INTERACT

E-NEWSLETTER

February 2022 Edition

PROJECT CONSORTIUM

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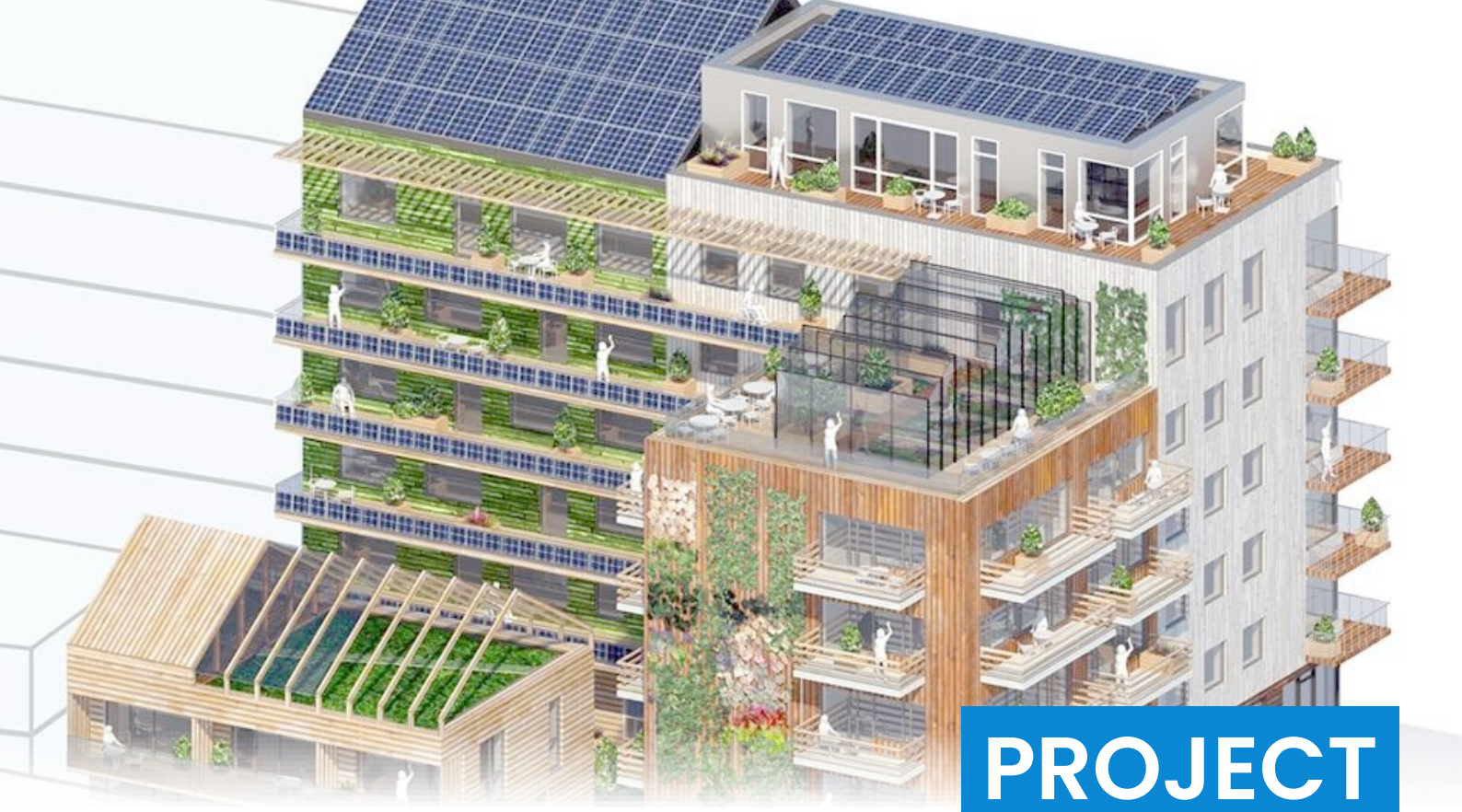
TIMELINE:

Start date: 01/02/2021 *End date: 31/01/2023*



PROJECT CHALLENGE

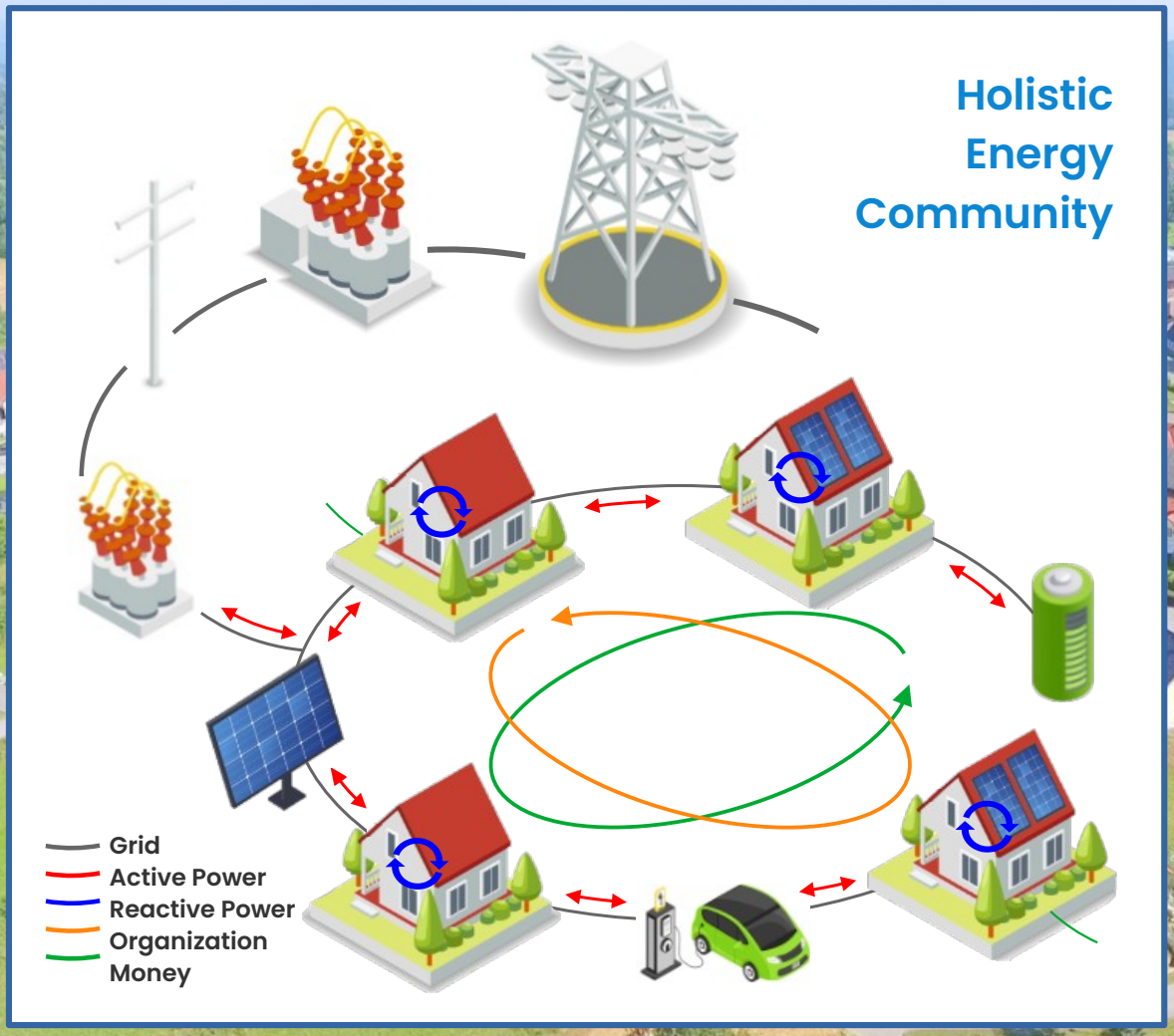
Recently, several projects have been carried out to modernize urban districts and increase both sustainability and quality of life. In particular, model regions are implemented based on various innovative technologies including novel mobility, transport and energy solutions.

Certain categories of citizen energy initiatives are increasingly recognized as **renewable or citizen energy communities**. The focus is placed there, because the approach of Energy Communities is leveraging on the vast diffusion of Distributed Energy Resources in most worldwide grids. Their establishment is a social and political will and serves as one of the central milestones towards **positive energy districts.** However, the development of sustainable and climate-neutral urban areas faces many challenges:

- With the growth of distributed energy resources, the development of local energy initiatives and Smart Cities as well as the specific requirements for reliable and sustainable electricity supply, TSOs and DSOs face new challenges that require greater coordination between all relevant actors;
- The implementation in large-scale of the projects achievements is almost impossible, because they are developed uncoordinated;
- It is almost impossible to adapt laws and regulations because there are no systematic approaches to technological, economic and social solutions.

All of this prevents citizens from actively contributing to CO2 reduction by generating electricity from renewable energy sources, and using this electricity most effectively together within their region.

To master these challenges, new solutions with a holistic vision are required:
The INTERACT project is based on a holistic approach and aims to mobilize citizens in the energy transition process up to the future energy era.



INTERACT

ENERGY COMMUNITY

The INTERACT Energy Community is based on the *LINK*-based holistic architecture, which merges all relevant components of the power system into one single structure. All Links communicate with each other through technical interfaces and with the market through market interfaces, ensuring data privacy and cybersecurity. Customer plants participate with the market through the energy community as their aggregator. All market actors, including customers joining energy communities, participate in the market in a non-discriminatory way. All grid operators, both transmission and distribution system operators, coordinate the market to guarantee the power system's reliable and secure functioning. The holistic architecture supports the price-driven demand response process, which is very important for energy communities.

Thanks to the INTERACT Energy Communitiy, the following benefits are achieved:

- Large scale integration of decentralised generation and storage;
- Secure, reliable, sustainable, and efficient operation in normal as well as in emergency cases for the end users and the grid;
- Full utilisation of existing infrastructures, thus capital expenditures can be postponed;
- Standardised solution for all voltage levels (high-, medium- and low) and costumer plants;
- Reduce carbon footprint by increasing the share of the renewable energy resources;
- Harmonisation of power grid physics with the electricity market rules;

PROJECT DEMO SITES

1. Großschönau / Austria

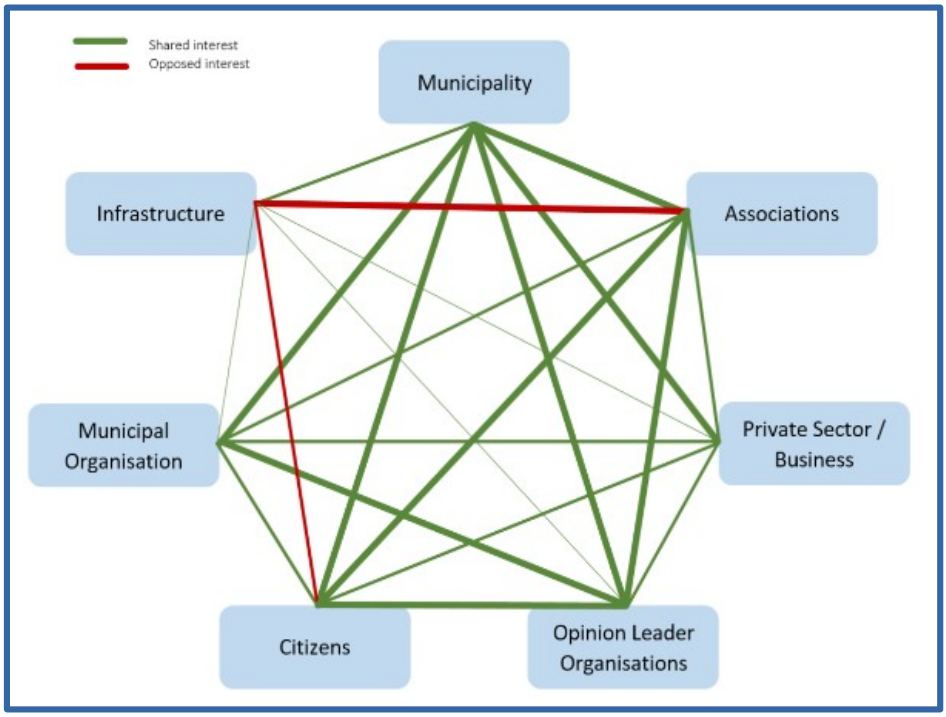
Großschönau, a rather small but very well-known rural municipality in Waldviertel, Lower Austria, has been since decades pushing towards sustainable and environmentally friendly ways of living. Großschönau is rated an e5-municipality, was winning the European Energy Award in Gold for its achievements in energy efficiency, and has with the fair BIOEM and the permanent exhibition SONNENWELT two nationwide known showcase projects of sustainable thinking and acting. In the municipality, about 1 kWp of photovoltaic is already installed per capita, bringing the municipality into the Top10 in this measure in the state of Lower Austria. Within the region, Großschönau aims to be energy-neutral by the year 2030, and is proactively working towards this aim, in line with its slogan “Feel the Energy”.

2. Fyllinge / Sweden

Tornet has a number of developing areas in Sweden, whereof Fyllinge (part of the city of Halmstad, south-west in Sweden) is one with special interest since the municipality has invited for innovative solutions and new and somewhat „daring“ and „challenging“ concepts to really address and initiate a change of use for the limited resources at hand. The plans for Fyllinge include around 2000 apartments in combination with recreation areas and areas for urban farming. Tornets plans for Fyllinge already include local production of heat and electricity in form of hybrid solar panels and geothermal heating. An Energy Community in this area has the potential of connecting all these actors and enable more efficient use of the locally produced energy.

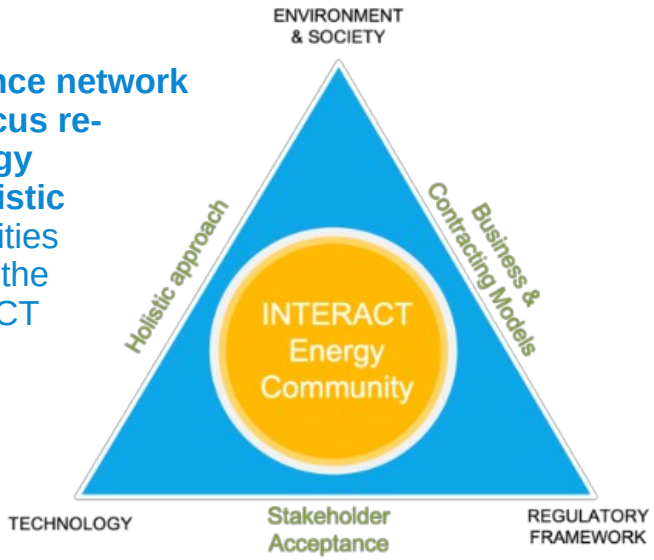
LOCAL STAKEHOLDERS

Within INTERACT a Stakeholder Mapping was performed. For a greenfield-development, the key stakeholders change over the course of the implementation. In an early phase they are the three major stakeholders: DSO, Municipality and real estate developer. They need to be addressed, since it is their joint effort that will enable the EC formation. For the existing munici-pality, seven relevant stakeholder groups were identified and surveyed through representatives of each stakeholder group. Overall, results show highly interested and motivated respondents among the seven stakeholder groups, yet various open questions, potential gaps of roles and differing interpretations regarding the influences on the EC. The EC need to fulfil clear benefits if participation and long-term functioning is expected – among respondents, these are clearly both financial as well as ecological be-nefits, that should be showcased. With unclear cost structure in ad-ministration and not clear energy price difference before starting the EC, monitoring results in a pilot stage will help in clarifying expec-tations and framing conditions for future participation. With the approach of incrementally starting the EC and monitoring the first stage closely, before offering it to the community, a good strategy to increase members trust in the functioning is instated. The Stake-holder mapping serves as a basis for the creation of communicative narratives that support the com-munity building and deployment of vision of the EC in the region.



Stakeholder perspectives on shared and opposing interests

INTERACT BENEFITS FOR THE PED-COMMUNITY



The overall project goal is – based on a competence network of successful PED approaches – to enable the focus regions to introduce the first worldwide Local Energy Communities and Sector Coupling based in a holistic approach. This creates maximum use of the possibilities available in urban areas for effective energy use and the maximum reduction in CO2 production. The INTERACT project will lay the foundation for the demonstration follow-up project, and will feed back its results to the PED/PEN competence network.

Within the project we will amongst others develop:

- Stakeholder Needs Evaluation
- Key success factors and requirements for INTERACT energy communities
- Common Inventory Methodology for recording current technologies
- Design of the Energy Community Organisation according to the *LINK*-solution
- Market Structure and its interfaces with the energy community
- Business cases for the INTERACT energy community
- Roadmap for the implementation of the designed energy community

Based on a holistic approach, technological and market-related solutions are delivered that maximize the benefit for the environment and society. The regulatory framework, which incentivizes citizen engagement by enabling new business and contracting models, is defined in accordance with the relevant stakeholders. The triality of objectives focuses on environmental, social and economic sustainability.

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This project has received funding in the framework of the PED Programme, which is imple-mented by the Joint Programming Initiative Urban Europe and SET Plan Action 3.2. The project is supported by the Austrian Ministry of Climate Action, Environment, Energy, Mobility, Inno-vation, and Technology (BMK), Technology Agency of the Czech Republic (TAČR) and Viable cities, a research program funded by the Swedish energy agency, Formas and Vinnova, Sweden.