Fraunhofer ISI



Key design elements and perceived cost-benefits of energy communities – what factors matter most? A descriptive analysis

Authors:

Barbara Breitschopf, Leon Wind, Ruben Hillebrandt

No. S08/2026

DOI: 10.24406/publica-10544

Publisher's information

Key design elements and perceived cost-benefits of energy communities – what factors matter most? A descriptive analysis.

Authors & Contributions

Barbara Breitschopf, barbara.breitschopf@isi.fraunhofer.de: funding, literature review, conceptual framework, review of questionnaire, survey supervision, supervision of analysis, writing and review of paper
Leon Wind, leon.wind@isi.fraunhofer.de: questionnaire design, survey
Ruben Hillebrandt, ruben.hillebrandt@isi.fraunhofer.de: analysis and writing

Paper reviewed by:

Ivana Jovovic, jovovic@europa-uni.de: review of questionnaire design and paper

Use of artificial intelligence:

Language check and support in formulation and coding of R.

Project information:

Project title: PIA – Professionalisierung, Inklusion, Akzeptanz
Duration: July 2025 – June 2028
Partner: Fraunhofer ISI, Europa-Universität Viadrina Frankfurt (Oder), SWW Wunsiedel GmbH, EsGeht! Energiesysteme GmbH, revoluSUN GmbH, Bündnis Bürgerenergie e.V.

Supported by:
Federal Ministry for Economic Affairs and Energy
on the basis of a decision by the German Bundestag

Picture credits

Cover page: Shutterstock.com/TechSolution

Recommended citation

Breitschopf, B.; Wind, L.; Hillebrandt, R. (2026): Key design elements and perceived cost-benefits of energy communities – what factors matter most? A descriptive analysis. S08/2026, Working Paper Sustainability and Innovation Fraunhofer ISI; Karlsruhe. DOI: 10.24406/publica-10544

Published

September 2026

Contact

Fraunhofer Institute for Systems und Innovation Research ISI

Breslauer Straße 48, 76139 Karlsruhe, Germany
Barbara Breitschopf, barbara.breitschopf@isi.fraunhofer.de

Notes

This report in its entirety is protected by copyright. The information contained was compiled to the best of the authors' knowledge and belief in accordance with the principles of good scientific practice. The authors believe that the information in this report is correct, complete and current, but accept no liability for any errors, explicit or implicit. The statements in this document do not necessarily reflect the client's opinion.

Abstract

This paper, developed within the PIA research project, investigates how energy communities can be designed to broaden citizen participation and overcome barriers to energy community (EC) membership.

Drawing on a comprehensive literature review and four citizen workshops conducted across German cities, a large-scale online survey of 964 German households has been conducted to identify key drivers, barriers, and preferred design features of energy communities.

Results reveal a striking gap between attitudes, intention and behavior: while 67% of respondents hold a positive attitude toward energy communities, 50% are likely to become a member, and only 2% are actual members. Membership intention is significantly shaped by socio-economic and demographic factors, including gender, income, education, home ownership, and prior engagement with renewable energy (e.g., PV ownership or RE investments). Financial considerations play a central role, with low-income groups exhibiting heightened risk sensitivity and lower motivation to join, while required cost savings when joining an EC decrease as membership intention increases. Independence from large energy providers and affordable electricity emerge as the strongest goals, whereas voluntary engagement and social interaction are comparatively less important. However, the latter could be a reason to join an EC, as these aspects are particularly associated with EC. Fairness - particularly regarding the equitable distribution of costs, benefits, and decision-making power - is consistently valued across respondent groups. Notably, a distinct regional effect is observed in Saxony-Anhalt, where attitudes toward ECs are markedly less favorable, plausibly linked to the region's political climate.

With respect to design preferences, respondents favor photovoltaic and onshore wind technologies, prioritize electricity generation and storage as core EC activities, and express strong support for local citizen and municipal involvement and local suppliers over external or national actors. A cooperative, collective legal structure is preferred over a commercial orientation, and respondents generally support member involvement in strategic decisions, though preferences for operational decision-making are more divided.

While design preferences vary modestly across demographic subgroups - mainly by age and educational background - the overall pattern suggests that no single "one-size-fits-all" EC model can accommodate the full diversity of citizen needs. Instead, findings point to the importance of context-sensitive design that balances locale features, financial accessibility, low organizational complexity, transparency, and meaningful participation opportunities.

Keywords: energy communities, energy sharing, citizen participation, energy transition, survey, design preferences, inclusion, energy democracy

Contents

1 Background 6

2 Key aspects of energy communities 7
2.1 Workshops 7
2.2 Literature review 8

3 Questionnaire 10

4 Data collection and analytical approach 15
4.1 Analytical approach 16
4.2 Data overview 16

5 Results 19
5.1 Membership or willingness to become a member of an EC 19
5.2 Drivers and barriers of becoming a member of an EC 21
5.3 Key design elements of an EC and preferred characteristics 23
5.3.1 Objectives of an EC 23
5.3.2 Business activities 24
5.3.3 Preferences for generation technologies and type of members 25
5.3.4 Legal structure 26
5.3.5 Decision power 27

6 Discussion and Conclusion 29

List of figures 32

List of tables 33

Annex 34

A.1 Workshops 34

A.2 Literature Review 37
A.2.1 Dimensions of energy communities 37
A.2.2 Design elements of energy communities 39
A.2.3 Success factors of energy communities 40

A.3 Questionnaire 41
A.3.1 Questionnaire in German 41
A.3.2 Questionnaire in English - translation 54

A.4 Codes 66

A.4.1 Stata 66
A.4.2 R 66

A.5 Detailed results 67
A.5.1 Mann-Whitney-U-Tests 67
A.5.1.1 Gender 67
A.5.1.2 Social benefits 69
A.5.1.3 PV present 70
A.5.1.4 PV ownership 72
A.5.1.5 Invest renewables 73
A.5.2 Kruskall-Wallis-Tests 74
A.5.2.1 Age 74
A.5.2.2 Income 75
A.5.2.3 Qualification 76
A.5.2.4 Municipality size 78
A.5.2.5 Federal state 79
A.5.2.6 Living Situation 80
A.5.2.7 Dunn-Post-Hoc-Tests 82

7 Publication bibliography 86

1 Background

This report is part of the research project "Professionalization, Inclusion, Acceptance – Digital Platform for Participation in Energy Communities and Energy Sharing (PIA)," funded by the German Federal Ministry for Economic Affairs and Energy (BMWE).

Energy communities represent a collaborative arrangement involving various actors—such as private households, small and medium-sized enterprises, energy suppliers, and municipalities—who jointly engage in generating electricity and, where applicable, heat. The energy produced may be consumed locally, stored, or, if a surplus exists, sold or fed into the wider energy system. Energy communities are typically organized at the local or regional level and often comprise groups of citizens. A more detailed definition and conceptual discussion of energy communities (ECs) can be found in Bucha (2026) and Bauwens et al. (2022).

Energy communities offer several benefits. By optimizing energy generation and consumption at the local level, they have the potential to reduce the need for costly grid expansion (Barnes et al. 2022; Basaran et al. 2025; Mariuzzo et al. 2023). Moreover, they provide citizens with a direct opportunity to participate in and contribute to the energy transition. This is particularly relevant for citizens who do not own their homes and have limited financial means to invest e.g. in a PV roof top plant (Breitschopf 2026a). In addition, EC membership empowers citizens to have a say in energy-related decisions, thereby strengthening energy democracy and, consequently, the energy transition (Arias et al. 2025; Peeters et al. 2025). Against this background, this report investigates how participation in energy communities can be broadened to include as many citizens as possible.

A central question in this context is how energy communities can be designed to attract individuals who have not yet participated in such initiatives or who face specific barriers to participation. Addressing this question is one of the key objectives of the PIA project, which seeks to generate insights into how energy communities can be structured and designed to ensure inclusive access for all citizens.

This working paper is part of a work package focused on identifying key design features of energy communities - that is, the attributes and characteristics of ECs that are particularly valued by citizens. As a first step, a comprehensive literature review was conducted to assess the current state of research on preferred EC designs, identify known drivers and barriers to participation and membership, and determine suitable theoretical frameworks for analysis. Based on these findings, a survey targeting households in Germany was developed and implemented. The analysis of the survey data aims to identify the preferred design features of ECs in general, as well as the key drivers and barriers to EC membership, differentiated by respondents' socio-economic characteristics. Furthermore, the survey results serve as a basis for deriving and formulating recommendations on how energy communities should be designed.

This paper aims to provide detailed information on the survey approach - i.e., the questionnaire, the data collection process, and the descriptive results - as well as insights into differences across socio-economic and demographic groups.

The first section of the paper briefly summarizes the findings of the literature review and the results of citizen workshops on EC design, which were conducted within the framework of this project in four German cities. It then presents the different question blocks of the survey and outlines the descriptive analytical approach and data used. Finally, it displays the descriptive results and concludes with a discussion of the key findings.

2 Key aspects of energy communities

2.1 Workshops

To gain a deeper understanding of citizens' needs, desires, and expectations regarding the contributions an EC should make, we conducted four workshops in four German cities between October and November 2025. Each workshop was attended by five to twenty citizens, whose knowledge of the energy transition and energy communities varied considerably - ranging from participants who were interested but had no prior experience or exchange with others on these topics, to individuals who had been actively engaged in energy communities for some time.

The workshops followed an interactive format. Each session began with a brief presentation of the project, followed by an illustrative example of an energy-sharing community. Citizens were then invited to share their preferred designs for an EC. The discussion was opened with the question, "What would an ideal energy community look like for me?", followed by sub-questions addressing preferred types of activities and participation, acceptable levels of effort, and expected benefits. All statements were recorded and subsequently sorted and classified into five categories: perceived benefits, risks, efforts, framework conditions, and design features (see A.1). The purpose of this collection and classification was to identify the key design elements of ECs that citizens consider important.

Our findings indicate that social and local benefits, along with individual benefits such as independence and self-sufficiency, play a central role in citizens' motivation to join an EC. Several statements pointed to the importance of neighborhood-based solutions combining local generation and storage, as well as flexible participation models that allow both tenants and property owners to take part in electricity generation and sales. Financial returns were also frequently mentioned, though often in conjunction with non-monetary aspects such as regional value creation, community cohesion, and environmental benefits (e.g., climate protection and reduced CO_2 emissions). Simplified financing models, including options for joint or proportional investment with a preference for direct use of generated energy, were seen as attractive.

At the same time, several factors were identified as potential barriers to participation. In particular, the time required and the cognitive effort needed to understand the complexity of organizational structures, benefit schemes, or the broader energy transition were perceived as significant obstacles. Bureaucratic hurdles—such as administrative, tax-related, and regulatory requirements—were similarly seen as deterrents, as was the perceived opacity and inaccessibility of public discourse on energy-related topics. In this context, participants emphasized the importance of a central point of contact ("one-stop shop") to reduce operational complexity, as well as governance structures that relieve members of administrative burdens, such as a designated coordinator or "caretaker" role.

Beyond these benefits and barriers, participants emphasized several framework conditions as prerequisites for their willingness to participate. Trust and transparency emerged as particularly important, with citizens expressing a strong desire to clearly understand and measure the benefits of participation, as well as to trust the underlying organizational structure (e.g., through familiarity with established forms such as cooperatives).

With respect to design features, citizens highlighted the value of integrated service offerings—such as the combination of energy provision with mobility, storage, billing, or advisory services—as well as the availability of a user-friendly app providing feedback and push notifications. Furthermore, participants stressed the need for low-threshold access, manageable financial risk, and legal certainty as key preconditions for participation.

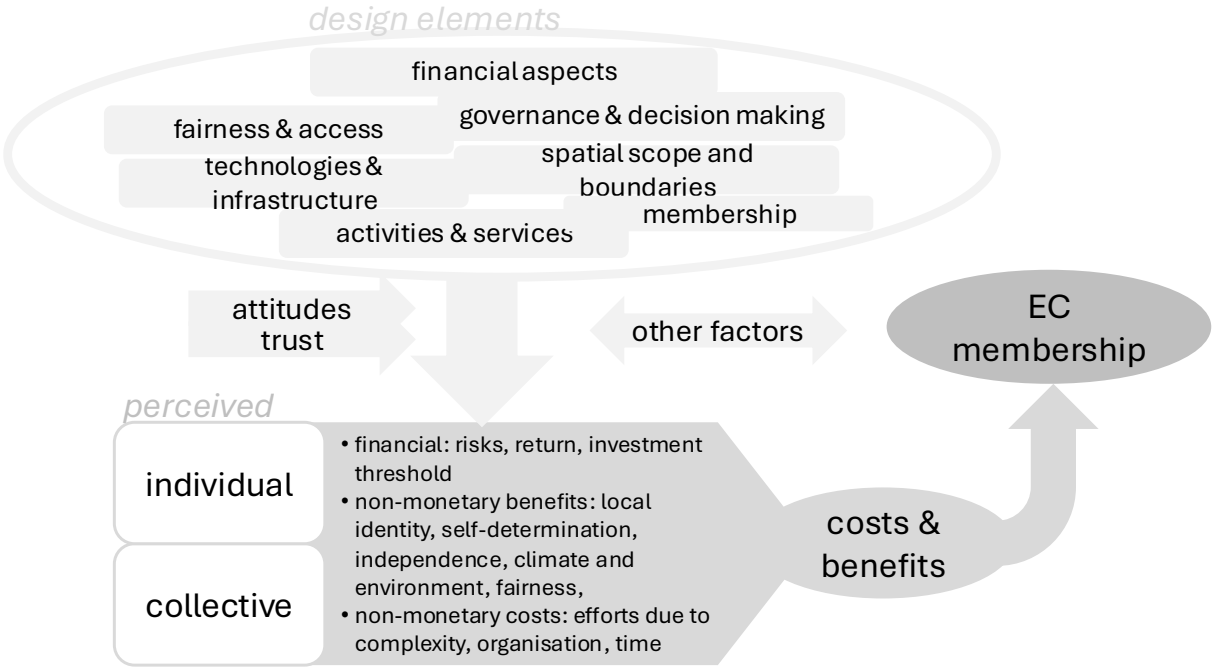
2.2 Literature review

As a first step, we reviewed the literature to identify the key concepts, analytical approaches, and research topics that have been explored in the context of energy communities.

We find that the literature identifies a broad, multidimensional framework for analysing EC covering technical, economic, social, institutional, and contextual aspects. At the core of the literature, EC are social constructs addressing social needs(Neves et al. (2025), Arias et al. (2025), Boije af Gennäs Erre et al. (2025), Ceglia et al. (2022), Le Long et al. (2025)) that are set up in form of economically viable business models (Vernay et al. 2023; Meitern 2025) that, in particular, account for non-monetary costs and benefits as well. The different dimensions are listed in A.2.1.

Further, the literature shows that energy communities integrate a combination of design elements addressing governance and decision-making, e.g. Clò et al. (2025), ownership and membership and eligibility, e.g. Lowitzsch et al. (2020), activities and role in the value chain of an energy system, e.g. Reis et al. (2021), investments into technologies and infrastructure, e.g. Lowitzsch et al. (2023), financial designs and revenue models, e.g. Vecchi et al. (2025), value creation and benefit distribution, e.g. Riquelme-Dominguez et al. (2025), regulatory settings and legal designs, e.g. DENA & FEL (2025), spatial scope and boundaries, e.g. Reis et al. (2021), external relationships and system integration, e.g. Chen et al. (2025). A detailed overview is available in A.2.2. These elements are highly interdependent and jointly determine participation incentives, economic outcomes, and the degree of community orientation.

Figure 1: Key aspects of energy communities



Finally, we identify several interrelated factors that contribute to the successful establishment and operation of energy communities. Some papers stress the relevance of value propositions including financial and non-monetary benefits, e.g. Klagge et al. 2016. Moreover, local embeddedness is a key factor (Goedkoop et al. 2025, Vernay et al. 2023). Financial aspects, such as low investment thresholds (Guetlein und Schleich 2023, Breitschopf 2026) are important as well while attitudes and

perceptions are key drivers for participation (Giannuzzo et al. 2025, Goedkoop et al. 2025). A detailed overview on key success factors is available in A.2.3.

Overall, the literature highlights that energy communities are complex socio-technical systems. Their success depends on the interaction between technological infrastructure, economic incentives, governance structures, social dynamics, and regulatory frameworks. In particular, social and inclusive aspects such as participation of various citizens and have a say – subsumed in literature by the terms inclusion and energy democracy (Radtke and Ohlhorst 2021; Hanke et al. 2021) - are highly linked to energy communities. Importantly, the dimensions are highly interdependent, and effective EC design requires an integrated approach that simultaneously addresses multiple dimensions as outlined in Lowitzsch et al. (2023).

These findings are synthesized into an overarching design framework for energy communities, comprising the key aspects illustrated in Figure 1. The framework depicts several design elements that, together with a trustworthy environment, individual attitudes, and other framework conditions, translate into perceived benefits, risks, and costs of EC participation for both individuals and society. Depending on citizens' underlying values - whether self-centred or altruistic - these perceived benefits, risks, and costs feed into the overall utility a citizen derives from EC membership. This utility, in turn, determines the likelihood of membership.

3 Questionnaire

Aiming at identifying what motivates citizens to participate in an EC, we drew on established models from social science that explain the acceptance and intended adoption of technologies. The literature on technology acceptance models identifies various explanatory factors, such as perceived risks, costs and benefits, trust, and attitudes (e.g. Huijts et al. 2012). Similarly, models explaining technology adoption incorporate comparable aspects but additionally consider perceived behavioral control and fairness (e.g. (Ajzen 1991). Finally, personal values may shape problem awareness, which in turn can foster participation in an EC (van der Werff and Steg 2016). Our questionnaire integrates these aspects and further includes preferences for design elements of ECs, as outlined in A.2.2.

The first section collects socio-economic and demographic information, which serves as control variables in the analysis. Additionally, it captures current forms of citizen participation in the energy transition, including ownership of photovoltaic (PV) installations (e.g. rooftop or balcony systems), investments in renewable energy projects (such as wind or solar parks), and membership in energy communities. Further, respondents were asked about their willingness to join an energy community and the level of potential energy cost savings required to motivate such participation.

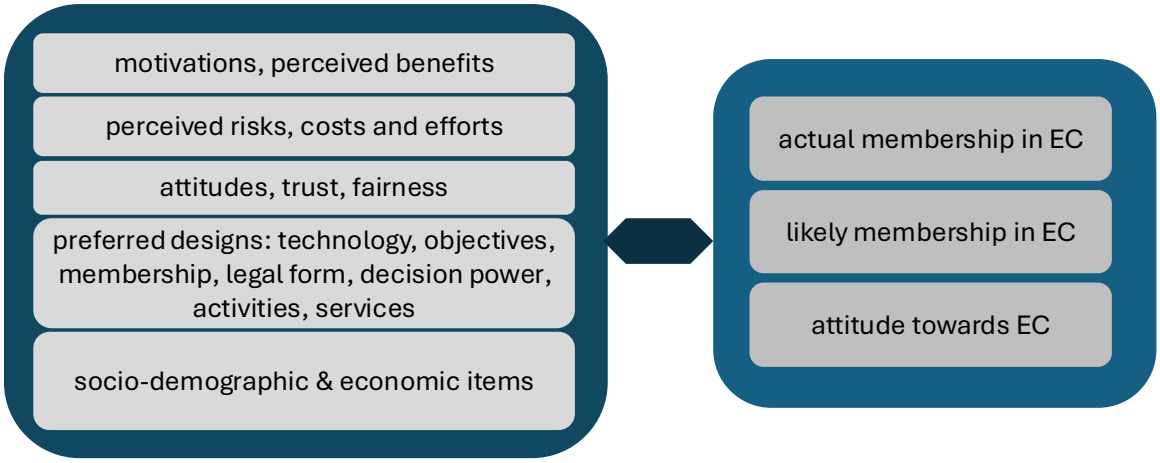
The next section focuses on motivations and barriers to joining an energy community. Drawing on our literature review and the workshop results, we selected various forms of perceived non-monetary costs, benefits, and risks to include in the survey. Specifically, it includes questions on perceived non-monetary costs, such as organizational or cognitive effort, as well as benefits, such as contributions to self-determination, independence, and local value creation.

Third, to account for individual orientations and values, the survey includes items related to environmental attitudes, perceptions of the energy transition and energy communities, as well as questions on trust, perceived risks, and fairness considerations.

The final section elicits respondents' preferences regarding the design of energy communities, including preferred legal forms, the magnitude of financial contributions, types of technologies, and the main objectives of the community. It further explores preferences with respect to membership composition, decision-making structures, core activities, and the range of additional services provided.

The full questionnaire is available in German in A.3.1, while an English translation can be found in A.3.2. Its structure is graphically presented in Figure 2.

Figure 2: Questionnaire



Regarding motivations, perceived risks, benefits and costs as well as attitudes, relevance of trust, fairness and participation, we structured the following items of the questionnaire into various blocks. They are all coded as ordinal variables with a 7-point Likert scale [strongly agree=1, neither nor=4, strongly disagree=7]:

Motivations or reasons for joining an EC: Would the opportunity to ...

- experience a sense of community (interaction)
- invest money (investment)
- provide self-generated electricity to the energy community in exchange for remuneration in euros (revenues)
- receive electricity from the energy community (electricity supply)
- volunteer

... be a decisive reason for you to become a member of an energy community?

This question captures hedonic, altruistic, egoistic and biospheric motivations (Van Werf) that contribute to the utility derived from being member of an EC. It takes up aspects applied in Arias et al. (2025), Guetlein and Schleich (2023), Breitschopf (2026b).

Perceived and attributed benefits of joining an EC: Please indicate the extent to which you agree with the following statements:

- Energy communities strengthen social cohesion in the region from my perspective (cohesion).
- Participation in an energy community makes an important contribution to climate protection (participation).
- Through an energy community, energy supply would be less dependent on large electricity providers (independence).
- Participation in an energy community allows electricity to be purchased more cheaply than from a conventional energy provider (affordable electricity).
- Financial participation in an energy community pays an annual dividend (profit share) or interest on the money invested (return)
- An energy community enables members with their own electricity generation (e.g., photovoltaic systems) to share excess electricity with others for a corresponding remuneration (energy sharing).

Perceived and attributed costs and efforts of joining an EC: How strongly do the following statements apply to you?

- The financial requirements for participating in an energy community (e.g., paying the cooperative share) seem high to me (costs).
- Informing myself about the conditions and functionalities of an energy community and understanding them seems too much work (cognitive efforts).
- I fear that participating in an energy community would take up too much of my time (time).
- I find the organizational or bureaucratic effort associated with membership deterring (bureaucracy).
- I find potential manual tasks involved in membership e.g., installing a suitable electricity meter too much physical effort (work).

Perceived and attributed risks of joining an EC: To what extent do you agree with the following statements?

- Membership represents a very high financial risk for me, for example, invested money could be partially or completely lost (financial risk).

- Political uncertainty or inconsistency regarding the energy transition is an obstacle for my participation (political uncertainty).
- I fear or experience that an energy community may not be able to solve technical problems e.g., system failures) as effectively as a regional energy provider (technical challenges).
- I fear or experience that the energy community lacks sufficient management competencies to operate reliably and profitably for all (management).

Attitudes: Please indicate the extent to which the following statements apply to you?

- I generally maintain an environmentally conscious lifestyle / an environmentally conscious lifestyle is important to me (ecological).
- I have a fundamentally positive attitude toward energy communities (positive perception).
- I believe energy communities make a meaningful contribution to the energy transition (EC contribution).

Relevance of **trust** with respect to the EC: To what extent do the following statements apply to you?

- I trust or experience that energy communities can employ technically competent and suitable people to manage the community (competence).
- I trust or experience that the statutes of energy communities ensure high transparency, participation, clear structure, and processes (governance).
- I trust or experience that all members of the energy community adhere to the established rules and statutes (commitment).
- I trust or experience that I myself make well-informed decisions about participating in an energy community (self-confidence).

Relevance of **fairness** and participation: Please indicate the extent to which you agree with the following statements?

- I find it important that members of an energy community have opportunities for input and participation in decision-making (decision power).
- I find it important that financial costs, risks, and returns within the energy community are distributed fairly, i.e. according to shares (fair net benefits).
- I find it important that people from all sectors of society come together in an energy community (diversity).

Simone et al. (2025b), Mullen et al. (2024), Simone et al. (2025a), Gasca et al. (2025) stress the importance of trust, fairness, contribution to community wellbeing, environmental and economic issues for participation.

With respect to **preferred design** elements of an EC the following items were grouped into several questions:

Technologies used in an EC: To what extend would the following energy generation technologies in an EC increase or decrease your willingness to participate? [ordinal variables on a 7-point Likert scale: strongly increase=1, neither nor=4, strongly decrease=7]

- Wind for electricity generation (wind)
- Photovoltaics for electricity generation from sunlight (PV)
- Wood, pellets, or biogas for heat and/or electricity (biomass)
- Heat pumps, using environmental heat, e.g., river water or ambient air) for heat supply via a heating network (HP)

- Geothermal energy, using geothermal heat for heat supply via a heating network (geothermal)

Objectives of an EC: How important are the following goals of an EC for you ? [ordinal variables on a 7-point Likert scale: very important =1, neither nor=4, very unimportant=7]

- Financial return for members - through business or cooperative shares (financial return)
- Strengthening the local economy (local economy)
- More social interactions (social interactions)
- Contact with diverse groups (social groups)
- Affordable provision of energy (affordable energy)

Membership: Who should be allowed to acquire shares (become a member) of an EC: [ordinal variables on a 7-point Likert scale: strongly agree=1, neither no=4r, strongly disagree=7]

- Citizens from the region
- Citizens from outside the region
- Local municipality
- Regional organizations (e.g., local utilities or other municipal companies)
- Supra-regional organizations (e.g., national energy supply companies)
- Small local businesses or economic organizations (without direct energy industry connection)
- Large businesses or economic organizations (without direct energy industry connection)

Various types of actors and members are discussed in Boije af Gennäs Erre, Ellen et al. (2025) or Palm et al. (2025).

Legal form of an EC: What kind of legal structure would you support? [ordinal variable, commercial =1, neither nor = 4, collective/cooperative = 7]?

Decision power within an EC: Who – Members' Meeting, Board of Directors, Supervisory Board - should have the decision power on ….. ?– [categorial variables: yes, indifferent, no]

- use of profit (profit)
- selection of projects (projects)
- strategy of EC (strategy)
- ordinary business operations (operation)

Governance and legal issues are discussed in Boije af Gennäs Erre, Ellen et al. (2025).

Activities of an EC: What should the EC do – which activities?

- Joint generation of electricity (generation)
- Joint supply of heat (heat)
- Joint storage of electricity or heat (storage)
- Marketing and or sale of surplus electricity (marketing)
- Provision of information on energy consumption and self-generated electricity via an app or website (digital information)
- Handling all contractual formalities and organizational matters such as cancellations, payment flows, and other contracts with energy providers (administration)

Services offered by an EC: Which additional services would be important to you in an EC?

- Energy consulting such as tips on saving energy or renovations (consulting)
- Consumption overview (overview)

- Simplified billing e.g., one invoice instead of multiple (billing)
- Consumption tracking and control (control)
- Handling installation and maintenance of generation systems (M&O)
- Linking electricity generation with e-mobility e.g., joint creation of charging infrastructure or car-sharing (e-mobility)

Reis, Inês, F.G. et al. (2021) and Arias et al. (2025) looked into various activities and services ECs could provide to its members, and which could be considered as value propositions of communities (Kubli and Puranik 2023).

The **socio-demographic** section of the questionnaire includes questions about age, income, sex, highest educational qualifications, home ownership, area of living, federal state, and size of administrative municipality. Further questions addressed ownership of shares in a wind or solar power park, installation or ownership of solar modules on balconies or rooftops, membership in an EC, and use of self-generated electricity.

Additional questions **(economic items)** covered the maximum amount respondents were willing to invest in an EC (**maximum contribution**) as applied in Guetlein and Schleich (2023), and the minimum electricity cost savings (**minimum savings**) required to join an EC. Both are metric variables ranging from zero to more than €5000, and from 0% to more than 50% electricity bill savings, respectively.

The **membership intention** of respondents was addressed by asking: "How likely is it for you to become a member?". The attitude of respondents toward EC was included under the section "attitudes".

4 Data collection and analytical approach

1.1 Data collection

This study is based on data collected from German households through a structured online survey administered between April 2, 2026, and May 11, 2026. Respondents were recruited via the panel of a professional market research company. Participation in the survey was incentivized, with respondents receiving monetary or equivalent compensation. In total, approximately 2,000 panel members were invited to participate, with a target sample size of 1,000 completed responses. Quotas were set for gender, age and monthly net income (quota-sampling).

The survey was implemented as an online questionnaire hosted on the Fraunhofer Society's platform. The median of the completion time was approximately 13,4 minutes. To ensure broad representation, simple quota sampling was applied based on age, income, and gender. The questionnaire followed a standardized structure in which all questions were presented in the same order to all respondents.

Prior to the main field phase, the questionnaire was carefully developed and iteratively tested. An initial version was elaborated and reviewed within the project team. Subsequently, additional pretests were conducted within the authors' research and private network to refine question wording, structure, and overall survey flow. A final pretest was carried out with panel participants, involving 76 respondents. The insights gained from these pretesting stages were used to improve clarity, reduce respondent burden, and ensure the robustness of the survey instrument.

The survey instrument collected detailed information on respondents' socio-economic and demographic characteristics. In addition, it included attitudinal and preference-based questions. These required respondents to indicate their level of agreement with a series of statements, assess given settings, and express preferences using a seven-point Likert scale.

Several measures were implemented to ensure data quality. During the survey, four quality checks were used to screen out inattentive or inconsistent respondents. Initially, one particular question led to a high screening rate of approximately 40%, contributing to elevated dropout rates. To address this issue, the survey instrument was adjusted on April 15, 2026: the strict screen-out condition was removed, and respondents were instead allowed to skip the question if necessary. This adjustment significantly reduced premature survey termination, and the survey was closed with 1006 fully answered questionnaires.

Following data collection, additional ex-post quality controls were applied. These included the identification and removal of "speeders," defined as respondents with completion times below 40% of the median survey duration, as well as "straight-liners," who provided identical responses across a series of Likert-scale items. After applying these criteria, the final dataset comprises 965 valid observations.

Overall, the combination of controlled recruitment, quota sampling, standardized survey administration, and rigorous quality checks ensures a high level of data reliability and suitability for subsequent empirical analysis.

The resulting sample is broadly comparable to the German population with respect to key socio-demographic characteristics, including gender, age, and monthly net income, supporting the external validity of the analysis (see Figure 3).

4.1 Analytical approach

This paper focuses on the descriptive analysis of the survey results. We used Excel for data visualization. In addition, non-parametric statistical tests were performed in R or Stata in order to test for differences between/within respondent groups. They are described in the following:

The *Mann-Whitney-U-Test* is a group test for groups that can take on two categories, e.g. male and female. It is a non-parametric "test for differences in central tendency" for two independent samples that are not normally distributed, and it constitutes the counterpart to the t-test, which requires a normally distributed dependent variable within the groups. The dependent variable must be classified as either ordinal or metric. The test can answer, for instance, whether there are significant differences between male and female regarding the motivation to participate in an EG. The Mann Whitney-U-Test was carried for all questions in the questionnaire and the following groups: Gender (female, male), social welfare (yes, no), PV system installed at home (yes, no), PV system ownership (yes, no), and investment in RE projects (yes, no).

For each test, p-value ($p < 0.05$), means and effect size r where calculated and significant results filtered and visualized in tables (see A.5.1). The effect size r is calculated as follows:

$$r = \left| \frac{z}{\sqrt{N}} \right|.$$

According to Cohen (1992, p.155-159) the effect sizes are categorized as follows:

- $r \geq 0{,}1$ (weak effect)
- $r \geq 0{,}3$ (medium effect)
- $r \geq 0{,}5$ (strong effect).

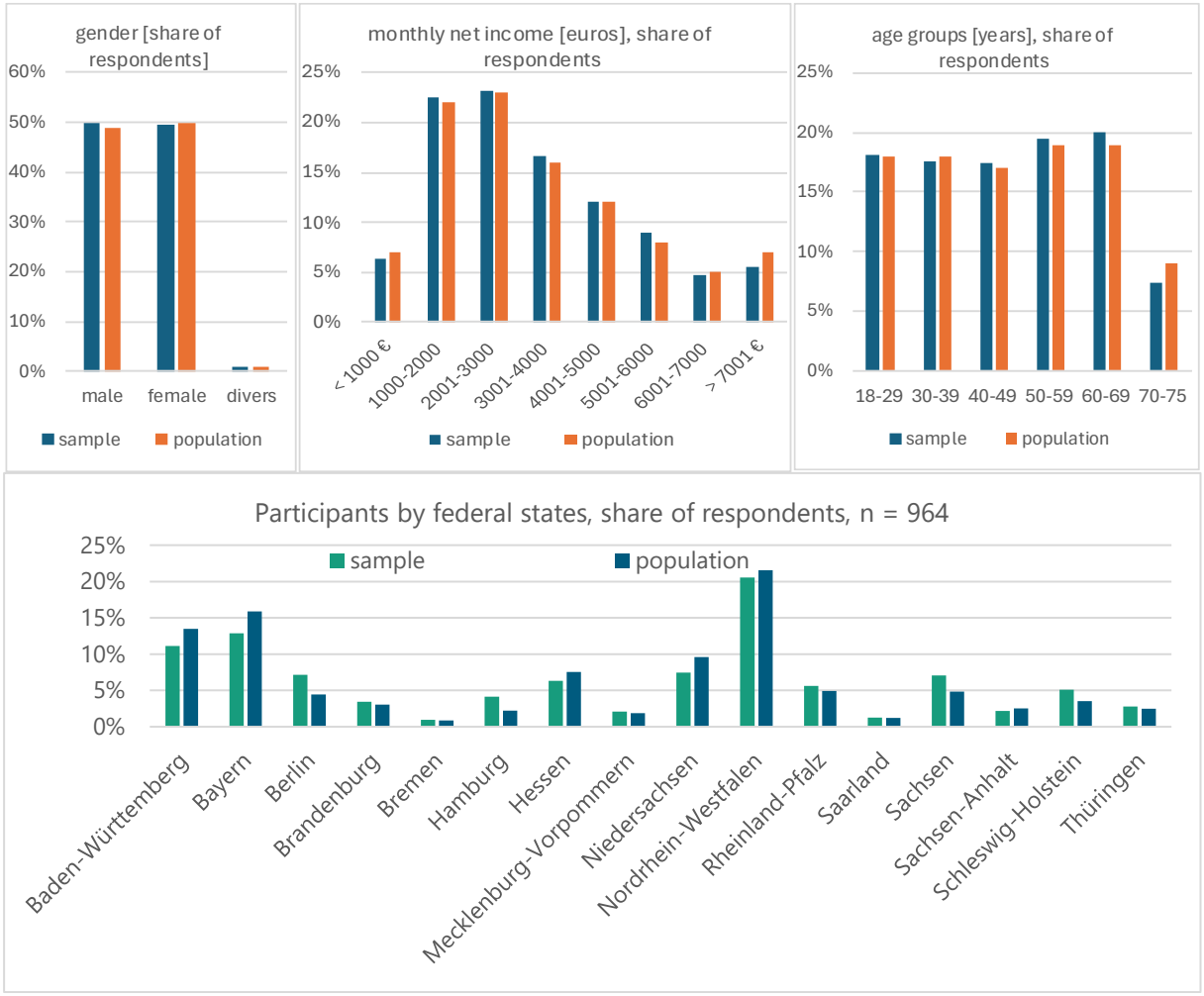
The *Kruskal-Wallis-Test* is different to the Mann-Whitney-U-Test in that the groups can take on three or more categories, e.g. “low income”, “middle income” and “high income”. The Kruskal Wallis Test was applied to all questions and the following groups: Age, income, qualification, size of municipality, federal state, living situation (see A.5.2 for categories within the various groups).

Similarly to the Mann-Whitney-U-Test, p-value ($p<0.05$), means and the effect size f were calculated. However, the Kruskal-Wallis-Test does not provide any information about the significant differences between the various groups. It is possible that there is no significant difference between the group “low income” and “middle income” but solely between the group “low income” and “high income”. Therefore, a Dunn’s test with Bonferroni correction was additionally carried out in order to identify pairwise significant differences between the categories within the various groups. The significant results (p.adj.signif) were filtered and visualized in tables (see appendix A.5.2.7) The effect size r for the pairwise comparison uses the same classification criteria as the Mann-Whitney U test (Cohen 1992, p. 157).

4.2 Data overview

The descriptive analysis encompasses a sample of 964 respondents and displays the socio-economic characteristics depicted in Figure 3 to Figure 5.

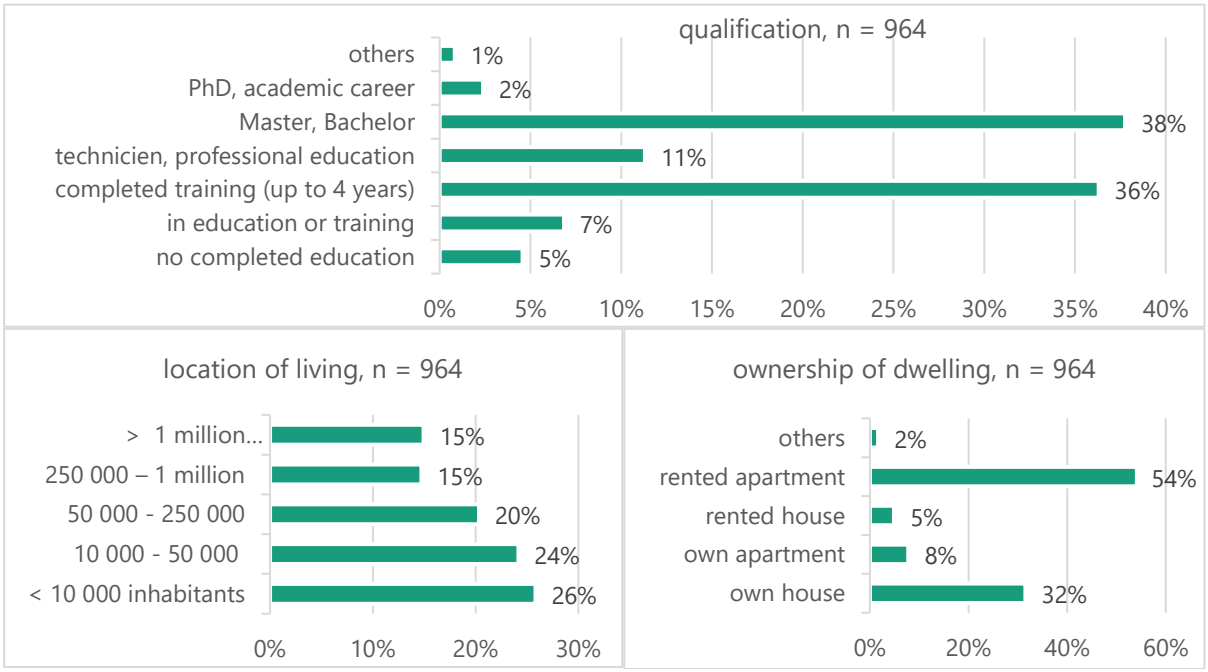
Figure 3: Gender, age, income and federal states of respondents by sample and population, n = 694



Source: Fraunhofer ISI survey 5/2026

The shares of respondents by gender, income, and age are comparable to those of the German population. However, the distribution across federal states deviates slightly from the national population shares: Saxony and Berlin are overrepresented, while Bavaria and Baden-Württemberg are underrepresented. Furthermore, the share of tenants is slightly higher in the sample than in the German population. Regarding the location of respondents, both very large cities and small rural communities appear to be overrepresented in the sample. Educational attainment in the sample is dominated by medium-level qualifications: roughly 47% of the population have completed upper secondary or post-secondary non-tertiary education, while about 40% hold tertiary degrees and around 13% have no or not yet completed educational attainment.

Figure 4: Qualification, location of living, ownership of dwellings by share of respondents



Source: Fraunhofer ISI survey 5/2026

Citizen participation in the energy transition varies strongly by type: investments in rooftop or balcony PV are relatively common (21%), while holding project shares of wind or solar parks (2%) remains limited (see Figure 5).

Figure 5: Share of respondents having invested in renewable energies, n = 964



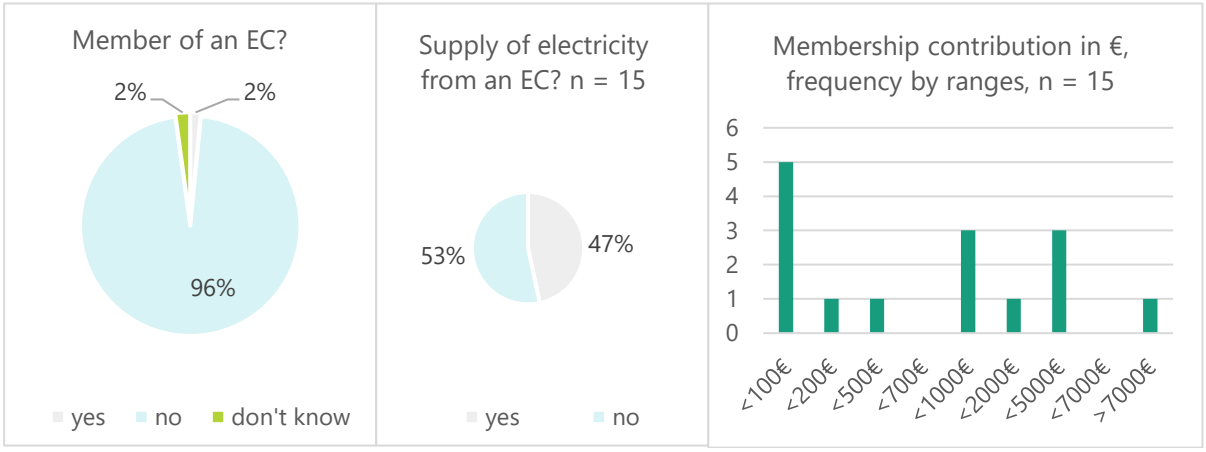
Source: Fraunhofer ISI survey 5/2026

5 Results

5.1 Membership or willingness to become a member of an EC

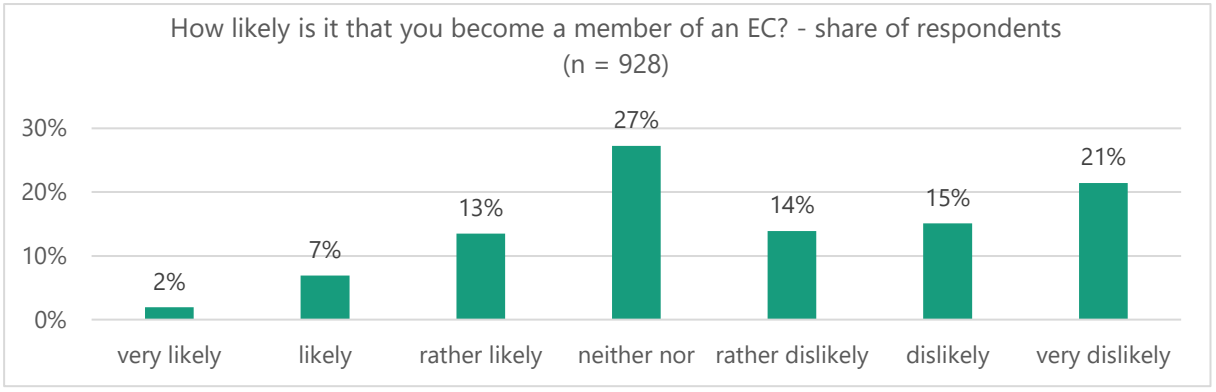
In contrast to the positive attitudes of the respondents (67%) towards energy communities, only 2% of the respondents are actual members of an EC. Fewer than 50% of these EC members are supplied with electricity by ECs. The membership contributions vary between small amounts of less than €100 and higher investment volumes above €5,000.

Figure 6: Share of respondents being member of an EC, n = 964



Source: Fraunhofer ISI survey 5/2026

Figure 7: Likelihood of becoming a member of an energy community?



Source: Fraunhofer ISI survey 5/2026

Regarding non-members of EC, a substantial share of respondents state that they are (rather or very) unlikely (50%) to join an energy community or indifferent (27%), whereas only a small proportion (around 22%) report a slight or clear willingness to participate. This likelihood or intention to participate **(membership intention**) is illustrated in Figure 7. Using either the Wilcoxon-Rank-Sum Test or the Kruskal-Wallis test, member intention differs significantly by:

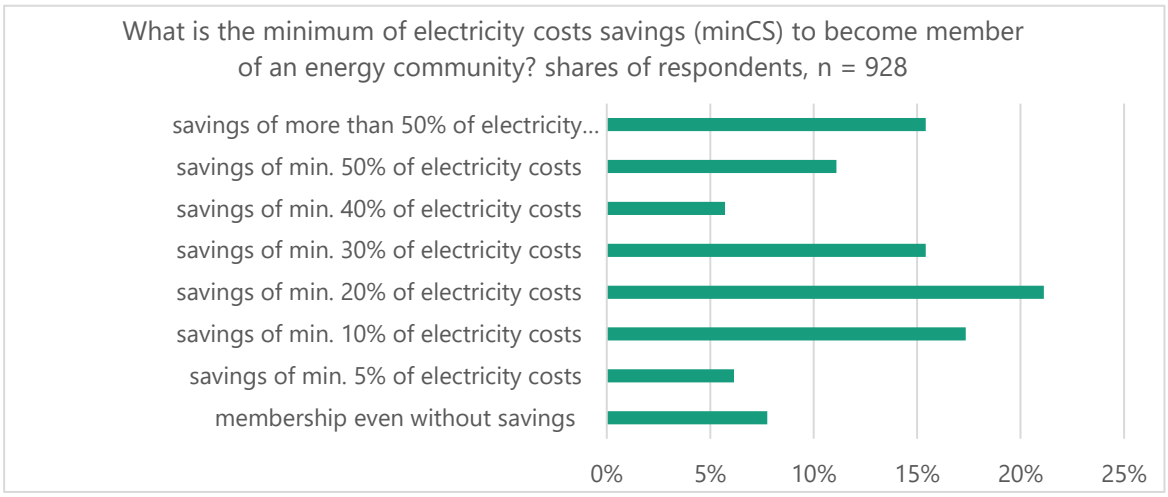
- gender: females reveal a lower intention for membership than men ($p<.0000$, Cohen's $d = -0.29$).
- existence of a PV rooftop plant on the dwelling: respondents with an PV plant on the roof of the dwelling tend to have a higher intention to become a member ($p<.0000$, Cohen's $d = -0.40$)

- investment in RE: respondents with investments in renewable energy projects reveal a higher intention to become a member than those without investments (p<.0001, Cohen's d = -0.93).
- income: persons with lower income tend to be less inclined to become a member (p<.0001)
- qualification: the membership intention differs between qualification groups, with students or persons in training displaying the highest intention, and person with no qualification or with a completed training revealing the lowest intention (p<.0001)
- home ownership: respondents living in a rented or own house display a higher intention to become a member of an EC than those that live in apartments (p<.0003, Cohen's d = -0.24).

To account for financial incentives or barriers to membership, we included the minimum electricity cost savings and the maximum contribution members require or are willing to pay (financial share), respectively.

Regarding the role of electricity cost savings in the intention to become a member, the respondents indicated the minimum share of **electricity cost savings (minCS)** required for membership. The results are depicted in Figure 8 (coding of minCS: 1= no savings, 8 = savings of more than 50% of their electricity costs). The Kruskal-Wallis test indicates that the minCS differed significantly across the seven categories of membership intention (χ^2=223.76, p<.0001). Descriptive results suggested a monotonic increase in minCS with lower levels of membership intention. This pattern was supported by Spearman's rank correlation, which shows a significant moderate relationship between minCS and membership intention (ρ=0.48, p<.001). Given that higher values on the membership intention variable indicate lower intention to join, this suggests that **respondents with lower membership intention tend to require higher electricity cost savings to consider a membership in an EC**.

Figure 8: Minimum share of electricity costs savings

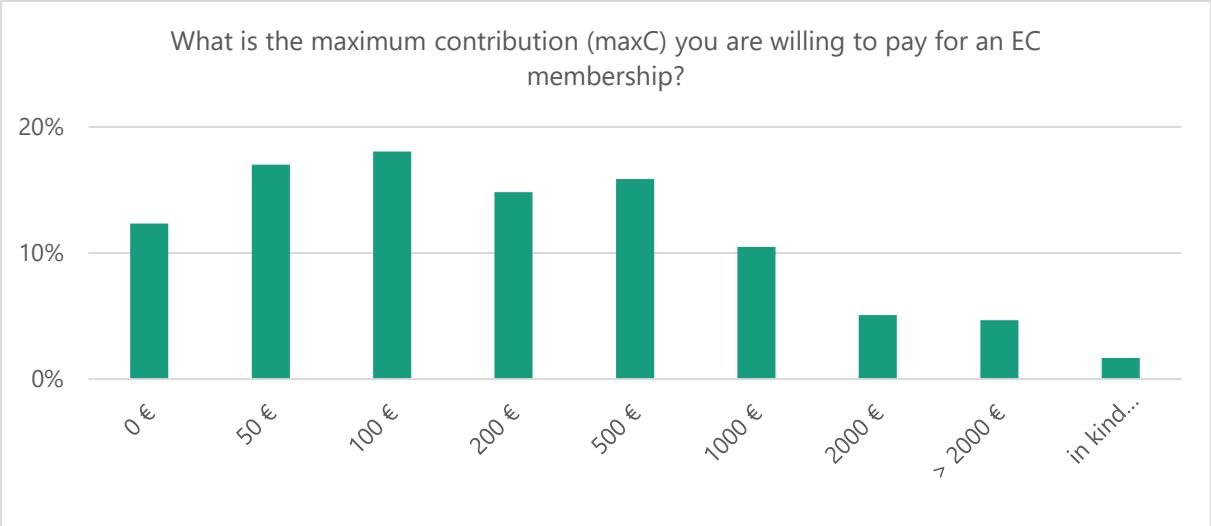


Source: Fraunhofer ISI survey 5/2026

Membership in an EC typically requires citizens to purchase a share, for which members may receive a dividend. The size of this share varies widely across ECs, ranging from around €100 to more than €2000 (coding: 1 = €0, 8 = > €2000). The survey also asked respondents about the **maximum contribution** they would be willing to pay for EC membership, that is, the maximum share in € (maxC) they would still accept and pay as member. This measure was included to estimate the potential investment volume citizens might be willing to invest in ECs (see Figure 9). A Kruskal-Wallis test indicates that maxC differs significantly across the seven categories of membership intention (χ2=122, p<.001). Descriptive results suggest that maxC increases as membership intention became stronger. This pattern is supported by Spearman's rank correlation, which shows a significant moderate negative relationship between maxC and membership intention (ρ=-0.35,

p<.001). Given that higher values on the membership intention variable indicate a lower intention, this negative association means that **respondents with stronger membership intentions are willing to pay higher contribution amounts**.

Figure 9: Maximum contribution for EC membership



Source: Fraunhofer ISI survey 5/2026

5.2 Drivers and barriers of becoming a member of an EC

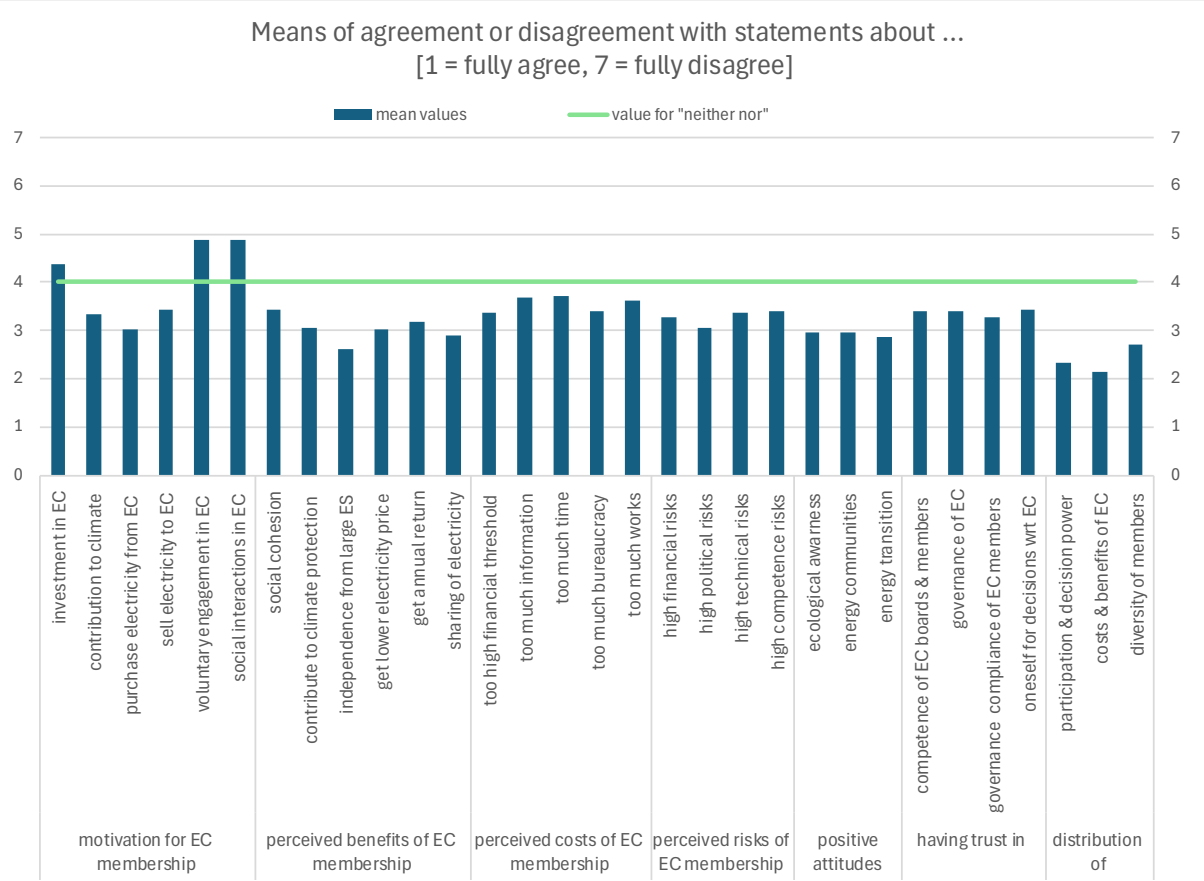
The survey responses reveal **general tendencies in the agreement and disagreement** of respondents on **drivers and barriers to becoming a member of an EC** (see Figure 10). We grouped drivers into different sub-groups such as motivations, perceived benefits, attitudes and trust, while barriers included perceived risks and monetary as well as non-monetary costs. Please note, a high value signals disagreement, while a low value indicates agreement with the statement in Figure 10.

On average, respondents view independence from large electricity providers and the ability to purchase electricity through an EC as key benefits and, hence, as motivational drivers for membership (mean Likert scale = 2.6; 3.0). However, a perceived fair distribution of costs and benefits, as well as of participation of all and having a voice, is considered an even more central aspect of an EC (mean Likert scale = 2.2; 2.3). In contrast, aspects addressing voluntary engagement, social interaction, and investment decisions receive the least agreement among respondents. Therefore, they are not perceived as important drivers (mean Likert scale = 4.8; 4.8; 4.3, respectively), suggesting that respondents either do not link membership with an investment possibility or consider the option to invest as less important.

Apart from these key drivers and non-drivers, respondents mainly show, on average, weak agreement with the remaining statements on perceived costs, risks, benefits, and attitudes. However, different social groups might exhibit or reveal different patterns of key drivers and barriers.

To test for group differences, **Mann-Whitney-U, Kruskal-Wallis** and **Dunn's tests** were carried out for the corresponding groups. The results of Dunn's test allow for pairwise comparison between different categories within one group. The following section highlights only the significant statistical test results concerning drivers and barriers of becoming a member of an EC (detailed results of all tests are provided in the Appendix).

Figure 10: Means of agreement or disagreement with statements addressing attributed and perceived drivers and barriers of becoming a member of an EC



Source: Fraunhofer ISI survey 5/2026

The results reveal significant differences regarding perceived costs and efforts between different groups.

- The results of the Mann–Whitney U test show consistent differences between **male and female** respondents regarding the **perceived costs and efforts** of an EC membership. Compared to women, men perceive the costs associated with time, information gathering, bureaucratic efforts, and financial thresholds as higher. The effect size r is small ($0.16 < r < 0.20$) but remains consistent across all questions addressing perceived cost.
- Men and women also differ in their perception of the **financial risk** associated with a membership. Women associate higher financial risks with membership than men do ($r = 0.23$).
- Significant differences in perceived membership **costs and efforts** were also observed between respondents **with and without a photovoltaic (PV) plant** installed at home. The latter tend to agree more with the statements that membership entails financial and construction efforts that are seen as too costly.
- The results of the Dunn's test show a significant difference between **Age Group** 2 (18–29 years) and Age Groups 5, 6, and 7 (50–59, 60–69, and 70–75 years) regarding the question of whether a membership is too **time-consuming** ($0.23 < r < 0.29$). Respondents in Age Group 2 expressed greater agreement that membership might be too time-consuming. This age group seems to value their time more highly than the other groups, suggesting that the opportunity costs of time outweigh the expected marginal utility of being a member of an EC.
- Furthermore, the results of Dunn's test demonstrate that **low-income households** express greater agreement with the statement that membership poses a major **financial risk.** The

effect size r is comparatively high and indicates a medium effect size (0.27 < r < 0.38). These results are consistent with the theory on increasing marginal losses associated with decreasing income.

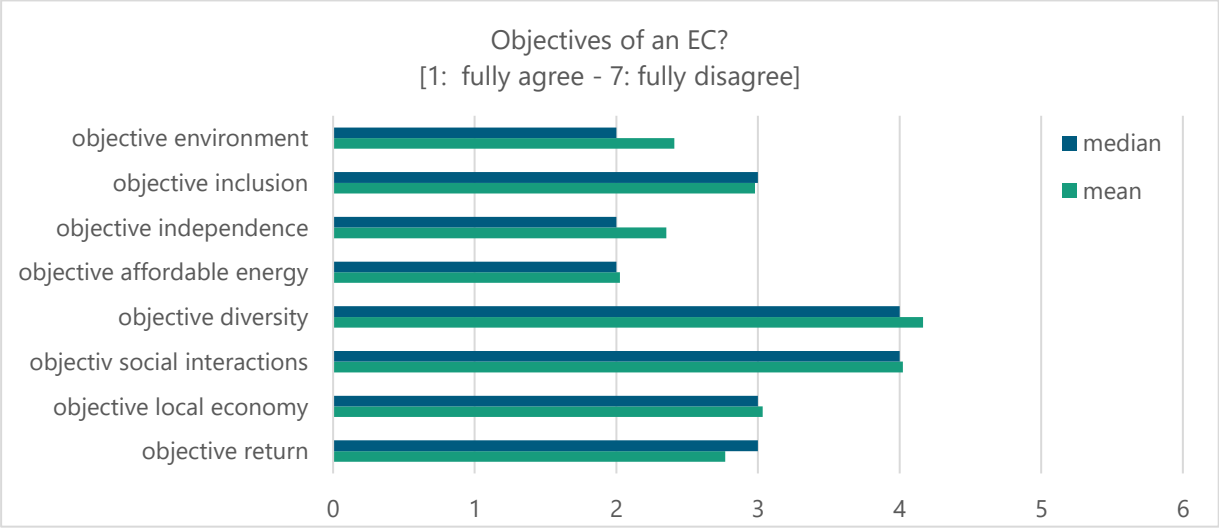
- In line with the financial risk aversion of low-income groups are the results that lower-income groups (1 and 2) show lower motivation for becoming an EC member due to **investment** reasons. In contrast, high-income groups (5–7) are more likely to agree that a membership should entail positive investment returns (0.18 < r < 0.27). This suggests that the perceived marginal loss of expected utility from a potential financial loss decreases as income rises.
- Differences in **attitudes** towards ECs were observed between respondents from **Saxony-Anhalt** and those from other federal states. Respondents from Sachsen-Anhalt display a comparatively less positive attitude towards ECs, with medium to strong effect sizes (0.25 < r < 0.47; mean Likert scale Sachsen-Anhalt = 4.0, mean Likert scale other selected federal states = 2.7–2.9)).

5.3 Key design elements of an EC and preferred characteristics

The following section describes which design elements of an EC are preferred or not. Regarding differences between groups, only the statistically significant test results concerning key design elements and preferred characteristics of an EC are highlighted here (detailed results of all tests are provided in the Appendix). The key design elements encompass objectives, business activities, services provided by an EC, technologies used and type of members.

5.3.1 Objectives of an EC

Figure 11: Survey Results on Objectives of an EC



Source: Fraunhofer ISI survey 5/2026

The survey responses reveal that, on average, two objectives – **affordable energy supply and energy independence** – are considered by respondents to be the most relevant objectives of an EC (mean Likert scale = 2.0; 2.2), while supporting social interactions or diversity issues is not considered an important objective of an EC. This seems to be contradictory to the respondents' answers regarding motivations for joining an EC. However, on closer inspection, the message is clear: **ECs are perceived as socially interactive and inclusive organizations**. These characteristics might be strong drivers of joining an EC for people who consider these aspects important. In

contrast, and according to the respondents' opinion, ECs should not pursue diversity and social interaction as main objectives. This means in the view of the respondents these characteristics are unimportant.

The statistical tests demonstrate **significant differences between groups** regarding the objectives of an EC. The results of the Mann-Whitney-U test reveal significant differences with small effect sizes.

- Firstly, **women** view environmental protection as more relevant than men (r=0.14). Significant deviations can also be seen regarding the goal of inclusion.
- Respondents who receive **social monetary transfers** express higher agreement with the goal of inclusion (r= 0.11),
- whereas respondents who **own a PV**-plant see the inclusion of people with low income as a less important goal of ECs (r= 0.17).

The results of the Dunn's exhibit further significant differences between categories of the same group regarding the goals of ECs.

- Within the **Age Group**, small to medium effect sizes occur between Age Group 2, 3 and Group 6, 7 ($0.17 < r < 0.36$). The younger groups view the goal of increasing social interaction and connection with different people as less important than the older age groups.
- Another consistent trend with medium effect sizes can be seen between **low-income** and high-income groups. Low-income groups view the inclusion of people with low-income as more important than the high-income groups ($0.2 < r < 0.43$).
- In line with the differences in attitudes towards ECs are the results regarding the goal of environmental protection. The respondents in **Saxony-Anhalt** express higher non-agreement with a medium to high effect size (0.43).

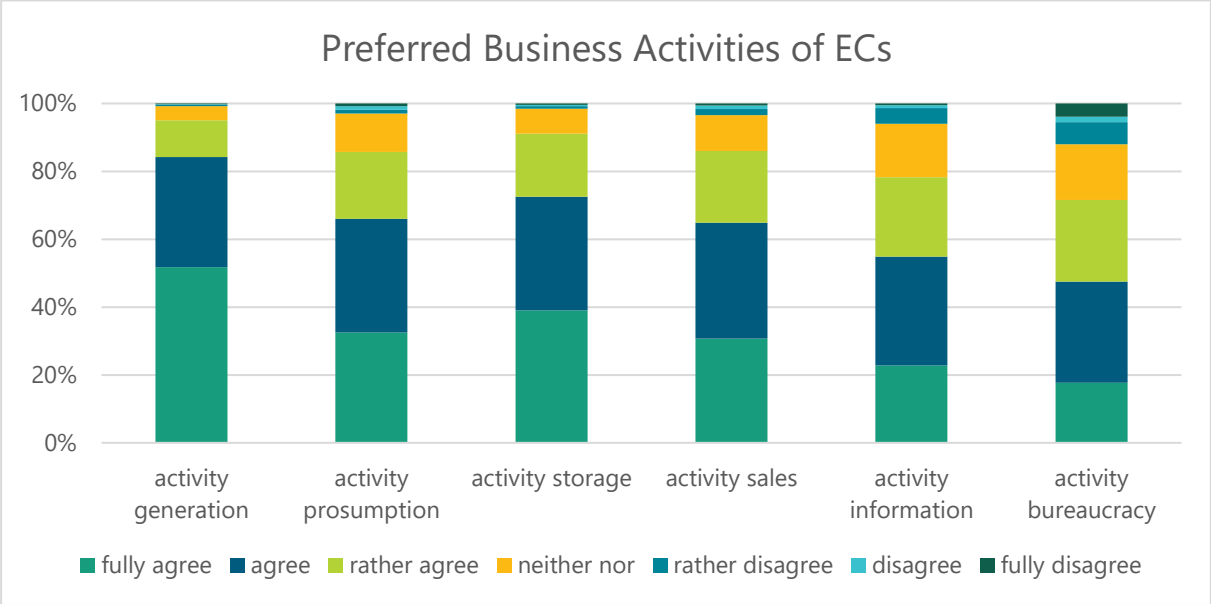
5.3.2 Business activities

The majority of respondents (approximately 90%) view the joint generation of electricity as the **preferred business activity of an EC**, followed by storage prosumption and electricity sales while support of its members in administrative issues (bureaucracy) is the least preferred, but still considered as a useful activity that an EC should pursue (see Figure 12).

Significant deviations between groups with small to medium effect sizes occur consistently across questions regarding **the preferred activities of an EC**.

- **Age Group** 2 consistently expresses lower agreement in comparison to Age Groups 5, 6, 7 regarding the activities that focus on the provision of information via an app, support in contract matters, and the sale of surplus energy ($0.16 < r < 0.38$).
- In line with this are the results that respondents of the **qualification** category 2 (Vocational training/studying) see support in contract matters and the sales of surplus energy as less important compared to the other qualification categories. Either this group expects low benefits from these services because they perceive them as requiring little effort to perform on their own, or they are unaware of the actual effort these services entail when undertaken independently, or they are not well informed about the benefits and services.

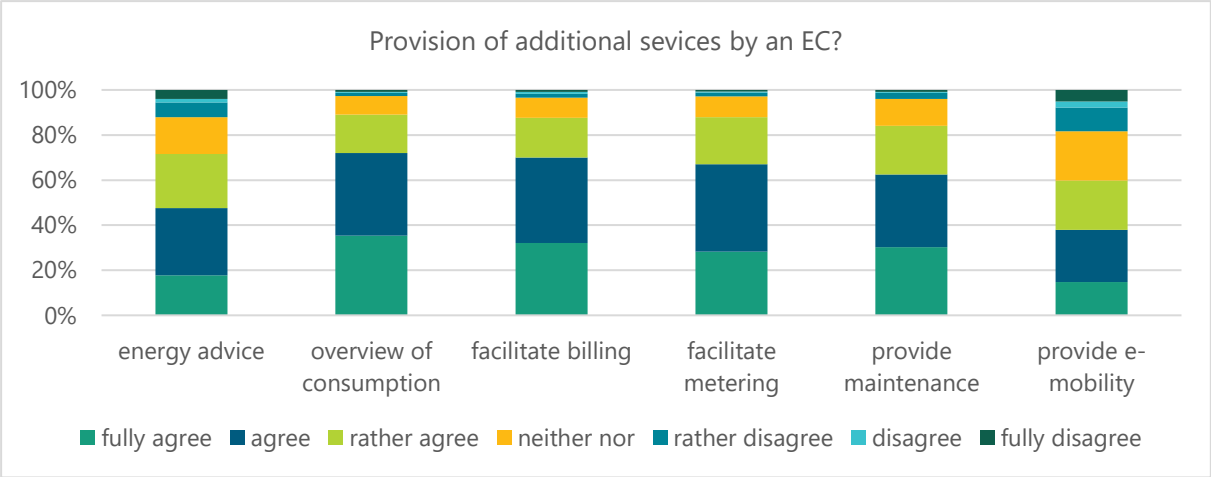
Figure 12: Survey Results on Preferred Business Activities of an EC



Source: Fraunhofer ISI survey 5/2026

When it comes to **the provision of additional services**, on average, provision of information on consumption (overview of consumed energy) and support in billing issues are the most favored options.

Figure 13: Survey Results on Provision of Additional Services by an EC



Source: Fraunhofer ISI survey 5/2026

Major **significant differences** can be seen, again among the **age groups**. Age Group 7 demonstrates a stronger preference for an additional energy consulting service (0.20< r <0.25) compared to Age Groups 3, 4and 5. This suggests the older generation still prefers traditional consulting services whereas younger generations are more willing and used to gather information on matters of energy saving and renovation themselves. Age Group 2, on the other hand, considers the additional service of consumption tracking to be less important than the older age groups do.

5.3.3 Preferences for generation technologies and type of members

Figure 14 displays preferences for generation technologies and type of member. On average, **wind onshore and PV** generation technologies are associated with the highest willingness to participate

in an EC. The statistical tests reveal a discrepancy between Age Group 2,3 and Age Group 6 in that the younger age groups express higher agreement for the generation technologies wind and PV ($0.16 < r < 0.23$).

Regarding types of members, the respondents could indicate who should have the option to become a member of an EC. The survey results show that, on average, respondents **most favor local citizens and municipalities** as preferred shareholder types in an EC (Figure 14). This suggests that if national energy suppliers or large firms were eligible as members, respondents would be less inclined to become a member.

Respondents living in small municipalities (population size < 10.000 inhabitants) express lower agreement with the statement that citizens living outside the region should be able to acquire shares compared to those living in larger cities (population size > 50.000 inhabitants; $0.13 < r < 0.20$).

Figure 14: Survey Result on Supportive Technologies for memberships and Preferred Member Types

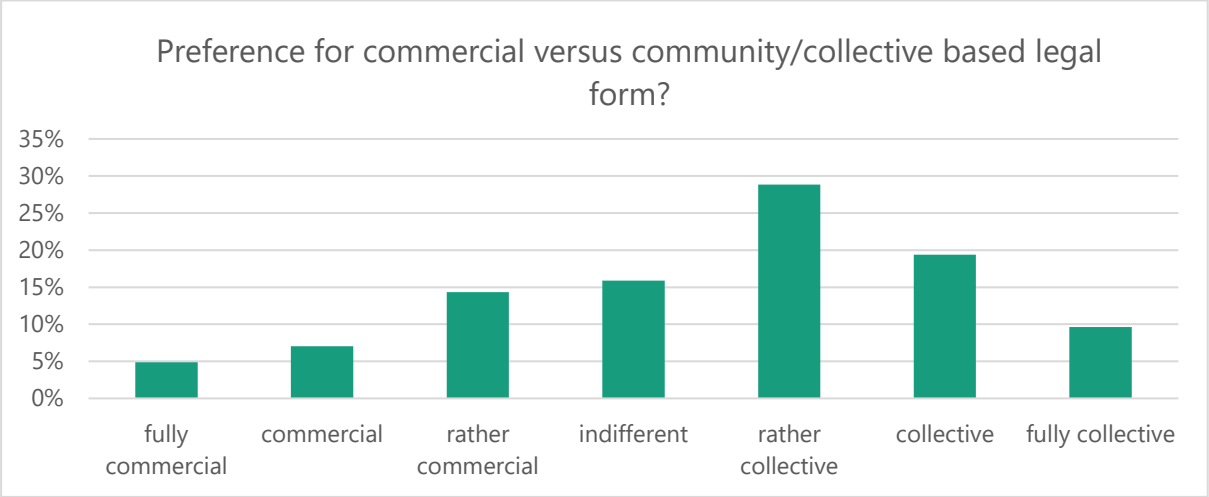


Source: Fraunhofer ISI survey 5/2026

5.3.4 Legal structure

Regarding preference on the legal structure of an EC, 60% of respondents favor a partially or fully **collective approach**. This suggests that a collective component in the structure of an EC might increase the willingness to acquire an EC membership. The statistical test results reveal no mentionable effect sizes.

Figure 15: Survey Results on Preferred Legal Form of an EC



Source: Fraunhofer ISI survey 5/2026

5.3.5 Decision power

The survey responses addressing decision power illustrate that the majority of respondents (approximately 80%) would like to see all members involved in **decisions regarding strategic direction, project development, and the use of profits** (see Figure 16). With regard to decision-making authority over **operational activities**, the picture is more heterogenous. Approximately half of the respondents agree on the involvement of all members, whereas the other half of the respondents agree that decision-making authority on these matters lies with an executive board or supervisory board.

This signals that having a say and participating in decisions is a major concern for the respondents. However, this desire for co-determination stands in contrast to their wish to spend as little time as possible on the EC and to avoid bureaucratic burdens (see Figure 10). One possible explanation is that the respondents have not linked the decision power to the devotion of time and efforts linked to an active and responsible EC membership when answering this question. Another is that it is not about actual (i.e., realized) participation, but rather about the possibility of participation. In other words, people do not necessarily want to be constantly involved in practice; they simply want the option to exert influence. Having this option gives them a voice, enables greater self-determination – together with others – and thereby also fosters self-efficacy and anchors democratic structures in the energy transition.

The Dunn tests reveal significant differences between socio-demographic groups on the matter of decision power.

- There are significant differences between **age groups**: Young respondents (Group 2 and 3) differ to older respondents (Group 5 and 6) in that younger respondents see the involvement of all members in **strategic and project development matters** as less important ($0.17 < r < 0.22$). This may reflect younger respondents' lower willingness to devote time and efforts to EC matters, as well as a diminished sense of community.
- The student group (**qualification** category 2) sees the involvement of all members **in project development matters** as less relevant than the other qualification categories ($0.20 < r < 0.37$).
- Another significant difference can also be seen in the population size group **(location**). Respondents living in cities > 1 Mio. inhabitants display less agreement towards the statement that **decisions on profits** should be taken by all members.

Figure 16: Survey Results Addressing Decision Power



Source: Fraunhofer ISI survey 5/2026

6 Discussion and Conclusion

Results reveal a striking gap between attitudes, intentions, and behavior: 67% of respondents hold a positive attitude toward energy communities (ECs), 50% report being likely to become a member, but only 2% are actual members. The gap between attitudes and intentions may be explained by perceived risks, costs, and benefits, as well as diverging motivations and values linked to EC membership. The gap between intentions and actual participation likely involves additional factors, such as insufficient information about ECs - both generally and at the local level - and a lack of networks or channels for engaging with existing EC members (Neves et al. 2025). The analysis of this paper focusses on the intention of becoming a member of an EC.

Regarding intentions, respondents generally agreed with statements on perceived risks, costs, benefits, motivations, and perceptions of ECs, with the exception of weak disagreement concerning statements on ECs as a place of social interaction, voluntary engagement, and EC as an investment option. The strongest motivation for joining an EC is the option to purchase electricity at low prices – a cost oriented argument according to Hackbarth and Löbbe (2022) - , while the greatest perceived benefit is achieving independence from large electricity suppliers. While perceptions of costs, risks, and trust in institutions or individuals show little variation, the distribution of costs and benefits, having a say, and inclusion are perceived as key aspects of an EC.

At first glance, this appears contradictory: respondents **reject inclusion, sociability, and social interaction as central goals of an EC**, yet strongly **endorse participation, cost-benefit sharing, and openness** to all types of members as positive aspects of membership. This tension can be resolved by recognizing that participants view an EC primarily as a structural space for communal activity, democratic decision-making, and civic engagement - not as a social end in itself, but as an intrinsic operating feature. Individuals, who do value sociability and volunteering may nonetheless find an EC a more suitable organizational form than other types of institutions.

Moreover, the **rejection to endorse financial investments as motivations** for membership and a strong support of indirect financial objectives (affordable energy price) as key design element of EC aligns with findings in Breitschopf (2026b) where involvements of communities or municipalities in energy transition projects are perceived less risky and less profitable than commercial projects, but are considered preferred options.

In line with other studies e.g. Ceglia et al. (2022), a high sensitivity toward financial issues prevails in terms of energy cost savings, less with respect to returns on investments. Low-income groups, in particular, exhibit greater risk sensitivity and lower motivation to become EC members. This is also in line with the findings that respondents with lower membership intentions tend to require higher electricity cost savings to consider joining. Conversely, **respondents with stronger membership intentions** were willing to pay **higher contribution** amounts.

The respondents expressed **clear preferences for design elements of the EC:**

- **Objective** of an EC: According to the respondents, an EC should primarily **pursue affordable** energy prices for its members, along with an **independent and autonomous electricity supply**, whereas social interaction and high diversity among members (inclusion) are less preferred objectives. This aligns well with Wierling et al. (2022) who summarized the provision of locally generated electricity, cost savings, and consulting services as key value propositions of EC.
- In terms of **activities**, **electricity generation** is regarded as the most important task for an EC, followed by **storage**, while relieving members of administrative burdens is considered less

relevant. By contrast, respondents welcome the provision of consumption data, billing, and metering as a service offered by the EC.

- Regarding **generation technologies**, **PV** is the most preferred option, followed by onshore wind.
- With respect to **membership composition**, **local citizens** are strongly preferred over non-local members, with **municipalities** ranking as the second most preferred type of member. Similarly, **local energy suppliers** are strongly preferred over national suppliers. This local focus and involvement of municipality is also stressed by Bonfert (2024) who considers municipalities as one key actor among others.
- Regarding **legal structure**, respondents tend to favor a **collective (cooperative-type)** form of organization, while only a minority (around 25%) prefer a commercially oriented structure.
- Concerning **decision-making power**, the majority of respondents support **strong member influence** over EC strategy, investment decisions, and the use of profits, as well as operational issues. This is in line with other studies that stress self-determination, independence and autonomy (Simone et al. 2025a; Breitschopf 2026b) as relevant key factors of the energy transition or EC membership. This finding appears somewhat at odds with respondents' expressed wish for minimal non-monetary costs and effort associated with membership. A plausible interpretation is that most respondents value having a say in decision-making, even if they do not necessarily intend to actively exercise this power in practice. Moreover, more than 30% of respondents believe that at least decisions on operational matters should be delegated to the executive board rather than the membership assembly.

Some design preferences **differ by socio-economic and demographic characteristics**. For instance, younger respondents place less value on social interaction and consulting services compared to older generations. Similarly, students show less inclination to be involved in project decision-making. One possible explanation is that students tend to have weaker social ties to their place of residence and prefer to remain flexible to relocate at any time, which may reduce their interest in being involved in decision-making processes. Another possible explanation is that students are at a stage of life characterized by exploration and discovery – they want to meet new people, see the world, and gain experiences – rather than being tied down by responsibilities and obligations. Consequently, they may be less inclined to seek explicit involvement in decision-making processes at this stage of their life.

Regarding geographic differences, one federal state - Saxony-Anhalt - stands out with a notably low level of positive attitude toward ECs. A possible explanation for this discrepancy lies in the general political climate in Saxony-Anhalt: recent election results show that almost half of the population supports the national party, which opposes the expansion of renewable energy. Since the concept of ECs is closely linked to RE expansion, attitudes toward ECs in this region could be potentially more critical.

Despite the heterogeneity of socio-economic and demographic characteristics among respondents, we found relatively few significant differences in design preferences across groups. This suggests a shared underlying need regarding EC design, independent of individual background: a **strong desire among citizens to be involved in decisions and to have a voice - reflecting a strong democratic orientation** and desire of democratic participation. The strong preference for local members - individuals, municipalities, and suppliers - may indicate limited trust in actors beyond a familiar, local scope, potentially linked to a need to be able to know and assess the actors involved – linked to the need for community commitment and trust in Neves et al. (2025).

This **local orientation** aligns with the perceived key benefit of independent electricity supply: local supply provided by local actors under local control. Together with the preference for **democratic participation**, this local orientation reflects citizens' **aspiration for empowerment and self-**

determined action in the energy system as stated by . Moreover, local and independent supply could be perceived as strengthening the resilience of the energy system against risks such as market concentration and dominance by large players, or dependence on non-RE sources as termed by Bellini et al. (2024). This perception, in turn, reinforces respondents' preference for known, local actors over distant or large-scale ones - pointing to a self-reinforcing link between local orientation and perceived system resilience.

While these findings point to a common underlying **need for participation and local embeddedness,** the specific design of an EC should still be **tailored to its local environment** - i.e., local challenges, potentials, and resources. A "one size fits all" approach would fail to accommodate the diversity of local contexts, even where citizens' underlying preferences converge.

List of figures

Figure 1: Key aspects of energy communities 8
Figure 2: Questionnaire 10
Figure 3: Gender, age, income and federal states of respondents by sample and population, n = 694 17
Figure 4: Qualification, location of living, ownership of dwellings by share of respondents 18
Figure 5: Share of respondents having invested in renewable energies, n = 964 18
Figure 6: Share of respondents being member of an EC, n = 964 19
Figure 7: Likelihood of becoming a member of an energy community? 19
Figure 8: Minimum share of electricity costs savings 20
Figure 9: Maximum contribution for EC membership 21
Figure 10: Means of agreement or disagreement with statements addressing attributed and perceived drivers and barriers of becoming a member of an EC 22
Figure 11: Survey Results on Objectives of an EC 23
Figure 12: Survey Results on Preferred Business Activities of an EC 25
Figure 13: Survey Results on Provision of Additional Services by an EC 25
Figure 14: Survey Result on Supportive Technologies for memberships and Preferred Member Types 26
Figure 15: Survey Results on Preferred Legal Form of an EC 27
Figure 16: Survey Results Addressing Decision Power 28

List of tables

Table 1: Results of the workshops 34
Table 2: Dimensions of energy communities identified in literature 37
Table 3: Key design elements of energy communities 39

Annex

A.1 Workshops

Table 1: Results of the workshops

Category	Subcategory	Citizen statement
Benefit	Financial	"Self-interest -> return (monetary)"
Benefit	Financial	"Cheaper housing"
Benefit	Financial	"Monetary benefit -> suppliers / consumers"
Benefit	Financial	"Financial benefit"
Benefit	Social & local	"Sense of community & added value for the region"
Benefit	Social & local	"Locality! (Profits must flow back)"
Benefit	Social & local	"Common good in the form of holistic solutions, including shared spaces (neighborhood concept) -> social structure"
Benefit	Social & local	"Ecological / social value of an EC as an argument (common good orientation instead of profit orientation!)"
Benefit	Social & local	"Local project for recognition value"
Benefit	Social & local	"Local added value -> jobs, etc."
Benefit	Social & local	"Regional value creation"
Benefit	Social & local	"Selling electricity as tenant & landlord"
Benefit	Social & local	"Sense of community"
Benefit	Social & local	"Involving different population groups / diversity"
Benefit	Ecological	"Self-interest -> sustainability mindset"
Benefit	Ecological	"Climate protection"
Benefit	Ecological	"CO2 emissions"
Benefit	Ecological	"Environmentally friendly generation"
Benefit	Independence	"Self-sufficiency"
Benefit	Independence	"Independence from large energy companies"
Benefit	Independence	"Self-determination, less dependent on corporations"
Benefit	Education	"Learning something about the energy transition"
Benefit	Education	"Experience spaces where energy and consumption can be experienced firsthand"
Benefit		"Social benefit is secondary"
Risk	Complexity	"Criticism: discussion on the topic of energy is too chaotic, unclear, and inaccessible"
Risk	Complexity	"Administration, taxes, tax office, bureaucracy -> currently too complex"

Category	Subcategory	Citizen statement
Risk	Volatility	"Financial return dependent on yield"
Risk	Security of supply	
Risk	Financial	"Backup behind the EC (expensive)"
Risk	Structure	"Demand exceeds supply / capacity"
Risk	Regulatory	
Effort	Financial	"Extensive construction measures exceed the scope"
Effort	Time / complexity	"2-hour information session, 2 signatures (from the consumer's perspective)"
Effort	Time	"Higher effort possible as a producer"
Effort	Time	"Manageable and clearly listed effort ('being guided through the process')"
Effort	Complexity	"Low bureaucracy"
Effort	Time / complexity	"Low effort -> automated -> monitoring yes, but not mandatory"
Framework conditions of the participation decision	Trust & transparency	"The mode of operation of the EC must be transparent"
Framework conditions of the participation decision	Trust & transparency	"Measurability of benefits"
Framework conditions of the participation decision	Trust & transparency	"Trust through interest, personal connections, familiarity with the cooperative concept"
Framework conditions of the participation decision	Communication	"Information deficit among the population -> information must be formulated in a way that is understandable for laypeople"
Framework conditions of the participation decision	Communication	"Mouthpieces and public relations work"
Framework conditions of the participation decision	Access	"Lowering hurdles and simplifying the topic"
Framework conditions of the participation decision	Access	"Fast implementation (registration, etc.)"
Framework conditions of the participation decision	Risk	"Minimal risk / investment"
Framework conditions of the participation decision	Risk	"Manageable risk is advantageous"

Category	Subcategory	Citizen statement
Framework conditions of the participation decision	Individual benefit	"Guaranteed benefit from participating in an EC must be ensured"
Framework conditions of the participation decision	Necessity	"If the 'crisis' were severe enough, an energy community would become a more attractive alternative"
Framework conditions of the participation decision	Legal framework	"Secure legal framework / regulation"
Design	Services	"Combination of various services"
Design	Services	"Increasing attractiveness through contracting -> but no effort / trusted contact person"
Design	Services	"An app is absolutely necessary -> not too complicated / technical -> with feedback / suggestions / push notifications"
Design	Financing	"Joint investment -> sharing financial risk; proportional investment -> preferred: direct use (alternative utilization only in case of surplus)"
Design	Financing	"Pre-financing of local electricity generation by the EC"
Design	Governance	"Caretaker / driving force -> one person for everything"
Design	Incentivization	"Bonus for member acquisition - advertising"
Design	Participation options	"Selling electricity as tenant and landlord"
Design		"Neighborhood solutions (storage and generation) are important!"
Design		"One-stop shop is most attractive"
Design		"Making shares inheritable"
Design		"Measurability of benefits"

A.2 Literature Review

A.2.1 Dimensions of energy communities

Table 2: Dimensions of energy communities identified in literature

Dimension	Key Aspects	Selected References
Technical or Technological	Energy management, demand response, modelling; generation technologies (solar, wind, hydro, biomass); storage and flexibility; infrastructure access; scalability; interaction between technology and participation	Lazdins et al. (2021); Rego et al. (2025); Reis, Inês, F.G. et al. (2021); Giannuzzo et al. (2025); Belmar et al. (2023); Galindo Noguera et al. (2025); Hackbarth and Löbbe (2022); Yiasoumas et al. (2023); Druta et al. (2025); Boije af Gennäs Erre, Ellen et al. (2025); Lowitzsch et al. (2023); Dudka et al. (2023)
Economic & Financial	Economic viability; business models; local value creation (jobs, income); high upfront costs; financial benefits (cost savings, revenues, returns); self-consumption; incentives; profitability; energy autonomy and security	Rego et al. (2025); Lazdins et al. (2021); Arias et al. (2025); Kerscher et al. (2024); Galindo Noguera et al. (2025); Georgarakis et al. (2021); Becchetti and Salustri (2025); Caferra et al. (2024); Wu et al. (2022); Basilico et al. (2025); Simone et al. (2025a); Breitschopf (2026b); Bellini et al. (2024); Cavana et al. (2025)
Individual non-monetary	Cognitive efforts to understand complex technologies or schemes, additional work due to constructions; time and organisational efforts; autonomy and self-determination and energy democracy;	Breitschopf (2026b); Arias et al. (2025); Peeters et al. (2025); Palm et al. (2025); Simone et al. (2025a); Goedkoop et al. (2025); Dioba et al. (2024)
Environmental	Climate impacts; environmental attitudes; emission reduction; renewable energy promotion	Rego et al. (2025); Galindo Noguera et al. (2025); Giannuzzo et al. (2025); Georgarakis et al. (2021); Breitschopf (2026b); Hackbarth and Löbbe (2022); Soeiro and Ferreira Dias (2020); Mullen et al. (2024); Simone et al. (2025a); Neves et al. (2025); Wu et al. (2022); Ranville (2025)
Social	Justice (procedural, distributive); social inclusion; energy poverty; trust; community benefits; engagement and communication; participatory governance; social cohesion and identity; social capital, local control	Becchetti and Salustri (2025); Hanke et al. (2021); Young and Halleck Vega (2024); Otte et al. (2024); Blanke et al. (2022); Simone et al.; Simone et al. (2025a; 2025b); Neves et al. (2025); Arias et al. (2025); Boije af Gennäs Erre, Ellen et al. (2025); Ceglia et al. (2022); Le Long et al.

Dimension	Key Aspects	Selected References
		(2025); Breitschopf (2026b); Palm et al. (2025)
Cultural	Beliefs; norms; values; capabilities; cultural barriers	Galindo Noguera et al. (2025) ; Fischer et al. (2021); Dioba et al. (2024); Ruggiero et al. (2021)
Knowledge & Information	Knowledge of technologies and economics; access to information; lack of awareness; prior experience with energy technologies and ECs	Georgarakis et al. (2021); Neves et al. (2025); Simone et al. (2025a); Dioba et al. (2024; Magalhães et al.); Magalhães et al. (2025)
Legal & Regulatory	Energy sharing and trading rules; legal forms; policy incentives; compliance; regulatory barriers (e.g. bureaucracy, net metering); EC-specific regulation	Belmar et al. (2023); Gautier et al. (2025; Arias et al. 2025); Arias et al. (2025); Becchetti and Salustri (2025); Dioba et al. (2024); Druta et al. (2025); Yiasoumas et al. (2023); Lowitzsch et al. (2020); Holstenkamp and Kahla (2016); DENA and FEL (2025)
Institutional & Governance	Governance structures; institutional logics; organizational forms; revenue distribution; voting rights; democratic principles; member orientation	Dudka et al. (2023); Vecchi et al. (2025); Arias et al. (2025); Shejale et al. (2025); Klagge et al. (2016); Clò et al. (2025); Boije af Gennäs Erre, Ellen et al. (2025)
Activities	Generation, storage, distribution, aggregation, trading; consumption optimization; grid services; sector coupling; energy sharing; cross-cutting services	Wierling et al. (2022); Kubli and Puranik (2023); Reis, Inês, F.G. et al. (2021); Arias et al. (2025); Lowitzsch et al. (2023); Santos et al. (2025); Crowley et al. (2025); Casalicchio et al. (2025)
Markets	Participation in electricity, heating, and waste-to-energy markets	Arias et al. (2025); Schwanitz et al. (2023); Caputo et al. (2025); Bellini et al. (2024)
Location & Geography	Geographic proximity; local vs. distributed communities (place vs. interest); spatial scope	Boije af Gennäs Erre et al. (2025); Reis, Inês, F.G. et al. (2021)
Purpose, Objectives & Value Proposition	Economic, environmental, and social goals; energy independence; grid reliability; value creation; energy services; support for energy transition and participation	Ceglia et al. (2022); Chaudhry et al. (2022); Mihailova et al. (2022); Klagge et al. (2016); Kubli and Puranik (2023); Reis, Inês, F.G. et al. (2021); Wierling et al. (2022); Yiasoumas et al. (2023)
Actors and Roles	Types of actors (citizens, municipalities, firms, NGOs); roles (prosumers, consumers, investors, operators); leadership; local vs. non-local actors; provision of assets	Arias et al. (2025); Cumo et al. (2022); DENA (2024); Palm et al. (2025); Horstink et al. (2021); Belmar et al. (2023); Żuk et al. (2025); Crowley et al. (2025); Ahlemeyer et al. (2022); Simone et al. (2025a)

A.2.2 Design elements of energy communities

Table 3: Key design elements of energy communities

Design Element	Key Features	Representative References
Governance & Decision-Making	Democratic principles (e.g. one member–one vote); operational control; bottom-up vs. top-down organization; coordination mechanisms	Reis, Inês, F.G. et al. (2021); Klagge et al. (2016); Clò et al. (2025)
Membership & Eligibility & Ownership	Type of participation; allocation of control and decision rights; rules on participation (citizens, firms, public actors); locality requirements; inclusion/exclusion criteria	Reis, Inês, F.G. et al. (2021); Lowitzsch et al. (2020); Yiasoumas et al. (2023); Chen et al. (2025); Dudka et al. (2023)
Activities & Role in Value Chain	Scope of activities (generation, storage, sharing, trading, aggregation); position in energy value chain	Reis, Inês, F.G. et al. (2021); Lowitzsch et al. (2023)
Technology & Infrastructure	Choice of generation technologies (e.g. PV); system design (individual vs. collective optimisation); infrastructure and flexibility options	Lowitzsch et al. (2023); (Riquelme-Dominguez et al. 2025)
Financial Design & Revenue Models	Tarif structures (fixed/dynamic); investment models; remuneration schemes (FiT, P2P); revenue allocation	DENA and FEL (2025); Vecchi et al. (2025)
Benefit Distribution & Value Creation	Allocation of costs and benefits; local value creation; reinvestment vs. individual returns	Reis, Inês, F.G. et al. (2021); Riquelme-Dominguez et al. (2025)
Legal Form & Regulatory Setting	Legal structures (e.g. cooperative, association); compliance, policy frameworks, support schemes	Holstenkamp and Kahla (2016); Lowitzsch et al. (2020); DENA and FEL (2025)
External Relationships & System Integration	Interaction with suppliers, DSOs, and markets; grid services; contractual arrangements	Chen et al. (2025); Crowley et al. (2025)
Spatial Scope & Boundaries	Geographic scope; proximity of members and assets; local vs. regional communities	Reis, Inês, F.G. et al. (2021); Lowitzsch et al. (2020)

A.2.3 Success factors of energy communities

1. Individual and collective benefits

Successful ECs must offer clear **value propositions**, including financial benefits for members and communities (Klagge et al. 2016; Heuninckx et al. 2022), as well as social contributions such as identity-building, public-interest orientation, and individual self-determination (Klagge et al. 2016). Overall, success is linked to combining economic, social, technical, and environmental benefits (Heuninckx et al. 2022).

2. Local embeddedness and Network Factors

Social networks and relationships play a key role by enabling access to resources, knowledge, and cooperation (Germes et al. 2025). Intermediaries can facilitate adoption processes (Vernay et al. 2023), while both strong **local relationships** (e.g. family and friends influencing behaviour) (Goedkoop et al. 2025) and weak ties to external actors such as investors (Griva and Mylonidis 2023) support diffusion and scaling.

Local embeddedness includes the role of local governments (Vernay et al. 2023), local leadership (Meitern 2025), and a focus on local benefits and contributions (Klagge et al. 2016). It enhances legitimacy, trust, and citizen participation.

External support is a major success factor. This includes municipal and state support and proactive public actors (Meitern 2025), as well as engagement from system operators such as DSOs (Meitern 2025).

Effective communication, successful pilot projects, and the presence of committed **key individuals** further facilitate development and scaling (Meitern 2025; Ahlemeyer et al. 2022).

3. Financial aspects:

Important aspects include low complexity of organizational and technical models (Ahlemeyer et al. 2022), appropriate data management systems (Yiasoumas et al. 2023), and suitable financing schemes (Yiasoumas et al. 2023). Lowering risks and entry barriers, for example through low investment thresholds or municipal co-financing, is important for participation as well (Guetlein and Schleich 2023). At the core, economic viability and robust **business models** are essential for long-term success (Vernay et al. 2023; Meitern 2025).

Additionally, the inclusion of diverse actors supports scaling and mainstreaming (Germes et al. 2025).

4. Attitudes and perceptions:

Equally important are **trust** among actors (Dóci and Vasileiadou 2015) and **adherence to social-ecological principles** (Ahlemeyer et al. 2022).

At the individual level, participation depends on perceived **self-efficacy** and participative **efficacy** (Giannuzzo et al. 2025; Goedkoop et al. 2025). Socio-economic characteristics, such as higher education and income levels, are also associated with increased likelihood of engagement (Giannuzzo et al. 2025).

A.3 Questionnaire

A.3.1 Questionnaire in German

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
1	Ich stimme der Datenverarbeitung gemäß den geltenden ISI-Richtlinien zu.	datenschutz	1 = Ja; 2 = Nein (J2)
2	Bitte geben Sie Ihr Geschlecht an.	geschlecht	1 = männlich; 2 = weiblich; 3 = divers
3	Wie alt sind Sie?	alter	1 = <18; 2 = 18–29; 3 = 30–39; 4 = 40–49; 5 = 50–59; 6 = 60–69; 7 = 70–75; 8 = >75
4	Welches Nettoeinkommen steht Ihrem Haushalt im Monat zur Verfügung?	einkommen	1 = unter 1.000 €; 2 = 1.000–2.000 €; 3 = 2.001–3.000 €; 4 = 3.001–4.000 €; 5 = 4.001–5.000 €; 6 = 5.001–6.000 €; 7 = 6.001–7.000 €; 8 = über 7.001 €
5	Beziehen Sie Sozialleistungen (z. B. Bürgergeld)?	sozialleistungen	J2
6	Welches ist Ihre höchste berufliche Qualifikation?	qualifikation	1 = keine abgeschlossene Ausbildung; 2 = derzeit in Ausbildung oder Studium; 3 = abgeschlossene Ausbildung oder Lehre; 4 = Meister/Techniker/Fachschulabschluss; 5 = (Fach-)Hochschulabschluss; 6 = akademischer Grad; 7 = Sonstiges

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
7	Wie ist Ihre aktuelle Wohnsituation?	wohnsituation	1 = eigene(s) Haus(hälfte); 2 = Eigentumswohnung; 3 = gemietete(s) Haus(hälfte); 4 = Mietwohnung; 5 = Sonstiges
8	Wohnlage: Wie groß ist Ihre Gemeinde/Stadt, in der Sie leben?	gemeindegroesse	1 = Landgemeinde bis 10.000 Einwohner; 2 = Kleinstadt 10.000–50.000; 3 = mittelgroße Stadt 50.000–250.000; 4 = größere Stadt 250.000–1 Mio.; 5 = Großstadt über 1 Mio.
9	In welchem Bundesland leben Sie?	bundesland	1 = Baden-Württemberg; 2 = Bayern; 3 = Berlin; 4 = Brandenburg; 5 = Bremen; 6 = Hamburg; 7 = Hessen; 8 = Mecklenburg-Vorpommern; 9 = Niedersachsen; 10 = Nordrhein-Westfalen; 11 = Rheinland-Pfalz; 12 = Saarland; 13 = Sachsen; 14 = Sachsen-Anhalt; 15 = Schleswig-Holstein; 16 = Thüringen
10	Haben Sie eine Photovoltaik-(Sonnenenergie-)Anlage auf dem Balkon oder Hausdach, in dem Sie wohnen?	pv_vorhanden	1 = Ja; 2 = Nein (J2)
11	Bitte beantworten Sie die nachfolgenden Fragen zu Ihrer Photovoltaik-Anlage.		
11a	Sind Sie alleinige:r Eigentümer:in dieser Anlage?	pv_eigentum	1 = Ja; 2 = Nein; 3 = Keine Ahnung (J3)

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
11b	Sie speisen den Strom nur in das Netz ein, ohne ihn selbst zu nutzen?	pv_nur_einspeisung	J3
11c	Sie nutzen den Strom selbst und speisen nichts ins Netz ein?	pv_nur_selbst	J3
11d	Sie speisen den Strom ins Netz ein und nutzen auch den erzeugten Strom selbst?	pv_beides	J3
11e	Sie teilen Ihren selbst erzeugten Strom mit anderen Haushalten vor Ort?	pv_teilen	J3
12	Sie sind nicht alleinige:r Eigentümer:in der Photovoltaik-(Sonnenenergie-) Anlage. Wie wird über die Nutzung des selbst erzeugten Stroms entschieden?	pv_entscheidung	Offenes Textfeld
13	Wie viel haben Sie ungefähr für die Photovoltaik-(Sonnenenergie-) Anlage ausgegeben?	pv_kosten	Numerische Eingabe in Euro
14	Haben Sie Geld in ein kommerzielles erneuerbares Energieprojekt investiert, z. B. in einen Windpark oder in eine große Photovoltaik-Freiflächenanlage?	invest_ee	J3
15	Wie viel haben Sie ungefähr investiert?	invest_betrag	Numerische Eingabe in Euro
16	Beziehen Sie Strom von einer Energiegemeinschaft, ohne selbst Mitglied zu sein (z. B. EWS Schönau oder Bürgerwerke eG)?	eg_bezug_ ohne_mitglied	J3
17	Sind Sie Mitglied bei einer Energiegemeinschaft, also bei einer Energiegenossenschaft, einem Bürger-Solarpark oder einem Bürger-Windpark?	eg_mitglied	J3
18	Beziehen Sie von dort Strom?	eg_strombezug	J2
19	Wie viel haben Sie ungefähr investiert?	eg_invest	Numerische Eingabe in Euro

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
20	Wie wahrscheinlich ist es für Sie, Mitglied einer Energiegemeinschaft zu werden?	teilnahme_absicht	1 = sehr wahrscheinlich; 2 = wahrscheinlich 3 = eher wahrscheinlich 4 = neutral 5 = eher unwahrscheinlich 6 = unwahrscheinlich 7 = völlig unwahrscheinlich
21	Wie hoch müsste Ihre jährliche Einsparung bei den Stromkosten sein, damit Sie Mitglied einer Energiegemeinschaft werden?	min_einsparung	1 = auch ohne Einsparung; 2 = mindestens 5 %; 3 = mindestens 10 %; 4 = mindestens 20 %; 5 = mindestens 30 %; 6 = mindestens 40 %; 7 = mindestens 50 %; 8 = mehr als 50 %
22	Welche Gründe wären oder waren für Sie ausschlaggebend, Mitglied einer Energiegemeinschaft zu werden?		
22a	Um Geld zu investieren	motiv_invest	1 = Sehr wichtig; 2 = Wichtig; 3 = Eher wichtig; 4 = Teils/teils; 5 = Eher unwichtig; 6 = Unwichtig; 7 = Völlig unwichtig (W7)
22b	Um einen Beitrag zur umweltfreundlichen Energieerzeugung zu leisten	motiv_klima	W7
22c	Um von der Energiegemeinschaft Strom zu beziehen	motiv_strom	W7
22d	Um den selbst erzeugten Strom gegen eine Vergütung der Energiegemeinschaft zur Verfügung zu stellen	motiv_einspeisung	W7

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
22e	Um mich ehrenamtlich zu engagieren	motiv_ehrenamt	W7
22f	Um Gemeinschaft zu erleben	motiv_gemeinschaft	W7
23	Bitte geben Sia an, inwieweit Sie folgenden Aussagen zustimmen.		
23a	Energiegemeinschaften stärken aus meiner Sicht den sozialen Zusammenhalt in der Region.	nutzen_sozial	1 = Stimme voll zu; 2 = Stimme zu; 3 = Stimme eher zu; 4 = Weder noch; 5 = Stimme eher nicht zu; 6 = Stimme nicht zu; 7 = Stimme gar nicht zu (Z7)
23b	Eine Beteiligung an einer Energiegemeinschaft leistet einen wichtigen Beitrag zum Klimaschutz.	nutzen_klima	Z7
23c	Durch eine Energiegemeinschaft wäre die Energieversorgung weniger abhängig von großen Stromversorgern.	nutzen_unabhaengig	Z7
23d	Durch eine Beteiligung an einer Energiegemeinschaft kann Strom günstiger bezogen werden als bei einem herkömmlichen Energieversorger.	nutzen_guenstig	Z7
23e	Diese Frage bitte mit „Stimme gar nicht zu“ beantworten.	kontrollfrage_1	Z7; Sollantwort = 7
23f	Für die finanzielle Beteiligung an einer Energiegemeinschaft wird eine jährliche Dividende (Gewinnbeteiligung) beziehungsweise Verzinsung des investierten Geldes ausgezahlt.	nutzen_dividende	Z7
23g	Eine Energiegemeinschaft ermöglicht Mitgliedern mit einer eigenen Stromerzeugung (Photovoltaikanlage), den nicht selbst verbrauchten Strom gegen eine entsprechende Vergütung mit anderen zu teilen.	nutzen_teilen	Z7
24	Wie stark treffen die folgenden Aussagen auf Sie zu?		

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
24a	Die finanziellen Anforderungen für eine Beteiligung an einer Energiegemeinschaft (z. B. Einzahlung des Genossenschaftsanteils) erscheinen mir hoch.	aufwand_finanziell	Z7
24b	Mich über die Bedingungen und Funktionsweisen einer Energiegemeinschaft zu informieren und diese zu verstehen, erscheint mir als zu aufwändig.	aufwand_info	Z7
24c	Ich befürchte, dass die Beteiligung an einer Energiegemeinschaft zu viel meiner Zeit in Anspruch nehmen würde.	aufwand_zeit	Z7
24d	Ich empfinde den organisatorischen beziehungsweise bürokratischen Aufwand, der mit einer Mitgliedschaft einherginge, als abschreckend.	aufwand_buerokratie	Z7
24e	Mögliche handwerkliche Arbeiten bei einer Mitgliedschaft (z. B. Installation eines passenden Stromzählers) empfinde ich als zu aufwändig.	aufwand_handwerk	Z7
25	Wie sehr können Sie den folgenden Aussagen zustimmen?		
25a	Eine Mitgliedschaft ist für mich ein sehr hohes finanzielles Risiko (investiertes Geld könnte teilweise oder vollständig verloren gehen).	risiko_finanziell	Z7
25b	Die politische Unsicherheit beziehungsweise das politische Hin und Her hinsichtlich der Energiewende ist für mich ein Hindernis für eine Beteiligung.	risiko_politik	Z7
25c	Ich befürchte beziehungsweise erlebe, dass eine Energiegemeinschaft technische Probleme (z. B. Systemausfall) weniger gut lösen kann als ein regionaler Energieversorger.	risiko_technik	Z7
25d	Ich befürchte beziehungsweise erlebe, dass die Energiegemeinschaft nicht über ausreichende Managementkompetenzen verfügt, um sie zuverlässig und gewinnbringend für alle zu leiten beziehungsweise zu betreiben.	risiko_kompetenz	Z7
26	Bitte geben Sie an, inwieweit die folgenden Aussagen auf Sie zutreffen.		

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
26a	Ich pflege allgemein einen umweltbewussten Lebensstil beziehungsweise mir ist ein umweltbewusster Lebensstil wichtig.	oeko_lebensstil	Z7
26b	Ich stehe Energiegemeinschaften grundsätzlich positiv gegenüber.	einstellung_positiv	Z7
26c	Ich finde, Energiegemeinschaften liefern einen sinnvollen Beitrag zur Energiewende.	einstellung_ energiewende	Z7
27	Wie sehr treffen die folgenden Aussagen auf Sie zu?		
27a	Ich vertraue darauf beziehungsweise erlebe, dass Energiegemeinschaften fachlich kompetente beziehungsweise geeignete Personen einsetzen können, um die Energiegemeinschaft zu leiten.	vertrauen_kompetenz	Z7
27b	Ich vertraue darauf beziehungsweise erlebe, dass die Satzung von Energiegemeinschaften für eine hohe Transparenz und Beteiligung, klare Struktur und Prozesse sorgen.	vertrauen_transparenz	Z7
27c	Ich vertraue darauf beziehungsweise erlebe, dass sich alle Mitglieder der Energiegemeinschaft an die gesetzten Regelungen beziehungsweise Satzungen halten.	vertrauen_regeln	Z7
27d	Ich vertraue darauf beziehungsweise erlebe, dass ich selbst fundierte Entscheidungen über eine Beteiligung an einer Energiegemeinschaft treffe.	vertrauen_selbst	Z7
28	Bitte geben Sie an, inwieweit Sie folgenden Aussagen zustimmen.		
28a	Ich finde es wichtig, dass Mitglieder einer Energiegemeinschaft Möglichkeiten zur Mitsprache und Beteiligung an Entscheidungen haben.	fairness_mitsprache	Z7
28b	Ich finde es wichtig, dass finanzielle Kosten, Risiken und Erträge innerhalb der Energiegemeinschaft fair verteilt sind (entsprechend der Anteile).	fairness_verteilung	Z7
28c	Ich finde es wichtig, dass unterschiedliche Leute aus allen Bereichen der Gesellschaft in einer Energiegemeinschaft zusammenkommen.	fairness_vielfalt	Z7

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
29	Welche Art von Rechtsform würden Sie befürworten?	rechtsform	1 = starke Präferenz für kommerzielle Formen (z. B. GmbH); 2–6 = Zwischenstufen; 7 = starke Präferenz für ehrenamtlich oder gemeinschaftlich orientierte Formen (z. B. Verein oder Genossenschaft)
30	Geben Sie an, wie viel Euro Sie maximal einmalig für eine Mitgliedschaft in einer Energiegemeinschaft einzahlen würden.	max_einlage	1 = 0 €; 2 = 50 €; 3 = 100 €; 4 = 200 €; 5 = 500 €; 6 = 1.000 €; 7 = 2.000 €; 8 = mehr als 2.000 €; 9 = kein Geld, nur Arbeits- und Sachleistungen
31	Inwieweit würden folgende Erzeugungstechnologien einer Energiegemeinschaft Ihre Teilnahmebereitschaft erhöhen oder vermindern?		
31a	Wind (Stromerzeugung)	tech_wind	1 = sehr erhöhen; 2 = erhöhen; 3 = etwas erhöhen; 4 = weder noch; 5 = etwas vermindern; 6 = vermindern; 7 = sehr vermindern (T7)
31b	Photovoltaik (Stromerzeugung aus Sonnenlicht)	tech_pv	T7
31c	Holz, Pellets oder Biogas (Wärme und/oder Strom)	tech_biomasse	T7
31d	Wärmepumpen (Nutzung von Umweltwärme wie beispielsweise Flusswasser oder Umgebungsluft) für die Wärmeversorgung über ein Wärmenetz	tech_waermepumpe	T7
31e	Geothermie (Nutzung der Erdwärme) für die Wärmeversorgung über ein Wärmenetz	tech_geothermie	T7

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
32	Wie wichtig sind Ihnen folgende Zielsetzungen einer Energiegemeinschaft?		
32a	Finanzielle Rendite (Geschäfts-/Genossenschaftsanteil) für Mitglieder	ziel_rendite	W7
32b	Stärkung der lokalen Wirtschaft	ziel_lokale_wirtschaft	W7
32c	Mehr soziale Interaktionen	ziel_sozial	W7
32d	Kontakt mit unterschiedlichen Gruppen	ziel_kontakt	W7
32e	Günstige Bereitstellung von Energie	ziel_guenstig	W7
32f	Bei dieser Frage bitte „völlig unwichtig“ anklicken.	kontrollfrage_2	W7; Sollantwort = 7
32g	Unabhängige und lokale Versorgung mit Energie	ziel_unabhaengig	W7
32h	Demokratie (demokratische Mitbestimmung)	ziel_demokratie	W7
32i	Beteiligung von Personen mit niedrigem Einkommen (Energieversorgung und finanzielle Beteiligung)	ziel_inklusion	W7
32j	Umweltschutz (saubere Energie)	ziel_umwelt	W7
33	Wer sollte Anteile an der Energiegemeinschaft erwerben dürfen?		
33a	Bürger:innen aus der Region	teilhaber_buerger_ region	Z7
33b	Bürger:innen außerhalb der Region	teilhaber_buerger_ ausserhalb	Z7
33c	Kommune vor Ort	teilhaber_kommune	Z7
33d	Regionale Organisationen (z. B. Stadtwerke vor Ort oder andere kommunale Unternehmen vor Ort)	teilhaber_regional_org	Z7

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
33e	Überregionale Organisationen (z. B. nationale Energieversorgungsunternehmen)	teilhaber_ ueberregional_org	Z7
33f	Kleine Unternehmen vor Ort oder Organisationen aus der Wirtschaft (ohne direkten energiewirtschaftlichen Bezug)	teilhaber_kleine_ unternehmen	Z7
33g	Große Unternehmen oder Organisationen aus der Wirtschaft (ohne direkten energiewirtschaftlichen Bezug)	teilhaber_grosse_ unternehmen	Z7
34	Wer sollte Entscheidungen in einer Energiegemeinschaft treffen? Bitte geben Sie Ihre Zustimmung bzw. Ablehnung an.		
34a	Entscheidungen über die Verwendung erwirtschafteter Gewinne sollten von allen Mitgliedern gemeinsam getroffen werden (Mitgliederversammlung).	entsch_gewinn_alle	1 = Stimme zu; 2 = Stimme nicht zu; 3 = Egal (Innerhalb jedes Entscheidungsbereichs musste jede Kategorie genau einmal vergeben werden) (D3)
34b	Entscheidungen über die Verwendung erwirtschafteter Gewinne sollten von gewählten Vertreter:innen der Mitglieder getroffen werden (Vorstand).	entsch_gewinn_vorstand	D3
34c	Entscheidungen über die Verwendung erwirtschafteter Gewinne sollten von Vorstand und Aufsichtsrat getroffen werden (Aufsichtsrat bestehend aus Mitgliedern und kommunalen Vertretern).	entsch_gewinn_aufsicht	D3
35a	Entscheidungen über neue Projekte und Investitionen sollten von allen Mitgliedern gemeinsam getroffen werden (Mitgliederversammlung).	entsch_projekte_alle	D3
35b	Entscheidungen über neue Projekte und Investitionen sollten von gewählten Vertreter:innen der Mitglieder getroffen werden (Vorstand).	entsch_projekte_ vorstand	D3

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
35c	Entscheidungen über neue Projekte und Investitionen sollten von Vorstand und Aufsichtsrat getroffen werden (Aufsichtsrat bestehend aus Mitgliedern und kommunalen Vertretern).	entsch_projekte_aufsicht	D3
36a	Entscheidungen über den Zweck und die Ziele (grundsätzliche Ausrichtung) der Gemeinschaft sollten von allen Mitgliedern gemeinsam getroffen werden (Mitgliederversammlung).	entsch_zweck_alle	D3
36b	Entscheidungen über den Zweck und die Ziele (grundsätzliche Ausrichtung) der Gemeinschaft sollten von gewählten Vertretern der Mitglieder getroffen werden (Vorstand).	entsch_zweck_vorstand	D3
36c	Entscheidungen über den Zweck und die Ziele (grundsätzliche Ausrichtung) der Gemeinschaft sollten von Vorstand und Aufsichtsrat getroffen werden (Aufsichtsrat bestehend aus Mitgliedern und kommunalen Vertretern).	entsch_zweck_aufsicht	D3
36d	… diese Aussage bitte nicht beantworten.	kontrollfrage_3	Sollantwort = Keine Antwort
37a	Entscheidungen über alltägliche Organisation und Abläufe (operative Tätigkeiten) sollten von allen Mitgliedern gemeinsam getroffen werden (Mitgliederversammlung).	entsch_alltag_alle	D3
37b	Entscheidungen über alltägliche Organisation und Abläufe (operative Tätigkeiten) sollten von gewählten Vertretern der Mitglieder getroffen werden (Vorstand).	entsch_alltag_vorstand	D3
37c	Entscheidungen über alltägliche Organisation und Abläufe (operative Tätigkeiten) sollten von Vorstand und Aufsichtsrat getroffen werden (Aufsichtsrat bestehend aus Mitgliedern und kommunalen Vertretern).	entsch_alltag_aufsicht	D3
38	Geben Sie an, was eine Energiegemeinschaft machen sollte.		
38a	Gemeinsame Erzeugung von Strom	dienst_strom	Z7

Nr.	Frage-/Itemwortlaut	Item-/Variablencode	Antwortmöglichkeiten/Kodierung
38b	Gemeinsame Versorgung mit Wärme	dienst_waerme	Z7
38c	Gemeinsame Speicherung von Strom oder Wärme	dienst_speicher	Z7
38d	Vermarktung beziehungsweise Verkauf überschüssigen Stroms	dienst_vermarktung	Z7
38e	Diese Frage bitte mit „Stimme gar nicht zu“ beantworten.	kontrollfrage_4	Z7; Sollantwort = 7
38f	Bereitstellung von Informationen zu Energieverbrauch und selbst erzeugtem Strom über eine App oder Webseite	dienst_app	Z7
38g	Übernahme aller Vertragsformalitäten und organisatorischen Angelegenheiten (wie Kündigung, Zahlungsströme und sonstige Verträge mit Energieversorgern)	dienst_vertrag	Z7
39	Welche weiteren Zusatzservices wären Ihnen bei einer Energiegemeinschaft wichtig?		
39a	Energieberatung (Tipps zum Energiesparen oder für Sanierungen)	service_beratung	W7
39b	Verbrauchsübersicht	service_verbrauch	W7
39c	Vereinfachte Abrechnung (z. B. nur eine Rechnung statt mehrere)	service_abrechnung	W7
39d	Verbrauchserfassung und -steuerung	service_erfassung	W7
39e	Übernahme von Installation und Wartung von Erzeugungsanlagen	service_wartung	W7
39f	Verknüpfung von Stromerzeugung mit E-Mobilität (z. B. in Form von gemeinsamer Schaffung von Ladeinfrastruktur oder Car-Sharing)	service_emobil	W7
40	Welche Hauptbedenken haben Sie hinsichtlich einer Teilnahme an einer Energiegemeinschaft?	bedenken_offen	Offenes Textfeld

Anmerkungen:
J2: 1 = Ja; 2 = Nein.
J3: 1 = Ja; 2 = Nein; 3 = Keine Ahnung.
Z7: 1 = Stimme voll zu; 2 = Stimme zu; 3 = Stimme eher zu; 4 = Weder noch (neutral); 5 = Stimme eher nicht zu; 6 = Stimme nicht zu; 7 = Stimme gar nicht zu.
W7: 1 = Sehr wichtig; 2 = Wichtig; 3 = Eher wichtig; 4 = Teils/teils; 5 = Eher unwichtig; 6 = Unwichtig; 7 = Völlig unwichtig.
T7: 1 = sehr erhöhen; 2 = erhöhen; 3 = etwas erhöhen; 4 = weder noch; 5 = etwas vermindern; 6 = vermindern; 7 = sehr vermindern.
D3: 1 = Stimme zu; 2 = Stimme nicht zu; 3 = Egal. Innerhalb jedes Entscheidungsbereichs musste jede Kategorie genau einmal vergeben werden.

A.3.2 Questionnaire in English - translation

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
1	I agree with the processing of my data in accordance with the applicable ISI guidelines.	data_protection	1 = Yes; 2 = No (J2)
2	Please indicate your gender.	gender	1 = male; 2 = female; 3 = diverse
3	How old are you?	age	1 = <18; 2 = 18–29; 3 = 30–39; 4 = 40–49; 5 = 50–59; 6 = 60–69; 7 = 70–75; 8 = >75
4	What is the monthly net income available to your household?	income	1 = under 1.000 €; 2 = 1.000–2.000 €; 3 = 2.001–3.000 €; 4 = 3.001–4.000 €; 5 = 4.001–5.000 €; 6 = 5.001–6.000 €; 7 = 6.001–7.000 €; 8 = over 7.001 €
5	Do you receive social benefits (e.g., unemployment benefits)?	social_benefits	J2
6	What is your highest professional qualification?	qualification	1 = no completed vocational training; 2 = currently in vocational training or studies; 3 = completed vocational training or apprenticeship; 4 = master craftsman/technician/vocational school degree; 5 = (technical) university degree; 6 = academic degree; 7 = other

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
7	What is your current living situation?	living_situation	1 = own house (or half of a duplex); 2 = condominium; 3 = rented house (or half of a duplex); 4 = rented apartment; 5 = other
8	Residential area: How large is the municipality/city in which you live?	municipality_size	1 = rural municipality up to 10,000 inhabitants; 2 = small town 10,000–50,000; 3 = medium-sized city 50,000–250,000; 4 = large city 250,000–1 million; 5 = metropolis over 1 million
9	In which federal state do you live?	federal_state	1 = Baden-Württemberg; 2 = Bavaria; 3 = Berlin; 4 = Brandenburg; 5 = Bremen; 6 = Hamburg; 7 = Hesse; 8 = Mecklenburg-Western Pomerania; 9 = Lower Saxony; 10 = North Rhine-Westphalia; 11 = Rhineland-Palatinate; 12 = Saarland; 13 = Saxony; 14 = Saxony-Anhalt; 15 = Schleswig-Holstein; 16 = Thuringia
10	Do you have a photovoltaic (solar energy) system on the balcony or on the roof of the building in which you live?	pv_present	J2
11	Please answer the following questions about your solar power system.		
11a	Are you the sole owner of this system?	pv_ownership	1 = Yes; 2 = No; 3 = No idea (J3)

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
11b	Do you only feed the electricity into the grid without using it yourself?	pv_only_feed_in	J3
11c	Do you use the electricity yourself and do not feed anything into the grid?	pv_only_self_use	J3
11d	Do you feed the electricity into the grid and also use the generated electricity yourself?	pv_both	J3
11e	Do you share your self-generated electricity with other local households?	pv_sharing	J3
12	You are not the sole owner of the photovoltaic (solar energy) system. How is the decision making on the use of self-generated electricity?	pv_decision	Open text field
13	Approximately how much did you spend on the photovoltaic (solar energy) system?	pv_costs	Numeric input in euros
14	Have you invested money in a commercial renewable energy project, e.g., a wind farm or a large ground-mounted photovoltaic system?	invest_renewables	J3
15	Approximately how much did you invest?	invest_amount	Numeric input in euros
16	Do you purchase electricity from an energy community without being a member yourself (e.g., EWS Schönau or Bürgerwerke eG)?	eg_purchase_ without_membership	J3
17	Are you a member of an energy community, such as an energy cooperative, a community solar farm, or a community wind farm?	eg_membership	J3
18	Do you purchase electricity from there?	eg_electricity_purchase	J2
19	Approximately how much did you invest?	eg_invest	Numeric input in euros

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
20	How likely is it that you will become a member of an energy community?	participation_intention	1 = very likely; 2 = likely; 3 = somewhat likely; 4 = neutral; 5 = somewhat unlikely; 6 = unlikely; 7 = very unlikely
21	What would your annual savings on electricity costs have to be for you to become a member of an energy community?	min_savings	1 = even without savings; 2 = at least 5%; 3 = at least 10%; 4 = at least 20%; 5 = at least 30%; 6 = at least 40%; 7 = at least 50%; 8 = more than 50%
22	What reasons would be or were decisive for you in deciding to become a member of an energy community?		
22a	To invest money	motive_invest	1 = Very important; 2 = Important; 3 = Somewhat important; 4 = Neutral; 5 = Somewhat unimportant; 6 = Unimportant; 7 = Completely unimportant (W7)
22b	To contribute to environmentally friendly energy generation	motive_climate	W7
22c	To purchase electricity from the energy community	motive_electricity	W7

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
22d	To make self-generated electricity available to the energy community in return for remuneration	motive_feed_in	W7
22e	To do volunteer work	motive_volunteer	W7
22f	To experience community	motive_community	W7
23	Please indicate to what extent you agree with the following statements.		
23a	From my perspective, energy communities strengthen social cohesion in the region.	benefit_social	1 = Strongly agree; 2 = Agree; 3 = Somewhat agree; 4 = Neither/nor; 5 = Somewhat disagree; 6 = Disagree; 7 = Strongly disagree (Z7)
23b	Participation in an energy community makes an important contribution to climate protection.	benefit_climate	Z7
23c	Through an energy community, the energy supply would be less dependent on large utility companies.	benefit_independence	Z7
23d	By participating in an energy community, electricity can be purchased more cheaply than from a conventional energy supplier.	benefit_cheap	Z7
23e	Please answer this question with "Strongly disagree".	control_question_1	Z7; Target answer = 7
23f	For financial participation in an energy community, an annual dividend (profit sharing) or interest in the invested money is paid out.	benefit_dividend	Z7
23g	An energy community enables members with their own electricity generation (photovoltaic system) to share the electricity they do not consume themselves with others for an appropriate remuneration.	benefit_sharing	Z7
24	To what extent do the following statements apply to you?		

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
24a	The financial requirements for participation in an energy community (e.g., payment of the cooperative share) seem high to me.	effort_financial	Z7
24b	Informing myself about the conditions and functioning of an energy community and understanding them seems too time-consuming to me.	effort_info	Z7
24c	I fear that participating in an energy community would take up too much of my time.	effort_time	Z7
24d	I find the organizational or bureaucratic effort associated with membership off-putting.	effort_bureaucracy	Z7
24e	I find potential manual work involved in membership (e.g., installing a suitable electricity meter) too time-consuming.	effort_manual	Z7
25	To what extent do you agree with the following statements?		
25a	Membership represents a very high financial risk for me (invested money could be partially or completely lost).	risk_financial	Z7
25b	Political uncertainty or political back-and-forth regarding the energy transition is an obstacle to participation for me.	risk_politics	Z7
25c	I fear or experience that an energy community is less able to solve technical problems (e.g., system failure) than a regional energy supplier.	risk_technology	Z7
25d	I fear or experience that the energy community does not have sufficient management skills to run and operate it reliably and profitably for everyone.	risk_competence	Z7
26	Please indicate to what extent the following statements apply to you.		
26a	I generally maintain an environmentally conscious lifestyle, or an environmentally conscious lifestyle is important to me.	eco_lifestyle	Z7
26b	I am fundamentally positive about energy communities.	attitude_positive	Z7

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
26c	I think energy communities make a meaningful contribution to the energy transition.	attitude_energy_ transition	Z7
27	To what extent do the following statements apply to you?		
27a	I trust or experience that energy communities can use professionally competent or suitable people to manage the energy community.	trust_competence	Z7
27b	I trust or experience that the statutes of energy communities ensure high transparency and participation, clear structures, and processes.	trust_transparency	Z7
27c	I trust or experience that all members of the energy community adhere to the established rules or statutes.	trust_rules	Z7
27d	I trust or experience that I make well-founded decisions about participation in an energy community myself.	trust_self	Z7
28	Please indicate to what extent you agree with the following statements.		
28a	I find it important that members of an energy community have opportunities for a voice and participation in decisions.	fairness_participation	Z7
28b	I find it important that financial costs, risks, and returns are distributed fairly within the energy community (according to shares).	fairness_distribution	Z7
28c	I find it important that different people from all areas of society come together in an energy community.	fairness_diversity	Z7
29	Which type of legal form would you favor?	legal_form	1 = strong preference for commercial forms (e.g., GmbH); 2–6 = intermediate stages; 7 = strong preference for voluntary or community-oriented forms (e.g., association or cooperative)

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
30	Indicate how many euros you would pay as a maximum one-off amount for membership in an energy community.	max_deposit	1 = 0 €; 2 = 50 €; 3 = 100 €; 4 = 200 €; 5 = 500 €; 6 = 1,000 €; 7 = 2,000 €; 8 = more than 2,000 €; 9 = no money, only labor and in-kind contributions
30	No money, only labor and in-kind contributions such as:	max_deposit_other	Open text field
31	To what extent would the following energy generation technologies increase or decrease your willingness to participate in an energy community?		
31a	Wind (electricity generation)	tech_wind	1 = increase significantly; 2 = increase; 3 = increase slightly; 4 = neither/nor; 5 = decrease slightly; 6 = decrease; 7 = decrease significantly (T7)
31b	Photovoltaics (electricity generation from sunlight)	tech_pv	T7
31c	Wood, pellets, or biogas (heat and/or electricity)	tech_biomass	T7
31d	Heat pumps (use of environmental heat such as river water or ambient air) for heat supply via a heating network	tech_heat_pump	T7
31e	Geothermal energy (use of geothermal heat) for heat supply via a heating network	tech_geothermal	T7
32	How important are the following objectives of an energy community to you?		
32a	Financial return (business/cooperative share) for members	goal_return	W7
32b	Strengthening the local economy	goal_local_economy	W7
32c	More social interactions	goal_social	W7

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
32d	Contact with different groups	goal_contact	W7
32e	Cheap provision of energy	goal_cheap	W7
32f	Please click "Completely unimportant" for this question.	control_question_2	W7; Target answer = 7
32g	Independent and local supply of energy	goal_independence	W7
32h	Democracy (democratic participation)	goal_democracy	W7
32i	Inclusion of people with low income (energy supply and financial participation)	goal_inclusion	W7
32j	Environmental protection (clean energy)	goal_environment	W7
33	Who should be allowed to purchase shares in the energy community?		
33a	Citizens from the region	stakeholder_citizens_ region	Z7
33b	Citizens from outside the region	stakeholder_citizens_ outside	Z7
33c	Local municipality	stakeholder_ municipality	Z7
33d	Regional organizations (e.g., local municipal utilities or other local municipal companies)	stakeholder_regional_ org	Z7
33e	Supra-regional organizations (e.g., national energy supply companies)	stakeholder_ supraregional_org	Z7
33f	Small local businesses or economic organizations (without a direct energy industry background)	stakeholder_small_ business	Z7

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
33g	Large businesses or economic organizations (without a direct energy industry background)	stakeholder_large_ business	Z7
34	Who should make decisions in an energy community? Please indicate whether you agree or disagree.		
34a	Decisions on the use of generated profits should be made jointly by all members (general assembly).	decision_profit_all	1 = Agree; 2 = Disagree; 3 = Indifferent (Within each decision area, each category had to be assigned exactly once) (D3)
34b	Decisions on the use of generated profits should be made by elected representatives of the members (board of directors).	decision_profit_board	D3
34c	Decisions on the use of generated profits should be made by the board of directors and the supervisory board (supervisory board consisting of members and municipal representatives).	decision_profit_ supervisory	D3
35a	Decisions on new projects and investments should be made jointly by all members (general assembly).	decision_projects_all	D3
35b	Decisions on new projects and investments should be made by elected representatives of the members (board of directors).	decision_projects_board	D3
35c	Decisions on new projects and investments should be made by the board of directors and the supervisory board (supervisory board consisting of members and municipal representatives).	decision_projects_ supervisory	D3
36a	Decisions on the purpose and goals (fundamental orientation) of the community should be made jointly by all members (general assembly).	decision_purpose_all	D3

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
36b	Decisions on the purpose and goals (fundamental orientation) of the community should be made by elected representatives of the members (board of directors).	decision_purpose_board	D3
36c	Decisions on the purpose and goals (fundamental orientation) of the community should be made by the board of directors and the supervisory board (supervisory board consisting of members and municipal representatives).	decision_purpose_ supervisory	D3
36d	… please do not answer this statement.	control_question_3	Target answer = No answer
37a	Decisions on everyday organization and processes (operational activities) should be made jointly by all members (general assembly).	decision_everyday_all	D3
37b	Decisions on everyday organization and processes (operational activities) should be made by elected representatives of the members (board of directors).	decision_everyday_ board	D3
37c	Decisions on everyday organization and processes (operational activities) should be made by the board of directors and the supervisory board (supervisory board consisting of members and municipal representatives).	decision_everyday_ supervisory	D3
38	Please indicate what an energy community should do.		
38a	Joint generation of electricity	service_electricity	Z7
38b	Joint supply of heat	service_heat	Z7
38c	Joint storage of electricity or heat	service_storage	Z7
38d	Marketing or sale of excess electricity	service_marketing	Z7
38e	Please answer this question with "Strongly disagree".	control_question_4	Z7; Target answer = 7

No.	Question/Itemwording	Item-/Variable Code	Answer Options/Coding
38f	Provision of information on energy consumption and self-generated electricity via an app or website	service_app	Z7
38g	Handling of all contractual formalities and organizational matters (such as cancellations, payment flows, and other contracts with energy suppliers)	service_contract	Z7
39	What other additional services would be important to you in an energy community?		
39a	Energy consulting (tips on saving energy or for renovations)	service_consulting	W7
39b	Consumption overview	service_consumption	W7
39c	Simplified billing (e.g., only one invoice instead of several)	service_billing	W7
39d	Consumption recording and control	service_monitoring	W7
39e	Assumption of installation and maintenance of generation systems	service_maintenance	W7
39f	Linking electricity generation with e-mobility (e.g., in the form of jointly creating charging infrastructure or car sharing)	service_e_mobility	W7
40	What are your main concerns regarding participation in an energy community?	concerns_open	Open text field

Note:
J2: 1 = Yes; 2 = No
J3: 1 = Yes; 2 = No; 3 = Don't know
Z7: 1 = Strongly agree; 2 = Agree; 3 = Somewhat agree; 4 = Neither/nor (neutral); 5 = Somewhat disagree; 6 = Disagree; 7 = Strongly disagree
W7: 1 = Very important; 2 = Important; 3 = Somewhat important; 4 = Neutral; 5 = Somewhat unimportant; 6 = Unimportant; 7 = Completely unimportant
T7: 1 = Increase significantly; 2 = Increase; 3 = Increase slightly; 4 = Neither/nor; 5 = Decrease slightly; 6 = Decrease; 7 = Decrease significantly
D3: 1 = Agree; 2 = Disagree; 3 = Indifferent. Within each decision area, each category had to be assigned exactly once

A.4 Codes

A.4.1 Stata

ranksum var_1, by (var_2) porder
esize twosample var_1, by(var_2)

kwallis var_1, by (var_3)
tabstat var_1, statistics (n mean cv q) by (var_3)

A.4.2 R

wilcox.test(var2~var9, data= data_var9, exact= FALSE)

kruskal.test(var1 ~ var99, data = data_var99)
dunn_test(var1 ~ var99, data = data_var99, p.adjust.method = "bonferroni")

A.5 Detailed results

A.5.1 Mann-Whitney-U-Tests

A.5.1.1 Gender

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Men]	Mean Group 2 [Women]
Drivers and Barriers of Becoming a Member								
Gender	motive_invest	95177	0	Yes	957	0,148	4,11	4,63
Gender	motive_electricity	104941	0,0219	Yes	957	0,074	2,95	3,12
Gender	benefit_dividend	101006	0,0009	Yes	957	0,107	3,09	3,28
Gender	benefit_sharing	104165	0,0121	Yes	957	0,081	2,83	2,97
Gender	effort_financial	137825	0	Yes	957	0,186	3,6	3,1
Gender	effort_info	138907	0	Yes	957	0,189	3,96	3,41
Gender	effort_time	135088	0	Yes	957	0,16	3,95	3,48
Gender	effort_bureaucracy	137806	0	Yes	957	0,181	3,67	3,13
Gender	effort_manual	139837	0	Yes	957	0,196	3,91	3,29
Gender	risk_financial	144042	0	Yes	957	0,229	3,59	2,93
Gender	risk_politics	122856	0,0459	Yes	957	0,065	3,18	2,95
Gender	risk_technology	133664	0	Yes	957	0,15	3,58	3,16
Gender	risk_competence	124144	0,0193	Yes	957	0,076	3,51	3,29
Gender	eco_lifestyle	125768	0,0059	Yes	957	0,089	3,09	2,84
Gender	attitude_positive	105840	0,0366	Yes	957	0,068	2,92	3,05
Gender	trust_competence	103477	0,0068	Yes	957	0,087	3,33	3,5
Gender	trust_transparency	102232	0,0025	Yes	957	0,098	3,33	3,51
Gender	trust_rules	102194	0,0027	Yes	957	0,097	3,19	3,38
Gender	trust_self	101470	0,0014	Yes	957	0,103	3,31	3,53
Gender	fairness_diversity	121951	0,0707	Yes	957	0,058	2,78	2,63

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Men]	Mean Group 2 [Women]
Key Design Elements of an EC and Prefered Characteristics								
Gender	tech_heat_pump	106559	0,0558	Yes	957	0,062	3,17	3,33
Gender	tech_geothermal	98029	0,0001	Yes	957	0,129	2,96	3,27
Gender	goal_return	107501	0,0921	Yes	957	0,054	2,72	2,81
Gender	goal_social	128912	0,0006	Yes	957	0,111	4,19	3,85
Gender	goal_contact	124744	0,0142	Yes	957	0,079	4,28	4,04
Gender	goal_cheap	122263	0,0543	Yes	957	0,062	2,08	1,97
Gender	goal_democracy	130801	0,0001	Yes	957	0,127	2,85	2,51
Gender	goal_inclusion	127200	0,0023	Yes	957	0,099	3,14	2,83
Gender	goal_environment	132119	0	Yes	957	0,138	2,62	2,21
Gender	stakeholder_ supraregional_org	129655	0,0003	Yes	957	0,117	4,85	4,5
Gender	service_electricity	101206	0,0006	Yes	957	0,11	1,61	1,8
Gender	service_heat	123997	0,0203	Yes	957	0,075	2,32	2,11
Gender	service_marketing	100291	0,0005	Yes	957	0,112	2,13	2,36
Gender	service_consulting	131253	0,0001	Yes	957	0,13	3,04	2,65
Gender	service_consumption	125543	0,0064	Yes	957	0,088	2,18	1,99
Gender	service_billing	123966	0,0198	Yes	957	0,075	2,25	2,06
Decision Power								
Gender	decision_everyday_all	122186	0,0444	Yes	957	0,065	1,65	1,58
Gender	decision_everyday_board	106453	0,0463	Yes	957	0,064	1,94	2,04

A.5.1.2 Social benefits

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Yes]	Mean Group 2 [No]
Drivers and Barriers of Becoming a Member								
Social benefits	motive_invest	44848	0	Yes	964	0,149	5,23	4,29
Social benefits	motive_feed_in	38465,5	0,0602	Yes	964	0,061	3,75	3,39
Social benefits	motive_volunteer	29700,5	0,0528	Yes	964	0,062	4,48	4,9
Social benefits	benefit_independence	28400	0,0113	Yes	964	0,082	2,34	2,65
Social benefits	benefit_dividend	38693,5	0,0416	Yes	964	0,066	3,43	3,16
Social benefits	benefit_sharing	38312,5	0,0647	Yes	964	0,059	3,13	2,88
Social benefits	effort_financial	29678,5	0,0447	Yes	964	0,065	3,05	3,38
Social benefits	risk_financial	29232	0,0316	Yes	964	0,069	2,92	3,29
Social benefits	risk_competence	38342,5	0,0641	Yes	964	0,06	3,64	3,39
Key Design Elements of an EC and Preferred Characteristics								
Social benefits	legal_form	39447,5	0,0211	Yes	964	0,074	4,92	4,5
Social benefits	tech_pv	38261,5	0,0687	Yes	964	0,059	2,79	2,49
Social benefits	tech_geothermal	38142	0,0782	Yes	964	0,057	3,36	3,09
Social benefits	goal_return	41318	0,0016	Yes	964	0,102	3,22	2,73
Social benefits	goal_local_economy	37894	0,0994	Yes	964	0,053	3,26	3,01
Social benefits	goal_democracy	29998,5	0,0681	Yes	964	0,059	2,45	2,69
Social benefits	goal_inclusion	26242,5	0,0005	Yes	964	0,111	2,42	3,03
Social benefits	stakeholder_regional_org	39548,5	0,0187	Yes	964	0,076	3,58	3,27
Social benefits	stakeholder_supraregional_org	30309,5	0,0947	Yes	964	0,054	4,42	4,7
Social benefits	stakeholder_small_companies	39046	0,0314	Yes	964	0,069	3,04	2,78
Social benefits	service_marketing	40159,5	0,0075	Yes	964	0,086	2,56	2,21
Social benefits	service_consumption	29453,5	0,0348	Yes	964	0,068	1,92	2,1

A.5.1.3 PV present

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Yes]	Mean Group 2 [No]
Drivers and Barriers of Becoming a Member								
PV present	motive_invest	63983	0,0004	Yes	964	0,113	3,97	4,47
PV present	motive_climate	66906	0,0072	Yes	964	0,087	3,06	3,41
PV present	motive_feed_in	60445	0	Yes	964	0,147	2,96	3,54
PV present	benefit_social	65837	0,0023	Yes	964	0,098	3,24	3,49
PV present	benefit_climate	63292	0,0002	Yes	964	0,122	2,73	3,15
PV present	benefit_independence	63902	0,0003	Yes	964	0,116	2,39	2,69
PV present	benefit_cheap	62423	0,0001	Yes	964	0,13	2,71	3,09
PV present	benefit_dividend	66266	0,0031	Yes	964	0,095	2,96	3,24
PV present	benefit_sharing	66952	0,0064	Yes	964	0,088	2,71	2,94
PV present	effort_financial	92254	0	Yes	964	0,156	3,73	3,25
PV present	effort_info	85743	0,0049	Yes	964	0,091	3,96	3,61
PV present	effort_time	88266	0,0004	Yes	964	0,115	4,05	3,63
PV present	effort_bureaucracy	85723	0,0049	Yes	964	0,091	3,69	3,33
PV present	effort_manual	92717	0	Yes	964	0,156	4,09	3,48
PV present	risk_financial	89079	0,0001	Yes	964	0,122	3,6	3,17
PV present	risk_technology	82501	0,06	Yes	964	0,061	3,56	3,33
PV present	risk_competence	81908	0,0868	Yes	964	0,055	3,58	3,37
PV present	attitude_positive	63802	0,0003	Yes	964	0,117	2,69	3,05
PV present	attitude_energy_transition	61659	0	Yes	964	0,138	2,54	2,96
PV present	trust_competence	68090	0,0159	Yes	964	0,078	3,22	3,45
PV present	trust_transparency	66869	0,0053	Yes	964	0,09	3,2	3,47
PV present	trust_self	61628	0	Yes	964	0,14	3,11	3,5
PV present	fairness_distribution	68521	0,0231	Yes	964	0,073	1,98	2,2
Key Design Elements of an EC and Preferred Characteristics								
PV present	legal_form	83062	0,0429	Yes	964	0,065	4,71	4,49

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Yes]	Mean Group 2 [No]
PV present	tech_wind	67730	0,0135	Yes	964	0,08	2,94	3,19
PV present	tech_pv	65829	0,0023	Yes	964	0,098	2,28	2,58
PV present	tech_heat_pump	68064	0,0175	Yes	964	0,077	3,05	3,29
PV present	goal_return	62370	0,0001	Yes	964	0,131	2,46	2,85
PV present	goal_local_economy	66470	0,0045	Yes	964	0,092	2,83	3,09
PV present	stakeholder_citizens_region	70482	0,0692	Yes	964	0,059	1,52	1,64
PV present	stakeholder_municipality	70443	0,0954	Yes	964	0,054	2,49	2,65
PV present	supraregional_org	82383	0,0678	Yes	964	0,059	4,82	4,64
PV present	service_electricity	65506	0,0008	Yes	964	0,107	1,51	1,75
PV present	service_storage	65502	0,0014	Yes	964	0,103	1,81	2,05
PV present	service_marketing	62507	0,0001	Yes	964	0,131	1,95	2,32
PV present	service_contract	67451	0,0106	Yes	964	0,082	2,35	2,56
PV present	service_billing	69559	0,0489	Yes	964	0,063	2,05	2,19
PV present	service_metering	69308	0,0413	Yes	964	0,066	2,11	2,24
PV present	service_emobility	67075	0,0084	Yes	964	0,085	2,95	3,25
Decision Power								
PV present	decision_profit_supervisory	81972	0,0616	Yes	964	0,06	2,5	2,41
PV present	decision_projects_supervisory	82827	0,0327	Yes	964	0,069	2,49	2,39
PV present	decision_purpose_all	71098	0,0262	Yes	964	0,072	1,16	1,28
PV present	decision_purpose_supervisory	86106	0,0014	Yes	964	0,103	2,56	2,4
PV present	decision_everyday_board	69240	0,0369	Yes	964	0,067	1,88	2,01
PV present	decision_everyday_supervisory	82797	0,0341	Yes	964	0,068	2,48	2,38

A.5.1.4 PV ownership

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Yes]	Mean Group 2 [No]
Drivers and Barriers of Becoming a Member								
PV ownership	benefit_climate	2606,5	0,0244	Yes	198	0,16	2,61	3,19
PV ownership	effort_manual	3865,5	0,0987	Yes	198	0,117	4,2	3,7
PV ownership	risk_financial	4032,5	0,0309	Yes	198	0,153	3,72	3,16
PV ownership	risk_technology	4116	0,0156	Yes	198	0,172	3,69	3,09
PV ownership	risk_competence	3920	0,0659	Yes	198	0,131	3,68	3,21
PV ownership	attitude_positive	2560	0,0159	Yes	198	0,171	2,56	3,14
Key Design Elements of an EC and Preferred Characteristics								
PV ownership	goal_inclusion	4116	0,0157	Yes	198	0,172	3,27	2,74
PV ownership	service_contract	2753,5	0,0706	Yes	198	0,128	2,26	2,6
Decision Power								
PV ownership	decision_projects_board	2643,5	0,0175	Yes	198	0,169	2,19	2,42
PV ownership	decision_projects_supervisory	3915,5	0,0456	Yes	198	0,142	2,54	2,33
PV ownership	decision_everyday_all	3864	0,0782	Yes	198	0,125	1,68	1,47

A.5.1.5 Invest renewables

Group	Question	W	P-Value	Significant	N	Effect Size r	Mean Group 1 [Yes]	Mean Group 2 [No]
Invest renewables	motive_invest	6621,5	0,002	Yes	938	0,101	3,3	4,4
Invest renewables	motive_climate	7035,5	0,0056	Yes	938	0,091	2,48	3,38
Invest renewables	motive_volunteer	8302,5	0,0776	Yes	938	0,058	4,26	4,89
Invest renewables	benefit_social	7740	0,0242	Yes	938	0,074	2,83	3,47
Invest renewables	benefit_climate	8014	0,0443	Yes	938	0,066	2,48	3,09
Invest renewables	benefit_cheap	7671,5	0,0215	Yes	938	0,075	2,43	3,04
Invest renewables	benefit_dividend	7866	0,0296	Yes	938	0,071	2,7	3,19
Invest renewables	effort_financial	14109,5	0,0033	Yes	938	0,096	4,13	3,32
Invest renewables	effort_time	13181,5	0,0337	Yes	938	0,069	4,39	3,69
Invest renewables	risk_financial	13894,5	0,0071	Yes	938	0,088	3,96	3,24
Invest renewables	risk_technology	13622,5	0,0128	Yes	938	0,081	4,09	3,36
Invest renewables	attitude_positive	7342,5	0,0104	Yes	938	0,084	2,3	3
Drivers and Barriers of Becoming a Member								
Invest renewables	attitude_energy_transition	7177,5	0,007	Yes	938	0,088	2,22	2,9
Invest renewables	trust_competence	7831,5	0,0276	Yes	938	0,072	2,96	3,43
Invest renewables	trust_self	8128	0,0505	Yes	938	0,064	2,91	3,43
Key Design Elements of an EC and Preferred Characteristics								
Invest renewables	stakeholder_citizens_region	8381	0,0593	Yes	938	0,062	1,26	1,61
Invest renewables	stakeholder_municipality	7639	0,0209	Yes	938	0,075	1,96	2,65
Invest renewables	stakeholder_regional_org	6583	0,0017	Yes	938	0,102	2,35	3,33
Decision Power								
Invest renewables	decision_purpose_all	12045	0,0656	Yes	938	0,06	1,48	1,25

A.5.2 Kruskall-Wallis-Tests

A.5.2.1 Age

Group	Question	H	P-Value	Significant	N	Effect Size f
Age	motive_invest	25,87	0,0001	Yes	964	0,149
Age	motive_climate	20,54	0,001	Yes	964	0,128
Age	motive_electricity	11,26	0,0464	Yes	964	0,081
Age	motive_feed_in	7,62	0,1785	No	964	0,052
Age	motive_volunteer	15,35	0,009	Yes	964	0,105
Age	motive_community	5,82	0,3242	No	964	0,029
Age	benefit_social	9,18	0,1022	No	964	0,066
Age	benefit_climate	9,95	0,0768	Yes	964	0,072
Age	benefit_independence	14,13	0,0148	Yes	964	0,098
Age	benefit_cheap	13,39	0,02	Yes	964	0,094
Age	benefit_dividend	13,37	0,0201	Yes	964	0,094
Age	benefit_sharing	5,07	0,407	No	964	0,009
Age	effort_financial	2,24	0,8156	No	964	0,000
Age	effort_info	36,28	0	Yes	964	0,184
Age	effort_time	38,7	0	Yes	964	0,191
Age	effort_bureaucracy	24,1	0,0002	Yes	964	0,143
Age	effort_manual	13,15	0,022	Yes	964	0,093
Age	risk_financial	3,16	0,6747	No	964	0,000
Age	risk_politics	5,5	0,3582	No	964	0,023
Age	risk_technology	3,28	0,6566	No	964	0,000
Age	risk_competence	4,42	0,4903	No	964	0,000
Age	eco_lifestyle	5,28	0,3823	No	964	0,017
Age	attitude_positive	8,74	0,1199	No	964	0,063
Age	attitude_energy_transition	12,05	0,034	Yes	964	0,086

Group	Question	H	P-Value	Significant	N	Effect Size f
Age	trust_competence	4,37	0,4974	No	964	0,000
Age	trust_transparency	2,38	0,7951	No	964	0,000
Age	trust_rules	6,19	0,2879	No	964	0,035
Age	trust_self	8,33	0,139	No	964	0,059
Age	fairness_participation	12,66	0,0267	Yes	964	0,090
Age	fairness_distribution	12,44	0,0292	Yes	964	0,088
Age	fairness_diversity	6,32	0,2761	No	964	0,037

A.5.2.2 Income

Group	Question	H	P-Value	Significant	N	Effect Size f
Income	motive_invest	36,71	0	Yes	964	0,179
Income	motive_climate	8,39	0,2995	No	964	0,038
Income	motive_electricity	6,99	0,4302	No	964	0,000
Income	motive_feed_in	14,5	0,043	Yes	964	0,089
Income	motive_volunteer	5,7	0,5754	No	964	0,000
Income	motive_community	7,32	0,3963	No	964	0,018
Income	benefit_social	14,64	0,0409	Yes	964	0,090
Income	benefit_climate	12,38	0,0889	Yes	964	0,075
Income	benefit_independence	6,85	0,445	No	964	0,000
Income	benefit_cheap	10,21	0,1772	No	964	0,058
Income	benefit_dividend	27,02	0,0003	Yes	964	0,146
Income	benefit_sharing	20,24	0,0051	Yes	964	0,118
Income	effort_financial	34,09	0	Yes	964	0,171
Income	effort_info	8,6	0,2824	No	964	0,041
Income	effort_time	13,98	0,0515	Yes	964	0,086
Income	effort_bureaucracy	19,84	0,0059	Yes	964	0,117

Group	Question	H	P-Value	Significant	N	Effect Size f
Income	effort_manual	24,38	0,001	Yes	964	0,136
Income	risk_financial	71,71	0	Yes	964	0,269
Income	risk_politics	8,93	0,2579	No	964	0,045
Income	risk_technology	10,83	0,1463	No	964	0,063
Income	risk_competence	8,56	0,2857	No	964	0,040
Income	eco_lifestyle	4,73	0,6932	No	964	0,000
Income	attitude_positive	14,39	0,0447	Yes	964	0,088
Income	attitude_energy_transition	7,38	0,3901	No	964	0,020
Income	trust_competence	4,88	0,6744	No	964	0,000
Income	trust_transparency	4,04	0,7747	No	964	0,000
Income	trust_rules	2,71	0,9101	No	964	0,000
Income	trust_self	11,29	0,1265	No	964	0,067
Income	fairness_participation	4,44	0,7282	No	964	0,000
Income	fairness_distribution	0,64	0,9987	No	964	0,000
Income	fairness_diversity	6,75	0,4552	No	964	0,000

A.5.2.3 Qualification

Group	Question	H	P-Value	Significant	N	Effect Size f
Qualification	motive_invest	23,6	0,0006	Yes	964	0,137
Qualification	motive_climate	34,5	0	Yes	964	0,175
Qualification	motive_electricity	7,9	0,2456	No	964	0,045
Qualification	motive_feed_in	3,68	0,7197	No	964	0,000
Qualification	motive_volunteer	10,82	0,094	Yes	964	0,071
Qualification	motive_community	2,94	0,8169	No	964	0,000
Qualification	benefit_social	8,82	0,1838	No	964	0,054
Qualification	benefit_climate	15,4	0,0174	Yes	964	0,100

Group	Question	H	P-Value	Significant	N	Effect Size f
Qualification	benefit_independence	14,71	0,0226	Yes	964	0,096
Qualification	benefit_cheap	2,64	0,8525	No	964	0,000
Qualification	benefit_dividend	9,96	0,1265	No	964	0,064
Qualification	benefit_sharing	7,37	0,2884	No	964	0,038
Qualification	effort_financial	5,78	0,4485	No	964	0,000
Qualification	effort_info	20,86	0,0019	Yes	964	0,126
Qualification	effort_time	13,39	0,0372	Yes	964	0,088
Qualification	effort_bureaucracy	13,57	0,0349	Yes	964	0,089
Qualification	effort_manual	13,07	0,0419	Yes	964	0,086
Qualification	risk_financial	16,05	0,0135	Yes	964	0,103
Qualification	risk_politics	10,93	0,0907	Yes	964	0,072
Qualification	risk_technology	7,6	0,2686	No	964	0,041
Qualification	risk_competence	5,59	0,4712	No	964	0,000
Qualification	eco_lifestyle	14,24	0,0271	Yes	964	0,093
Qualification	attitude_positive	41,7	0	Yes	964	0,197
Qualification	attitude_energy_transition	28,38	0,0001	Yes	964	0,155
Qualification	trust_competence	2,23	0,897	No	964	0,000
Qualification	trust_transparency	9,52	0,1464	No	964	0,061
Qualification	trust_rules	7,43	0,2831	No	964	0,039
Qualification	trust_self	3,75	0,7109	No	964	0,000
Qualification	fairness_participation	2,68	0,8482	No	964	0,000
Qualification	fairness_distribution	9,1	0,1683	No	964	0,057
Qualification	fairness_diversity	3,58	0,7339	No	964	0,000

A.5.2.4 Municipality size

Group	Question	H	P-Value	Significant	N	Effect Size f
Municipality size	motive_invest	3,94	0,4136	No	964	0,000
Municipality size	motive_climate	5,41	0,2478	No	964	0,038
Municipality size	motive_electricity	5,97	0,2012	No	964	0,045
Municipality size	motive_feed_in	6,93	0,1395	No	964	0,055
Municipality size	motive_volunteer	1,06	0,8998	No	964	0,000
Municipality size	motive_community	1,28	0,8645	No	964	0,000
Municipality size	benefit_social	4,73	0,3159	No	964	0,028
Municipality size	benefit_climate	7,28	0,1219	No	964	0,059
Municipality size	benefit_independence	1,36	0,8509	No	964	0,000
Municipality size	benefit_cheap	4,54	0,3377	No	964	0,024
Municipality size	benefit_dividend	12,85	0,0121	Yes	964	0,096
Municipality size	benefit_sharing	6,43	0,1694	No	964	0,050
Municipality size	effort_financial	2,44	0,6563	No	964	0,000
Municipality size	effort_info	7,1	0,1309	No	964	0,057
Municipality size	effort_time	2,86	0,5809	No	964	0,000
Municipality size	effort_bureaucracy	6,15	0,1883	No	964	0,047
Municipality size	effort_manual	6,02	0,1975	No	964	0,046
Municipality size	risk_financial	1,29	0,8637	No	964	0,000
Municipality size	risk_politics	3,8	0,4333	No	964	0,000
Municipality size	risk_technology	5,09	0,2784	No	964	0,034
Municipality size	risk_competence	4,88	0,2997	No	964	0,030
Municipality size	eco_lifestyle	1,04	0,9035	No	964	0,000
Municipality size	attitude_positive	0,7	0,9514	No	964	0,000
Municipality size	attitude_energy_transition	1,05	0,9015	No	964	0,000
Municipality size	trust_competence	1,88	0,7585	No	964	0,000
Municipality size	trust_transparency	4,14	0,3876	No	964	0,012

Group	Question	H	P-Value	Significant	N	Effect Size f
Municipality size	trust_rules	5,97	0,2011	No	964	0,045
Municipality size	trust_self	6,91	0,1408	No	964	0,055
Municipality size	fairness_participation	17,5	0,0015	Yes	964	0,119
Municipality size	fairness_distribution	3,68	0,4505	No	964	0,000
Municipality size	fairness_diversity	12,17	0,0161	Yes	964	0,093

A.5.2.5 Federal state

Group	Question	H	P-Value	Significant	N	Effect Size f
Federal State	motive_invest	28,4	0,0192	Yes	964	0,120
Federal State	motive_climate	29	0,0161	Yes	964	0,122
Federal State	motive_electricity	8,93	0,8813	No	964	0,000
Federal State	motive_feed_in	13,56	0,5588	No	964	0,000
Federal State	motive_volunteer	15,56	0,4121	No	964	0,024
Federal State	motive_community	14,45	0,4918	No	964	0,000
Federal State	benefit_social	13,35	0,5757	No	964	0,000
Federal State	benefit_climate	15,1	0,4443	No	964	0,010
Federal State	benefit_independence	23,13	0,0815	Yes	964	0,093
Federal State	benefit_cheap	12,83	0,6158	No	964	0,000
Federal State	benefit_dividend	14,66	0,4759	No	964	0,000
Federal State	benefit_sharing	11,96	0,6821	No	964	0,000
Federal State	effort_financial	8,14	0,9181	No	964	0,000
Federal State	effort_info	29,68	0,0131	Yes	964	0,125
Federal State	effort_time	19,97	0,1729	No	964	0,073
Federal State	effort_bureaucracy	12,47	0,6433	No	964	0,000
Federal State	effort_manual	10,86	0,7627	No	964	0,000
Federal State	risk_financial	15,75	0,3988	No	964	0,028

Group	Question	H	P-Value	Significant	N	Effect Size f
Federal State	risk_politics	18,8	0,2228	No	964	0,063
Federal State	risk_technology	16,11	0,3749	No	964	0,034
Federal State	risk_competence	16,61	0,3427	No	964	0,041
Federal State	eco_lifestyle	17,76	0,2757	No	964	0,054
Federal State	attitude_positive	30,82	0,0093	Yes	964	0,130
Federal State	attitude_energy_transition	22,73	0,09	Yes	964	0,091
Federal State	trust_competence	8,62	0,8968	No	964	0,000
Federal State	trust_transparency	16,47	0,3518	No	964	0,039
Federal State	trust_rules	20,78	0,1439	No	964	0,078
Federal State	trust_self	16,68	0,3386	No	964	0,042
Federal State	fairness_participation	8,58	0,8983	No	964	0,000
Federal State	fairness_distribution	8,64	0,8956	No	964	0,000
Federal State	fairness_diversity	12,46	0,6437	No	964	0,000

A.5.2.6 Living Situation

Group	Question	H	P-Value	Significant	N	Effect Size f
Living situation	motive_invest	2,98	0,5615	No	964	0,000
Living situation	motive_climate	2,54	0,6376	No	964	0,000
Living situation	motive_electricity	6,51	0,1639	No	964	0,051
Living situation	motive_feed_in	13,43	0,0094	Yes	964	0,100
Living situation	motive_volunteer	6,68	0,1538	No	964	0,053
Living situation	motive_community	0,93	0,9208	No	964	0,000
Living situation	benefit_social	7,9	0,0952	Yes	964	0,064
Living situation	benefit_climate	4,45	0,3488	No	964	0,022
Living situation	benefit_independence	1,79	0,7734	No	964	0,000
Living situation	benefit_cheap	3,45	0,4862	No	964	0,000

Group	Question	H	P-Value	Significant	N	Effect Size f
Living situation	benefit_dividend	15,81	0,0033	Yes	964	0,112
Living situation	benefit_sharing	6,52	0,1637	No	964	0,051
Living situation	effort_financial	9,27	0,0547	Yes	964	0,074
Living situation	effort_info	15,42	0,0039	Yes	964	0,110
Living situation	effort_time	13,5	0,0091	Yes	964	0,100
Living situation	effort_bureaucracy	8,92	0,063	Yes	964	0,072
Living situation	effort_manual	21,99	0,0002	Yes	964	0,138
Living situation	risk_financial	13,68	0,0084	Yes	964	0,101
Living situation	risk_politics	10,06	0,0395	Yes	964	0,080
Living situation	risk_technology	6,25	0,1814	No	964	0,048
Living situation	risk_competence	4,79	0,3101	No	964	0,029
Living situation	eco_lifestyle	1,03	0,905	No	964	0,000
Living situation	attitude_positive	8,28	0,0819	Yes	964	0,067
Living situation	attitude_energy_transition	6,54	0,1623	No	964	0,052
Living situation	trust_competence	6,68	0,1538	No	964	0,053
Living situation	trust_transparency	3,85	0,4268	No	964	0,000
Living situation	trust_rules	2,89	0,5766	No	964	0,000
Living situation	trust_self	8,81	0,0661	Yes	964	0,071
Living situation	fairness_participation	2,49	0,6455	No	964	0,000
Living situation	fairness_distribution	2,78	0,596	No	964	0,000
Living situation	fairness_diversity	1,3	0,8606	No	964	0,000

A.5.2.7 Dunn-Post-Hoc-Tests

Group	Question	Group 1	Group 2	Z	P-Value (adj.)	Effect Size r	Mean Group 1	Mean Group 2
Age	motive_invest	2	6	3,821	0,00199	0,199	4,07	4,8
Age	motive_invest	3	6	4,016	0,00089	0,211	4,04	4,8
Age	motive_invest	3	7	3,076	0,0315	0,198	4,04	4,79
Age	motive_climate	3	4	3,007	0,03958	0,164	2,95	3,5
Age	motive_climate	3	6	4,113	0,00059	0,216	2,95	3,63
Age	motive_volunteer	2	4	3,131	0,02616	0,169	4,56	5,07
Age	motive_volunteer	2	6	3,229	0,01866	0,169	4,56	5,08
Age	benefit_independence	3	6	3,281	0,01553	0,172	2,35	2,83
Age	benefit_dividend	2	7	-3,357	0,01183	0,214	3,4	2,99
Age	effort_info	2	5	3,615	0,0045	0,19	3,34	3,91
Age	effort_info	2	6	4,358	0,0002	0,227	3,34	4,04
Age	effort_info	2	7	3,150	0,02451	0,201	3,34	3,96
Age	effort_info	3	5	3,173	0,02266	0,168	3,48	3,91
Age	effort_info	3	6	3,908	0,0014	0,205	3,48	4,04
Age	effort_info	4	6	3,606	0,00466	0,19	3,48	4,04
Age	effort_time	2	3	3,227	0,01878	0,174	3,24	3,74
Age	effort_time	2	5	4,439	0,00014	0,233	3,24	3,88
Age	effort_time	2	6	5,136	0	0,268	3,24	3,96
Age	effort_time	2	7	4,541	0,00008	0,29	3,24	4,08
Age	effort_bureaucracy	2	5	3,413	0,00962	0,179	3,03	3,53
Age	effort_bureaucracy	2	6	3,906	0,00141	0,204	3,03	3,6
Age	effort_bureaucracy	2	7	3,315	0,01375	0,212	3,03	3,68
Age	attitude_energy_transition	3	6	2,975	0,04395	0,156	2,63	3,05
Age	fairness_participation	3	6	-2,955	0,04697	0,155	2,54	2,22
Age	fairness_distribution	2	5	-3,141	0,02528	0,165	2,34	1,95
Income	motive_invest	1	6	-3,214	0,0367	0,264	4,8	3,84

Group	Question	Group 1	Group 2	Z	P-Value (adj.)	Effect Size r	Mean Group 1	Mean Group 2
Income	motive_invest	2	3	-3,670	0,00678	0,175	4,87	4,27
Income	motive_invest	2	5	-3,293	0,02777	0,18	4,87	4,18
Income	motive_invest	2	6	-4,637	0,0001	0,266	4,87	3,84
Income	motive_invest	2	7	-3,381	0,0202	0,208	4,87	3,91
Income	motive_invest	2	8	-3,295	0,02758	0,201	4,87	3,98
Income	benefit_social	1	6	-3,201	0,03829	0,263	3,87	3,14
Income	benefit_dividend	1	4	-3,238	0,03373	0,217	3,56	2,98
Income	benefit_dividend	2	4	-4,017	0,00165	0,207	3,41	2,98
Income	benefit_dividend	2	6	-3,161	0,04408	0,181	3,41	2,99
Income	benefit_sharing	2	6	-3,218	0,03613	0,185	3,08	2,62
Income	effort_financial	2	4	3,882	0,0029	0,2	3,04	3,52
Income	effort_financial	2	5	3,360	0,02184	0,184	3,04	3,6
Income	effort_financial	2	8	3,718	0,00561	0,226	3,04	3,89
Income	effort_bureaucracy	2	5	3,144	0,04667	0,172	3,19	3,74
Income	effort_bureaucracy	3	5	3,248	0,0326	0,176	3,24	3,74
Income	effort_manual	2	4	3,411	0,01813	0,175	3,29	3,83
Income	effort_manual	2	5	4,159	0,00089	0,228	3,29	4,03
Income	effort_manual	3	5	3,223	0,03551	0,175	3,47	4,03
Income	risk_financial	1	4	3,955	0,00215	0,265	2,8	3,55
Income	risk_financial	1	5	4,006	0,00173	0,301	2,8	3,69
Income	risk_financial	1	6	3,574	0,00984	0,294	2,8	3,56
Income	risk_financial	1	7	3,801	0,00403	0,367	2,8	3,8
Income	risk_financial	1	8	4,026	0,00159	0,377	2,8	3,81
Income	risk_financial	2	4	5,008	0,00002	0,258	2,83	3,55
Income	risk_financial	2	5	4,869	0,00003	0,267	2,83	3,69
Income	risk_financial	2	6	4,123	0,00105	0,236	2,83	3,56
Income	risk_financial	2	7	4,119	0,00107	0,254	2,83	3,8
Income	risk_financial	2	8	4,453	0,00024	0,271	2,83	3,81

Group	Question	Group 1	Group 2	Z	P-Value (adj.)	Effect Size r	Mean Group 1	Mean Group 2
Income	risk_financial	3	4	4,162	0,00088	0,212	3	3,55
Income	risk_financial	3	5	4,102	0,00115	0,223	3	3,69
Income	risk_financial	3	6	3,423	0,01731	0,194	3	3,56
Income	risk_financial	3	7	3,570	0,00999	0,218	3	3,8
Income	risk_financial	3	8	3,873	0,00301	0,233	3	3,81
Qualification	motive_invest	3	5	-4,475	0,00016	0,167	4,64	4,04
Qualification	motive_climate	2	3	3,438	0,0123	0,169	2,89	3,67
Qualification	motive_climate	3	5	-5,195	0	0,194	3,67	3,08
Qualification	benefit_climate	3	5	-3,351	0,0169	0,125	3,26	2,93
Qualification	benefit_independence	3	5	-3,100	0,0407	0,116	2,81	2,51
Qualification	effort_info	1	2	-3,215	0,0274	0,307	3,89	2,97
Qualification	effort_info	2	3	3,587	0,00702	0,176	2,97	3,67
Qualification	effort_info	2	4	4,063	0,00102	0,307	2,97	3,86
Qualification	effort_info	2	5	4,029	0,00118	0,194	2,97	3,76
Qualification	effort_bureaucracy	1	2	-3,103	0,04021	0,296	3,93	3,03
Qualification	effort_manual	2	4	3,297	0,02051	0,249	3,24	3,95
Qualification	attitude_positive	3	5	-6,108	0	0,229	3,24	2,72
Qualification	attitude_energy_transition	2	3	3,043	0,04919	0,149	2,58	3,09
Qualification	attitude_energy_transition	3	5	-4,544	0,00012	0,17	3,09	2,72
Municipality size	benefit_dividend	2	4	3,137	0,01709	0,162	2,98	3,34
Municipality size	fairness_participation	1	2	-2,841	0,04499	0,129	2,49	2,23
Municipality size	fairness_participation	1	3	-3,006	0,0265	0,142	2,49	2,18
Municipality size	fairness_participation	3	4	2,898	0,0376	0,158	2,18	2,53
Municipality size	fairness_diversity	3	4	2,954	0,03133	0,161	2,56	2,96
Federal State	motive_invest	2	13	3,859	0,01366	0,279	3,98	4,97
Federal State	effort_info	1	9	3,705	0,02539	0,277	3,25	4,08
Federal State	attitude_positive	2	14	4,040	0,00642	0,335	2,81	4
Federal State	attitude_positive	7	14	3,645	0,03212	0,402	2,8	4

Group	Question	Group 1	Group 2	Z	P-Value (adj.)	Effect Size r	Mean Group 1	Mean Group 2
Federal State	attitude_positive	10	14	3,765	0,01995	0,254	2,93	4
Federal State	attitude_positive	11	14	4,037	0,0065	0,466	2,7	4
Living situation	motive_feed_in	1	4	2,902	0,03704	0,101	3,19	3,53
Living situation	benefit_dividend	1	4	3,704	0,00213	0,129	3,01	3,28
Living situation	effort_info	1	4	-3,282	0,01031	0,114	3,87	3,52
Living situation	effort_time	1	4	-3,192	0,01411	0,111	3,91	3,56
Living situation	effort_manual	1	4	-4,541	0,00006	0,158	3,92	3,41
Living situation	risk_financial	1	4	-3,571	0,00355	0,124	3,47	3,11

7 Publication bibliography

Ahlemeyer, Kai; Griese, Kai-Michael; Wawer, Tim; Siebenhüner, Bernd (2022): Success factors of citizen energy cooperatives in north western Germany: a conceptual and empirical review. In *Energ Sustain Soc* 12 (1). DOI: 10.1186/s13705-022-00354-4.

Ajzen, Icek (1991): The theory of planned behavior. In *Organizational Behavior and Human Decision Processes* 50 (2), pp. 179–211. DOI: 10.1016/0749-5978(91)90020-T.

Arias, Alba; Husiev, Oleksandr; Schwaller, Corinne; Sturm, Ulrike (2025): Terminologies and concepts of energy cooperations in Europe: A systematic review of characteristics, potentials, and challenges. In *Energy Research & Social Science* 122, p. 104012. DOI: 10.1016/j.erss.2025.104012.

Barnes, Jake; Hansen, Paula; Kamin, Tanja; Golob, Urša; Musolino, Monica; Nicita, Agatino (2022): Energy communities as demand-side innovators? Assessing the potential of European cases to reduce demand and foster flexibility. In *Energy Research & Social Science* 93, p. 102848. DOI: 10.1016/j.erss.2022.102848.

Basaran, Kivanc; Lőrincz, Máté János; Alaei, Mohammad Hosein; Lautert, Renata Rodrigues; Siano, Pierluigi; Kia, Mohsen; Görel, Göksu (2025): Review of transmission planning and scaling of renewable energy in energy communities. In *Renewable and Sustainable Energy Reviews* 222, p. 115928. DOI: 10.1016/j.rser.2025.115928.

Basilico, Paolo; Biancardi, Alberto; D'Adamo, Idiano; Gastaldi, Massimo; Stornelli, Vincenzo (2025): Socioeconomic dimensions of renewable energy communities: Pathways to collective well-being. In *Utilities Policy* 96, p. 102000. DOI: 10.1016/j.jup.2025.102000.

Bauwens, Thomas; Schraven, Daan; Drewing, Emily; Radtke, Jörg; Holstenkamp, Lars; Gotchev, Boris; Yildiz, Özgür (2022): Conceptualizing community in energy systems: A systematic review of 183 definitions. In *Renewable and Sustainable Energy Reviews* 156, p. 111999. DOI: 10.1016/j.rser.2021.111999.

Becchetti, Leonardo; Salustri, Francesco (2025): Renewable energy communities and the ecological transition: A game theoretic bargaining approach. In *Utilities Policy* 96, p. 102006. DOI: 10.1016/j.jup.2025.102006.

Bellini, Francesco; Campana, Paola; Censi, Riccardo; Di Renzo, Matteo; Tarola, Anna Maria (2024): Energy Communities in the Transition to Renewable Sources: Innovative Models of Energy Self-Sufficiency through Organic Waste. In *Energies* 17 (15), p. 3789. DOI: 10.3390/en17153789.

Belmar, Francisco; Baptista, Patrícia; Neves, Diana (2023): Modelling renewable energy communities: assessing the impact of different configurations, technologies and types of participants. In *Energ Sustain Soc* 13 (1). DOI: 10.1186/s13705-023-00397-1.

Blanke, Julia; Belda Gonzalez, Alberto; D'Oca, Simona; Niederkofler, Michael; Nordlund, Edvard (2022): European small-town Renewable Energy Communities: Participatory design of supporting tools as a vehicle to engage and understand local communities and their energy related concerns. In *Open Res Europe* 2, p. 129. DOI: 10.12688/openreseurope.15114.1.

Boije af Gennäs Erre, Ellen; Palm, Jenny; Bergek, Anna (2025): Community of place or community of interest: challenging the role of citizen engagement and proximity in energy communities in Sweden. In *Journal of Cleaner Production* 510, p. 145654. DOI: 10.1016/j.jclepro.2025.145654.

Bonfert, Bernd (2024): 'We like sharing energy but currently there's no advantage': Transformative opportunities and challenges of local energy communities in Europe. In *Energy Research & Social Science* 107, p. 103351. DOI: 10.1016/j.erss.2023.103351.

Breitschopf, Barbara (2026a): Financing: Non-Monetary Barriers and Opportunities for Energy Transition Investments in Germany. In *International Conference on the European Energy Market (EEM),* 22nd, pp. 1–6. DOI: 10.1109/EEM68581.2026.11589885.

Breitschopf, Barbara (2026b): Understanding the role of non-monetary aspects in promoting citizen investment for the energy transition – An exploratory approach. In *Energy Research & Social Science* 135, p. 104678. DOI: 10.1016/j.erss.2026.104678.

Bucha, Monika (2026): Energy Sharing: Analyse regulatorischer Rahmenbedingungen der gemeinsamen Nutzung von Energie in Deutschland, Österreich, Tschechien und den Niederlanden und Erstellung von Geschäftsmodellen.

Caferra, Rocco; Colasante, Annarita; D'Adamo, Idiano; Yilan, Gülşah; Lancialonga, Davide (2024): A strategic analysis of renewable energy communities in achieving sustainable development. In *Utilities Policy* 90, p. 101810. DOI: 10.1016/j.jup.2024.101810.

Caputo, Paola; Ferla, Giulio; Mura, Benedetta; Gallo, Vanessa (2025): Integrating technical assessment and stakeholder engagement: A case-based approach to explore thermal renewable energy communities. In *Energy Reports* 14, pp. 952–963. DOI: 10.1016/j.egyr.2025.07.004.

Casalicchio, Valeria; Barchi, Grazia; Calabria, Francesca; Manzolini, Giampaolo; Prina, Matteo Giacomo; Moser, David (2025): Advancing renewable energy community planning through integrated sector-coupling and economies of scale. In *Applied Energy* 395, p. 125942. DOI: 10.1016/j.apenergy.2025.125942.

Cavana, G.; Becchio, C.; Bottero, M. (2025): Feasibility and evolution studies on renewable energy communities in cities. In *Renewable and Sustainable Energy Reviews* 213, p. 115477. DOI: 10.1016/j.rser.2025.115477.

Ceglia, Francesca; Marrasso, Elisa; Pallotta, Giovanna; Roselli, Carlo; Sasso, Maurizio (2022): The State of the Art of Smart Energy Communities: A Systematic Review of Strengths and Limits. In *Energies* 15 (9), p. 3462. DOI: 10.3390/en15093462.

Chaudhry, Shubhra; Surmann, Arne; Kühnbach, Matthias; Pierie, Frank (2022): Renewable Energy Communities as Modes of Collective Prosumership: A Multi-Disciplinary Assessment Part II—Case Study. In *Energies* 15 (23), p. 8936.

Chen, Ting; Anapyanova, Alina; Vandenriessche, Frederik; Meer, Hermann de (2025): Implementing energy sharing in energy communities: A comparative legal analysis of Austria and Flanders. In *Utilities Policy* 96, p. 101993. DOI: 10.1016/j.jup.2025.101993.

Clò, Stefano; Iannucci, Gianluca; Tampieri, Alessandro (2025): Dynamic choice of renewable energy communities: Bottom-up vs top-down organisation. In *Mathematical Social Sciences* 137, p. 102412. DOI: 10.1016/j.mathsocsci.2025.102412.

Crowley, Bennevis; Kazempour, Jalal; Mitridati, Lesia (2025): How can energy communities provide grid services? A dynamic pricing mechanism with budget balance, individual rationality, and fair allocation. In *Applied Energy* 382, p. 125154. DOI: 10.1016/j.apenergy.2024.125154.

Cumo, F.; Maurelli, P.; Pennacchia, E.; Rosa, F. (2022): Urban Renewable Energy Communities and Energy Poverty: a proactive approach to energy transition with Sun4All project. In *IOP Conf. Ser.: Earth Environ. Sci.* 1073 (1), p. 12011. DOI: 10.1088/1755-1315/1073/1/012011.

DENA (2024): Energy Sharing in Deutschland. Vom Konzept zur energiewirtschaftlichen Umsetzung. Edited by Deutsche Energie-Agentur GmbH (dena).

DENA; FEL (2025): Leitfaden zur Umsetzung von Energy Sharing Communities in Deutschland. Edited by Deutsche Energie-Agentur (dena), Future Energy Lab.

Dioba, Albina; Giannakopoulou, Amalia; Struthers, David; Stamos, Angelos; Dewitte, Siegfried; Fróes, Isabel (2024): Identifying key barriers to joining an energy community using AHP. In *Energy* 299, p. 131478. DOI: 10.1016/j.energy.2024.131478.

Dóci, Gabriella; Vasileiadou, Eleftheria (2015): "Let's do it ourselves" Individual motivations for investing in renewables at community level. In *Renewable and Sustainable Energy Reviews* 49, pp. 41–50. DOI: 10.1016/j.rser.2015.04.051.

Druta, Roxana; Lakatos, Elena; Munteanu, Radu; Cioca, Lucian-Ionel; Ferenci, Sara; Barnisca, Madalina; Puiac, Andrei (2025): Bridging the Gap in Renewable Energy Participation: A Case Study on Energy Communities. In *Processes* 13 (8), p. 2632. DOI: 10.3390/pr13082632.

Dudka, Aurore; Moratal, Nuria; Bauwens, Thomas (2023): A typology of community-based energy citizenship: An analysis of the ownership structure and institutional logics of 164 energy communities in France. In *Energy Policy* 178, p. 113588. DOI: 10.1016/j.enpol.2023.113588.

Fischer, Beate; Gutsche, Gunnar; Wetzel, Heike (2021): Who wants to get involved? Determining citizen willingness to participate in German renewable energy cooperatives. In *Energy Research & Social Science* 76, p. 102013. DOI: 10.1016/j.erss.2021.102013.

Galindo Noguera, Ana Lisbeth; Mendoza Castellanos, Luis Sebastián; Ardila Cruz, Sebastian; Osorio-Gómez, Gilberto (2025): Key aspects and challenges for successful energy communities: A comparative analysis between Latin America and developed countries. In *Renewable and Sustainable Energy Reviews* 216, p. 115687. DOI: 10.1016/j.rser.2025.115687.

Gasca, María-Victoria; Rigo-Mariani, Remy; Debusschere, Vincent; Sidqi, Yousra (2025): Fairness in energy communities: Centralized and decentralized frameworks. In *Renewable and Sustainable Energy Reviews* 208, p. 115054. DOI: 10.1016/j.rser.2024.115054.

Gautier, Axel; Jacqmin, Julien; Poudou, Jean-Christophe (2025): The energy community and the grid. In *Resource and Energy Economics* 82, p. 101480. DOI: 10.1016/j.reseneeco.2025.101480.

Georgarakis, Elena; Bauwens, Thomas; Pronk, Anne-Marie; AlSkaif, Tarek (2021): Keep it green, simple and socially fair: A choice experiment on prosumers' preferences for peer-to-peer electricity trading in the Netherlands. In *Energy Policy* 159, p. 112615. DOI: 10.1016/j.enpol.2021.112615.

Germes, Lynette A.M.H.; Wiekens, Carina J.; van der Windt, Henny J. (2025): Role of social networks in upscaling energy communities: Experiences from the Netherlands. In *Energy Policy* 206, p. 114792. DOI: 10.1016/j.enpol.2025.114792.

Giannuzzo, Lorenzo; Demetrio Minuto, Francesco; Schiera, Daniele Salvatore; Branchetti, Samuele; Petrovich, Carlo; Gessa, Nicola et al. (2025): Assessment of renewable energy communities: A comprehensive review of key performance indicators. In *Energy Reports* 13, pp. 6609–6630. DOI: 10.1016/j.egyr.2025.05.082.

Goedkoop, Fleur; Jans, Lise; Perlaviciute, Goda; Hamann, Karen R.S. (2025): Inclusive community energy initiatives? Understanding involvement of different socio-demographic groups. In *Energy Research & Social Science* 125, p. 104104. DOI: 10.1016/j.erss.2025.104104.

Griva, Krina; Mylonidis, Nikolaos (2023): Social interactions and household financial participation: Looking beyond traditional social networks. In *Elsevier Reference Collection in Social Sciences*. DOI: 10.1016/B978-0-44-313776-1.00007-6.

Guetlein, Marie-Charlotte; Schleich, Joachim (2023): Understanding citizen investment in renewable energy communities. In *Ecological Economics* 211, p. 107895. DOI: 10.1016/j.ecolecon.2023.107895.

Hackbarth, André; Löbbe, Sabine (2022): 9 - What motivates private households to participate in energy communities? A literature review and German case study. In Sabine Löbbe, Fereidoon Sioshansi, David Robinson (Eds.): Energy Communities: Academic Press, pp. 153–166. Available online at https://www.sciencedirect.com/science/article/pii/B9780323911351000262.

Hanke, Florian; Guyet, Rachel; Feenstra, Marielle (2021): Do renewable energy communities deliver energy justice? Exploring insights from 71 European cases. In *Energy Research & Social Science* 80, p. 102244. DOI: 10.1016/j.erss.2021.102244.

Heuninckx, Shary; Boveldt, Geert te; Macharis, Cathy; Coosemans, Thierry (2022): Stakeholder objectives for joining an energy community: Flemish case studies. In *Energy Policy* 162, p. 112808. DOI: 10.1016/j.enpol.2022.112808.

Holstenkamp, Lars; Kahla, Franziska (2016): What are community energy companies trying to accomplish? An empirical investigation of investment motives in the German case. In *Energy Policy* 97, pp. 112–122. DOI: 10.1016/j.enpol.2016.07.010.

Horstink, Lanka; Wittmayer, Julia M.; Ng, Kiat (2021): Pluralising the European energy landscape: Collective renewable energy prosumers and the EU's clean energy vision. In *Energy Policy* 153, p. 112262. DOI: 10.1016/j.enpol.2021.112262.

Huijts, N.M.A.; Molin, E.J.E.; Steg, L. (2012): Psychological factors influencing sustainable energy technology acceptance: A review-based comprehensive framework. In *Renewable and Sustainable Energy Reviews* 16 (1), pp. 525–531. DOI: 10.1016/j.rser.2011.08.018.

Kerscher, Selina; Koirala, Arpan; Arboleya, Pablo (2024): Grid-optimal energy community planning from a systems perspective. In *Renewable and Sustainable Energy Reviews* 199, p. 114485. DOI: 10.1016/j.rser.2024.114485.

Klagge, Britta; Schmole, Hanna; Seidl, Irmi; Schön, Susanne (2016): Zukunft der deutschen Energiegenossenschaften. In *RuR* 74 (3). DOI: 10.1007/s13147-016-0398-3.

Kubli, Merla; Puranik, Sanket (2023): A typology of business models for energy communities: Current and emerging design options. In *Renewable and Sustainable Energy Reviews* 176, p. 113165. DOI: 10.1016/j.rser.2023.113165.

Lazdins, Roberts; Mutule, Anna; Zalostiba, Diana (2021): PV Energy Communities—Challenges and Barriers from a Consumer Perspective: A Literature Review. In *Energies* 14 (16), p. 4873. DOI: 10.3390/en14164873.

Le Long, Anh Nguyen; Jansma, Sikke R.; Lee, Dasom; Jong, Menno D.T. de (2025): Capital endowments: Explaining energy citizenship using Bourdieu's forms of capital. In *Energy Research & Social Science* 119, p. 103903. DOI: 10.1016/j.erss.2024.103903.

Lowitzsch, J.; Hoicka, C. E.; van Tulder, F. J. (2020): Renewable energy communities under the 2019 European Clean Energy Package – Governance model for the energy clusters of the future? In *Renewable and Sustainable Energy Reviews* 122, p. 109489. DOI: 10.1016/j.rser.2019.109489.

Lowitzsch, Jens; Kreutzer, Kaja; George, Jan; Croonenbroeck, Carsten; Breitschopf, Barbara (2023): Development prospects for energy communities in the EU identifying best practice and future opportunities using a morphological approach. In *Energy Policy* 174, p. 113414. DOI: 10.1016/j.enpol.2022.113414.

Magalhães, Renan; Narracci, Federico; Lowitzsch, Jens (2025): Crowdfunding and Energy Efficiency Contracting: Exploring New Pathways for Private Investment in Building Renovations. In *FinTech* 4 (1), p. 6. DOI: 10.3390/fintech4010006.

Mariuzzo, Ivan; Fioriti, Davide; Guerrazzi, Emanuele; Thomopulos, Dimitri; Raugi, Marco (2023): Multi-objective planning method for renewable energy communities with economic, environmental and social goals. In *International Journal of Electrical Power & Energy Systems* 153, p. 109331. DOI: 10.1016/j.ijepes.2023.109331.

Meitern, Maarja (2025): Navigating the rise of energy communities in Estonia: Challenges and successes through case studies. In *Energy Policy* 198, p. 114514. DOI: 10.1016/j.enpol.2025.114514.

Mihailova, Darja; Schubert, Iljana; Burger, Paul; Fritz, Morgane M.C. (2022): Exploring modes of sustainable value co-creation in renewable energy communities. In *Journal of Cleaner Production* 330, p. 129917. DOI: 10.1016/j.jclepro.2021.129917.

Mullen, Helen; Turkson, Charles; Acquaye, Adolf (2024): An examination of motivation factors driving investor behaviours towards socially responsible community energy initiatives. In *Heliyon* 10 (5), e27490. DOI: 10.1016/j.heliyon.2024.e27490.

Neves, Catarina; Oliveira, Tiago; Karatzas, Stylianos (2025): Citizen participation in local energy communities: A social identity and pro-environmental behaviour joint perspective. In *Energy and Climate Change* 6 (1), p. 100212. DOI: 10.1016/j.egycc.2025.100212.

Otte, Lukas; Schmid, Lena; Baerens, Tidian; Tomboanjara, Moli; Ahmed, Faiza; Heinz, Boris (2024): An energy transition for all: Investigating determinants of citizen support for energy community initiatives on the island of Mayotte. In *Energy Research & Social Science* 116, p. 103690. DOI: 10.1016/j.erss.2024.103690.

Palm, Jenny; Kojonsaari, Anna-Riikka; Magnusson, Dick (2025): Toward energy democracy: Municipal energy actions in local renewable energy projects. In *Energy Research & Social Science* 120, p. 103921. DOI: 10.1016/j.erss.2025.103921.

Peeters, Leen; Fernández López, Laura; Trompoukis, Christos (2025): Addressing the gaps in understanding and assessing energy communities. In *Energy Research & Social Science* 127, p. 104176. DOI: 10.1016/j.erss.2025.104176.

Radtke, Jörg; Ohlhorst, Dörte (2021): Community Energy in Germany – Bowling Alone in Elite Clubs? In *Utilities Policy* 72, p. 101269. DOI: 10.1016/j.jup.2021.101269.

Ranville, Adélie (2025): Pathways towards member participation in governance of cooperatives: Conjunction of motivations and resources in the case of French community energy. In *Ann Public Coop Econ* 96 (2), pp. 257–299. DOI: 10.1111/apce.12501.

Rego, Nuno; Castro, Rui; Lagarto, João (2025): Sustainable energy trading and fair benefit allocation in renewable energy communities: A simulation model for Portugal. In *Utilities Policy* 96, p. 101986. DOI: 10.1016/j.jup.2025.101986.

Reis, Inês, F.G.; Gonçalves, Ivo; A.R. Lopes, Marta; Henggeler Antunes, Carlos (2021): Business models for energy communities: A review of key issues and trends. In *Renewable and Sustainable Energy Reviews* 144, p. 111013. DOI: 10.1016/j.rser.2021.111013.

Riquelme-Dominguez, Jose Miguel; Sempértegui, María Emilia; Roldan-Fernandez, Juan Manuel; Serrano-Gonzalez, Javier; Riquelme-Santos, Jesus Manuel (2025): Economic assessment of self-consumption and energy communities: Profit distribution insights from a real case study. In *Energy Conversion and Management: X* 28, p. 101198. DOI: 10.1016/j.ecmx.2025.101198.

Ruggiero, Salvatore; Busch, Henner; Isakovic, Aljosa; Hansen, Teis (2021): Community Energy in the Eastern Baltic Sea Region: From Standstill to First Steps. In Coenen, Frans H. J. M., Thomas Hoppe (Eds.): Renewable Energy Communities and the Low Carbon Energy Transition in Europe. Cham: Springer International Publishing, pp. 49–74.

Santos, Jóni Buchinho; Scharnigg, Renée; Monteiro, Jânio; Pacheco, André (2025): Fair shares or smart savings? Exploring business models, justice and efficiency trade-offs in Portuguese energy communities. In *Energy Research & Social Science* 125, p. 104102. DOI: 10.1016/j.erss.2025.104102.

Schwanitz, Valeria Jana; Wierling, August; Arghandeh Paudler, Heather; Beck, Constantin von; Dufner, Simon; Koren, Ingrid Knutsdotter et al. (2023): Statistical evidence for the contribution of citizen-led initiatives and projects to the energy transition in Europe. In *Sci Rep* 13 (1). DOI: 10.1038/s41598-023-28504-4.

Shejale, Sharayu; Zhan, Mallory Xinyu; Sahakian, Marlyne; Aleksieva, Remina; Biresselioglu, Mehmet Efe; Bogdanova, Victoria et al. (2025): Participation as a pathway to procedural justice: A review of energy initiatives across eight European countries. In *Energy Research & Social Science* 122, p. 103982. DOI: 10.1016/j.erss.2025.103982.

Simone, Evelyn de; Rochira, Alessia; Mannarini, Terri (2025a): Individual and community catalysts for Renewable Energy Communities (RECs) development. In *Current Opinion in Psychology* 62, p. 101987. DOI: 10.1016/j.copsyc.2024.101987.

Simone, Evelyn de; Rochira, Alessia; Procentese, Fortuna; Sportelli, Carmela; Mannarini, Terri (2025b): Psychological and social factors driving citizen involvement in renewable energy communities: A systematic review. In *Energy Research & Social Science* 124, p. 104067. DOI: 10.1016/j.erss.2025.104067.

Soeiro, Susana; Ferreira Dias, Marta (2020): Renewable energy community and the European energy market: main motivations. In *Heliyon* 6 (7), e04511. DOI: 10.1016/j.heliyon.2020.e04511.

van der Werff, Ellen; Steg, Linda (2016): The psychology of participation and interest in smart energy systems: Comparing the value-belief-norm theory and the value-identity-personal norm model. In *Energy Research & Social Science* 22, pp. 107–114. DOI: 10.1016/j.erss.2016.08.022.

Vecchi, Francesca; Fardian, Athena Karami; Ranjbar, Saeed; Berardi, Umberto; Eicker, Ursula (2025): Energy remuneration mechanisms for renewable energy communities: Insights from a mixed-use district. In *Building and Environment* 285, p. 113543. DOI: 10.1016/j.buildenv.2025.113543.

Vernay, Anne-Lorène; Sebi, Carine; Arroyo, Fabrice (2023): Energy community business models and their impact on the energy transition: Lessons learnt from France. In *Energy Policy* 175, p. 113473. DOI: 10.1016/j.enpol.2023.113473.

Wierling, August; Zeiss, Jan Pedro; Beck, Constantin von; Schwanitz, Valeria Jana (2022): Business models of energy cooperatives active in the PV sector—A statistical analysis for Germany. In *PLOS Sustain Transform* 1 (9), e0000029. DOI: 10.1371/journal.pstr.0000029.

Wu, Hangjian; Carroll, James; Denny, Eleanor (2022): Harnessing citizen investment in community-based energy initiatives: A discrete choice experiment across ten European countries. In *Energy Research & Social Science* 89, p. 102552. DOI: 10.1016/j.erss.2022.102552.

Yiasoumas, Georgios; Berbakov, Lazar; Janev, Valentina; Asmundo, Alessandro; Olabarrieta, Eneko; Vinci, Andrea et al. (2023): Key Aspects and Challenges in the Implementation of Energy Communities. In *Energies* 16 (12), p. 4703. DOI: 10.3390/en16124703.

Young, Jordan; Halleck Vega, Sol Maria (2024): What is the role of energy communities in tackling energy poverty? Measures, barriers and potential in the Netherlands. In *Energy Research & Social Science* 116, p. 103693. DOI: 10.1016/j.erss.2024.103693.

Żuk, Piotr; Mazač, Jan; Muth, Dániel; Tichý, Lukáš (2025): Energy self-defence against official policy: prosumer motives and tactics in the Czech Republic, Hungary, Poland, and Slovakia. In *Energy Research & Social Science* 127, p. 104202. DOI: 10.1016/j.erss.2025.104202.