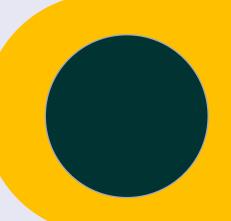






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### Aims

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Deliverable 4.2 aims to explore the possibilities and limits of a co-design approach for creating a potential energy community. The central question is to what extent stakeholders (tenants, property owners, others) in a potential energy community site can be activated for active involvement in the development of an energy community.

This summary presents, in anonymized form, the main findings and results of the process initiated and accompanied in a municipality in Switzerland (use case) to activate stakeholders of a potential energy community.



# Methodology: Co-design processes for energy transition

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The primary goals of co-design processes include developing context-specific solutions that are closely aligned with the needs and preferences of promoters, end-users or participants. This approach fosters the creation of more tailored responses and builds trust and commitment among those involved. By engaging participants early in the design process, co-design helps identify and promptly address resistance, obstacles, and contradictions. Additionally, this participatory method enhances the acceptance of the implemented solutions by ensuring they resonate well with the community. Furthermore, co-design promotes knowledge sharing and self-empowerment, enabling participants to contribute effectively and feel a sense of ownership over the outcomes.

Developing energy communities effectively hinges on thoroughly understanding consumers' diverse needs, desires, and behaviors. Since each community has unique characteristics and challenges, context-sensitive approaches to technology solutions are crucial rather than relying on a one-size-fits-all method. While standardizing approaches is difficult, establishing and replicating good practices can be beneficial.



## Methodology: QUBE Process Model

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This project adapts in a limited scope the "Socio-Technical Process Model for Energy

Transformation in Neighborhoods" that was developed as an outcome of the Innosuisse project QUBE - Quartierbezogene Energiekooperationen (Neighborhood-based energy cooperations)<sup>1</sup>. It is a socio-technical framework designed to coordinate the cooperative transformation of neighborhoods towards a renewable energy supply for existing buildings, encompassing electricity and/or heating.

The "QUBE Socio-Technical Process Model for Energy Transformation in Neighborhoods" encompasses four major phases, each incorporating both social and technical dimensions<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> Alexa Bodammer, Christopher Young, Ulrike Sturm, Stefanie Müller, Nadja Hutmacher, Corinne Schwaller (2025). Quartierbezogene Energiekooperationen – Kurzbericht zum Projekt, Institut für Soziokulturelle Entwicklung, Hochschule Luzern - Soziale Arbeit, Luzern.
<sup>2</sup> Ibid.



## Methodology: QUBE Process Phases<sup>3</sup>

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QUBE Process Phases	Aims and components
Initialization phase (focus of GENTE project)	Comprises the stages of <b>analysis and activation</b> and marks the start of the project. The relevant <b>stakeholders are activated</b> , the <b>perimeters</b> for possible cooperative energy solutions are defined, and <b>technical and socially oriented analyses</b> are carried out. The project is presented in an <b>initial workshop</b> with the property owners in the neighbourhood and the socio-technical analysis is iteratively expanded to include local knowledge. The <b>content, objectives and interim results</b> of the process are publicised based on a locally adapted communication strategy. Ideally, these steps lead to an initial level of <b>consolidation and commitment</b> , and to the formation of a working or interest group that will pursue and organise the further process in a <b>self-organised</b> manner. (see next phase)
Interest formation phase	Establishment of one or more working or interest groups that further develop initial ideas and act informally as coordinating actors, taking responsibility for a self-organized further course of the process.
Consolidation phase	The property owners drive the process forward with the support of technical and other experts and consolidate the previously developed solutions and partnerships.
Implementation phase	Realization of the chosen technical solution, with the property owners forming a legal entity and defining the operating model for the provision of renewable energy.
<b>Operation phase</b> (outside of the socio-technical transformation process)	Operational phase in which the renewable energy solutions developed and implemented in the process are up and running.

<sup>&</sup>lt;sup>3</sup> Alexa Bodammer, Christopher Young, Ulrike Sturm, Stefanie Müller, Nadja Hutmacher, Corinne Schwaller (2025). Quartierbezogene Energiekooperationen – Kurzbericht zum Projekt, Institut für Soziokulturelle Entwicklung, Hochschule Luzern - Soziale Arbeit, Luzern



## Use case: GENTE approach to co-design

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#### **QUBE**

- Focus on an entire neighbourhood.
- Mostly individually owned single-family homes (partly subject to monument protection regulations), but also including various institutions as "big consumers".
- Very comprehensive and holistic approach, addressing numerous stakeholders, pursuing a very open concept for possible forms of energy cooperation. Various sub-projects and "satellite projects" outside the original project perimeter. Long and highly complex participation process.

#### **GENTE**

- Adapting and testing the co-design process in a much **smaller project perimeter** with a few dozen buildings maximum.
- **Homogenous building structure**, consisting of relatively new buildings (built after 2000) with several flats in condominium ownership.
- Streamlining and accelerating the co-design process by both focusing on a smaller group of potential end-users and concentration on the initial phase of the process, aiming at activating the interested endusers of a potential energy community and encouraging self-organization from the outset.



## Use case: User engagement in co-design process



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#### What is it

Test a co-design approach for activating and motivating a potential energy community for selforganization, focusing on:

- Extent to which stakeholders can be engaged
- Initial phase of stakeholder activation

### Approach (Process "Steps")<sup>4</sup>

- Definition of project parameter
- Socio-technical neighbourhood analysis
- Stakeholder mapping and analysis
- Communication strategy
- Networking
- Initial neighbourhood event
- Analysis of event and definition of next steps towards self-organization

<sup>&</sup>lt;sup>4</sup> cf. Bodammer, A. et al. (2023). Abschlussbericht des Projekts Quartierbezogene Energiekooperationen. Unveröffentlichter Bericht, Hochschule Luzern.





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#### Objectives

- Assess the neighborhood's current situation and its potential regarding the implementation of energy community projects.
- Define the geographical scope of the project.
- Analyze energy, urban and social aspects of targeted project perimeter.
- Assess existing energy infrastructure and identify potentials and obstacles.
- Document local building types, construction date and renovation status.
- Identify the types of property ownership.



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## Use case: Stakeholder mapping

Stakeholders	Main roles and tasks
Support Group: GENTE Project team (HSLU)	Manage the process to meet project goals. Moderate meetings and workshops. Ensure information flows and keep all parties informed.
Public administration	Officially support the project. Send out letters, provide rooms and infrastructure.
"Energy Pioneers"	Inspire and activate for energy transition. Advocacy and networking: Promote the benefits of the co-design process and help building alliances with stakeholders.
End-users: Condominium owners within project perimeter	Play a critical role in decision-making processes from planning to implementation. Provide local insights for renewable energy projects.  Share information and resources with other homeowners to collaborate and strengthen the project.  Help fund renewable energy infrastructure.
Energy experts and consultants	Provide expert advice on energy, efficiency and sustainability, and regulatory frameworks. Evaluate energy solutions for informed decision-making on project direction and investment.



## Use case: Initial neighborhood event

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### Objectives of the event

- Provide **information** about the goals, possibilities, technical options, and advantages of joint energy solutions for the neighborhood.
- Collect **local knowledge**, **ideas**, **and concerns** regarding a transition to renewable energies.
- Inform about the **possibilities and limits** of the participatory process.
- Provide an overview of **climate objectives**, **political framework**, and **funding options** for the implementation of renewable energy solutions.
- **Clarify questions** and build a **shared understanding**.
- Enabling exchange and **networking** between neighbors and specialists.
- Inspire enthusiasm for a **collaborative approach**.



## Use case: Initial neighborhood event

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#### Outcomes

#### Participants

- 18 homeowners from within the project perimeter
- Local council representative; Head of the Civil Engineering Department; Municipal administration employee; 2 researchers from the Urban and Regional Development Unit; 1 researcher from the Institute of Electrical Engineering, also a member of the Energy and Environmental Commission and a resident of the targeted project perimeter; Head of the Cantonal Energy Office; Energy consultant from the local energy provider; Owner and manager of an energy flagship housing complex in the region
- Analysis of the results of the event and creation of a set of procedural next steps
- Communication to all property owners in the perimeter summarising the workshop
- Invitation to all property owners to join working groups
- Creation of a working group to develop community-specific energy solutions
  - Establishment of a working group on joint electricity production and consumption with a goal of: Establishing a Local Energy Community (Lokale Energiegemeinschaft LEG)
  - Activation for self-organisation in the context of shared heating was not successful



## Learnings and recommendations: Key factors

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Key factors and components of the process	Why important
Early community engagement	Builds momentum and commitment from the outset
Role of energy pioneers	Enhances visibility, trust and acceptance within the community
Embracing process unpredictability	Accommodates diverse backgrounds and interests of stakeholders and dynamic nature of the co-design process
Genuine participation	Requires open and honest commitment to be successful
Flexible scheduling & planning	Adapts to ongoing developments and feedback; assimilates to slowdowns due to regulatory or personnel obstacles
Step-by-step planning	Ensures each phase builds upon the last and integrates feedback
Role of technical experts	Presenting feasible and tailored solutions while not overpowering the process  Adapting to differing technical & energy knowledge to ensure inclusivity
Initial event	Creates networking opportunities  Seeding the idea of collaborative energy transitions
Increasing formalisation of self-organization	Commitment of end-users to the process is decisive for the process to be successful  Becoming self-responsible for the process and community organization

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# Learnings and recommendations: Challenges and obstacles



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#### **Challenges and obstacles identified**

Overall complexity of renewable energy topics, accompanied by a lack of expert knowledge and being dependent on external expert knowledge.

**Improbability of establishing municipal renewable heating systems** such as lake heat or district heating.

Challenge of **engaging more property owners** within the project perimeter, particularly younger ones.

Navigating the **complex ownership structures** typical of condominiums, which can hinder the initiation of energy projects or complicate consensus and collective action for joint energy solutions.

Heterogeneity of the buildings regarding year of construction and lifespans of heating systems.

Financial concerns: doubts about the cost-effectiveness, financial viability, and scaling of proposed solutions, alongside the possible high initial investment costs.

**Uncertainties regarding future developments** in the energy sector, discouraging investment in new technologies.

Participatory processes, especially those with a high degree of openness to results and a high degree of self-organisation, are time-consuming and can only be controlled from the outside to a limited extent. The time planning must be constantly revised and adapted to the course of the process, the interim results and the possibilities and needs of the people involved.

With **many stakeholders involved**, organising and maintaining the process over a long period of time can be a major challenge.

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ERA-Net Smart Energy Systems



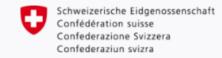
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