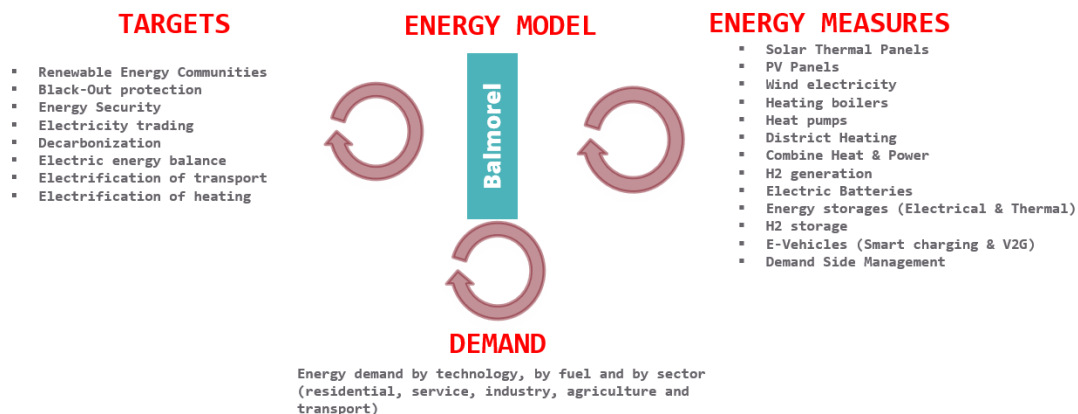


Figure 1: Overall view methodology approach

The methodology follows the next steps: i) Deployment of the overall *structure of the energy model* under Balmorel energy tool; ii) Integration of the future *electricity prices* and future *transmission line* connection of the pilots to the national grid; iii) Integration of the *flexibility measures*: demand side management, energy storage, heat pumps (HP), CHP systems and electric charging in EVs; iv) Creation of a *techno-economic database* of energy supply technologies; v) *Calibration* of the base year and future demand heat projections; vi) Implementation of the *energy and technological constraints*; vii) *Scenario implementation* for future decarbonization and energy transition to assess the scalability of the flexibility measures; viii) *Scenario evaluation*. In the following subsection, the Balmorel modelling tool, flexibility options and future electricity - prices methodology are described to provide a more detailed view.

## Ergebnisse und Schlussfolgerungen

Municipality of Ollersdorf has enough PV potential to satisfy the expected future electricity demand in terms of electric energy balance without bottlenecks in the transmission line that connects the municipality to the national grid.

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The combination of PV and wind production is fundamental to achieve full electrification of the heating and transport sectors. However, under this situation transmission line capacity is not big enough to absorb all the electricity surplus production resulting in curtailment of PV and wind production and reducing the electricity exports.

Protection against blackout events implies a need for a massive increase of electric batteries. However, this supplementary capacity of electric batteries allows increasing the electricity balance and a more effective exchange with the national grid.

Charging of EVs produces a saw-tooth in the overall electricity consumption profile. These peaks can be very intensive when a high number of EVs are connected to the grid.

In terms of decarbonization, in all the assessed scenarios there is a clear reduction of the overall CO<sub>2</sub> emissions compared to the base year being possible the fully decarbonization in case that municipality achieve the fully electrification of the energy system.