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# SCRIPT TALES FROM PARTICIPATORY ENERGY TRANSITIONS

## *Critical Reflections from Co-Designing Energy Citizenship in a Rural Community*

by Lina Naoroz Bråten, Berit Therese Nilsen, Lucia Liste & Pasi Aalto

*This paper explores how context-sensitive co-design approaches shape energy transitions, drawing on empirical insights from the municipality of Overhalla, Norway. Using Citizen Action Labs (CALs) as a participatory co-design tool, the article offers a retrospective methodological reflection addressing the question:* ***How are expectations of a more participatory energy transition enacted in a rural community?*** *Through the lens of script tales, we examine how energy citizenship is negotiated via subscription, de-inscription, and the emergence of new user scripts. Our findings underscore the importance of aligning participatory expectations and methods with local practices, values, and socio-spatial dynamics to foster meaningful engagement and identify viable, sustainable options. Recent EU calls emphasise energy citizenship as a tool for public engagement, yet the discourse remains relatively urban-centric. Rural contexts are often viewed as vulnerable, but they are also rich sources of inspiration and learning that can inform more inclusive co-creation approaches in energy transitions, thereby challenging urban biases in current policy frameworks. The study contributes to debates on energy citizenship by showing how co-designed processes can bridge abstract policy concepts and everyday rural practices. It expands our understanding of how rural communities can actively participate in sustainable energy transitions, emphasizing the need for tailored approaches in co-designing energy citizenship.*

**Keywords**: Co-design; energy citizenship; rural energy transitions; joint critical reflection; script

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# Introduction and background

There is a growing trend and demand involving citizens and other actors in facilitating sustainable and democratic development (Schreiber et al., 2023). This focus involves employing innovative, multidisciplinary, and experimental approaches to tackle diverse spatial and social challenges in local communities in various contexts (e.g., Zavratnik et al., 2019; Smith et al., 2017). Such a participatory approach fits with the notions of co-creation, co-design and participatory design (terms often used synonymously), and facilitates working together with citizens to reflect on and accomplish shared goals through collective creativity (Sanders and Stappers, 2008). Participatory design processes are characterised by mutual learning, where the design outcome and the learning process are legitimate end-goals for the process (Bødker et al., 2022, p. 20). In addition to being a tool for citizen-practitioner collaborations, these collaborative methods have also gained traction in what we can term public engagement with science (Irwin, 2015), citizens science (e.g., Vohland et al., 2021; Hetland, 2020) or participatory research through co-design processes, where researchers, citizens and other stakeholders are equally involved to co-create future solutions and integrate research into practice more actively (Benz et al., 2024).

Energy citizenship has emerged as a central concept in discussions about sustainable energy transitions, highlighting the role of individuals and communities as active participants rather than passive consumers. It is commonly understood as citizens' engagement in energy-related practices, decision-making, and awareness, aimed at fostering more democratic and sustainable energy systems (Ryghaug et al., 2018; Silvast & Valkenburg, 2023). Energy citizenship may be expressed through a wide range of practices, such as dialogue with energy planners, co-production, material participation through technological artefacts, smart energy monitoring, or participation in energy platform technologies (Boekelo & Kloppenburg, 2023). In our use of the concept, citizen participation includes both individual and collective forms of engagement—ranging from everyday energy practices and household-level decisions to involvement in community energy initiatives, local governance processes, and broader political or civic action.

In European policy contexts, however, energy citizenship has been adopted primarily as a tool to support ongoing energy transition goals. Initiatives such as the Citizens' Energy Forum and policy frameworks such as the Clean Energy for All Europeans Package and the European Green Deal frame citizens primarily as consumers or prosumers, whose participation contributes to market efficiency, system flexibility, and renewable integration (European Commission, 2019). While these documents acknowledge the importance of citizen involvement, they deploy the concept in an instrumental way, without engaging with its theoretical or democratic dimensions. Citizen participation is thus often reduced to a mechanism for achieving predefined techno-economic objectives, rather than a transformative form of civic or political agency. These divergent interpretations—instrumental and consumer-oriented in policy contexts, but theoretically diverse and at times contradictory in academic research—highlight the conceptual fragmentation that currently characterises energy citizenship.

Academic research initially mirrored some of these limitations. Although widely used, the concept remains underspecified and lacks a consistent theoretical framework (Silvast & Valkenburg, 2023; Biresselioglu et al., 2024). Early studies tended to operationalise energy citizenship through behavioural indicators, such as energy-saving actions, willingness to adopt renewable technologies, or participation in community energy projects (Wahlund & Palm, 2022). This focus produced normative assumptions and conceptual ambiguity, alongside a limited understanding of the structural, social, and institutional factors shaping civic energy participation (Lennon et al, 2020). More recently, scholarship has increasingly adopted critical, political, and justice-oriented perspectives. These approaches highlight the collective, socio-material, and institutional dimensions of energy agency, linking energy citizenship to energy democracy and emphasising power relations, governance structures, inequalities, and the socio-material organisation of energy systems (Wahlund & Palm, 2022; Dunphy et al., 2025). This shift moves beyond behavioural framings toward a more transformative and democratic understanding of how citizens engage with energy systems.

In this paper, we build on this emerging critical tradition. While we acknowledge Devine-Wright's (2007) foundational framing of energy citizenship as democratic engagement in energy transitions, we adopt Biresselioglu et al.'s (2024:1904) definition of energy citizenship "as the extent to which and how the goals of a sustainable energy transition are incorporated into the everyday practices of individuals." In this article, we define energy citizenship as the ways in which individuals and collectives integrate the goals of a just and sustainable energy transition into their everyday practices and forms of participation. This definition allows us to focus on how citizens incorporate sustainability goals into daily life while recognising the political, structural, and justice-related conditions that shape such engagement. Our approach places particular emphasis on citizens' willingness and capacity to participate in a just and sustainable energy transition, moving beyond consumerist roles toward a more situated and context-sensitive understanding of energy citizenship.

In addition, energy transition research (including research on energy citizenship) has predominantly focused on urban areas, which has resulted in the notion of 'urban energy transitions' (see for instance, Droege et al., 2018). Rural energy citizenship has been largely overlooked in the energy citizenship literature (see, e.g., Debourdeau et al., 2024), and rural energy transitions remain

relatively underexplored (Salonen et al., 2022). Therefore, more research is needed to understand transitions unfolding in rural settings (Naumann and Rudolph, 2020). This paper contributes to both fields by addressing the rural gap and demonstrating how participatory expectations are enacted in practice.

Rural communities face challenges that differ from those in urban settings affecting energy transitions on several areas, for instance, housing (Funch et al., 2020). Construction costs in general are the same in rural or urban settings, but since the sale price is significantly lower in rural areas, investing in a house is riskier (Quist Eliasen et al. 2020). Rural bindings also often lack energy-saving designs (Abouaiana and Battisti, 2023), but upgrading is challenging due to the beforementioned discrepancy between investment costs and selling price. Transport also represents different challenges in rural settings (Sovacool et al., 2018), with less developed infrastructure, fewer transportation options in addition to longer travel distances and car dependency (Leiren and Skollerud, 2015). Demographically, rural areas typically have an older and more male dominated population (Heleniak and Sánchez Gassen 2020), with less education than the urban average, and poorer health (Bremberg 2020; NOU 2020). This in turn influences the view on transition issues, as younger people, and those holding a university degree are more positive towards energy efficiency measures (KC et al., 2023). A lack of educational opportunities, a less diverse job market, fewer recreational activities, and a greater degree of social conformity are some of the reasons behind the out migration of young people (Rauhut et al., 2008), predominantly women (Faber et al., 2015). However, in recent years, immigration populations have started to arrive in rural destinations (Rye and Slettebak, 2020), potentially moderating the speed of rural depopulation (Heleniak and Sánchez Gassen 2020). Effectively navigating these demographic changes and tackling the energy transition requires the use of participatory tools and methodologies that recognise unique context-specific dynamics. Yet, participatory expectations, tools and methods do not differentiate between rural and urban contexts (e.g. Dell'Era and Landoni, 2014), nor do we have a set of solutions tailored to the specific needs and conditions of rural areas in the context of energy transitions. Moreover, dominant policy narratives, particularly within EU documentation, frequently frame rural areas as sites of deficiency, while positioning urban regions as sources of innovation. This framing risks reinforcing inequalities and undermining the potential of rural communities to lead their own energy transitions.

## Purpose and research question

We address the gap in rural energy citizenship research by critically reflecting on a participatory process addressing sustainable living in rural energy transitions in Norway. Existing research often overlooks the specificities of rural energy transitions, with rural studies tending to focus on preserving traditional ways of life. In contrast, energy transition literature frequently applies urban-centric frameworks to rural contexts. This paper aims to address this gap by conceptualising rural energy transition as a distinct domain—one that foregrounds place-based approaches and recognises the unique resources, capacities, and lived experiences of rural communities. We ask: *How are expectations of a more participatory energy transition enacted in a rural community?*

Our collective reflections come from our participation in a Horizon 2020 funded project, called DIALOGUES (2021-2024). A core aim of the DIALOGUES project is to enable citizens to take a central role in the energy transition, and the practical objective is to allow deep, inclusive energy citizenship to emerge. The project explored what energy citizenship means to diverse actors in different European contexts through a participatory and interdisciplinary co-design method named Citizen Action Labs (CALs). A series of CALs were conducted in different countries. In Norway, the CAL was conducted in a small, rural community and aimed to gain insights into how the built environment (e.g. residential housing and social meeting places) may shape rural energy citizenship practices.

Through the theoretical lens of script theory (Akrich, 1992), this paper illustrates how urban-focused ideals may be misaligned with rural lifestyles and realities, as evidenced by varying responses to energy citizenship frameworks. Our key findings reveal that participatory energy transitions must be tailored to distinct social, spatial and economic geographies. Specifically, we argue that flexible, context-sensitive approaches are essential for enabling meaningful engagement in energy transitions. This paper contributes to a more nuanced understanding of how rural communities can actively shape energy citizenship through locally grounded participatory processes.

## Theory: Scripting participatory energy transitions in rural contexts

To gain insights into what characterises the relationship between the CAL, us as researchers, the local community, and the context where it takes place, we draw on the script concept. CALs offer a way to materialise participatory energy transition processes. We understand a CAL as a socio-material artefact in which several actors (EU, researchers, policymakers, and practitioners) have ascribed meanings, projections, and expectations to specific action programs. The concept of scripts, originated by Madeleine Akrich, illustrates how artefacts encode intended usage and meaning (Akrich and Latour, 1992). To understand the CAL as a process of scripting can help us articulate participants different voices and timelines (Huybrechts et al., 2017), and like 'instruction manuals',

these scripts convey designers' visions but may be contested, rejected, or reinterpreted by users, creating new scripts.

As described by Akrich (1992: 208), *inscription* is the process where designers (or in this case, researchers) embed their intended usage and societal assumptions into artefacts, defining users' roles and expectations. However, users may deviate from these prescribed roles, leading to misinterpretation or rejection of the intended usage. *Description* involves how people interpret these embedded instructions. *Subscription* occurs when users accept and enact the prescribed roles, aligning with the designer's vision. Conversely, *de-inscription* consists of rejecting the artefact or creating alternatives to challenge the prescribed roles, enabling users to construct new scripts. Later, the notion of *user scripts* was introduced to accommodate reactions that generate new usage patterns (Gjøen and Hård, 2002).

This framework facilitates understanding how local actors, funding institutions (such as the EU), and researchers negotiate and construct a sphere of action and meaning through collaborative efforts. The interactions among participants within the CAL—as a collaborative effort—are characterized by continuous negotiations and renegotiations of diverse scripts (Pineda, 2008). Moreover, both resistance to and adherence to these negotiated scripts are not solely performed by human actors (e.g., CAL participants) but also by non-human actors (Pineda, 2008), including the physical design of the town centre, the transport system, the layout of residential housing, and the geography and climate of the studied area.

## Rural Norway as the point of departure

The Norwegian CAL was conducted in the rural municipality of Overhalla in the northern part of Trøndelag county (Figure 1), where the population density is low, even by Norwegian standards. Around 50% of the land in the municipality is covered by forest, and the area is well-suited for agriculture, which explains the foundation for forestry, grain cultivation, and cattle farming. In addition, the local economy includes a wood-processing industry as well as the production of mineral and chemical products. Public services (especially the service industry and health sector), agriculture, and tourism (particularly salmon fishing) are main sources of income.

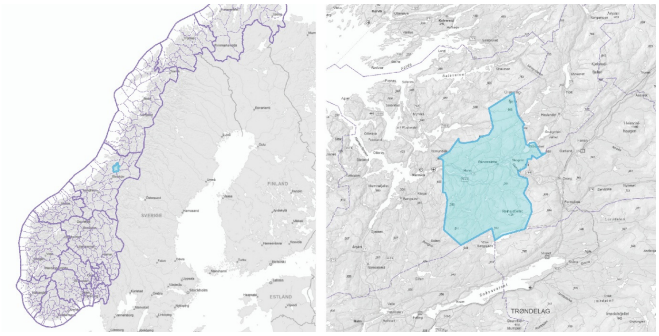


*Figure 1. Overhalla, Trøndelag county, Norway (Map generated through NVE Atlas)*

Overhalla exhibits a relatively balanced age distribution, which is both uncommon and advantageous for a rural municipality in Norway. While many rural areas are projected to experience population decline, forecasts from Statistics Norway (SSB) indicate a modest population increase in Overhalla by 2030 and 2050, primarily driven by anticipated immigration, which together with welfare state interventions represent key factors in mitigating the depopulation of rural parts of Norway (Aasbrenn and Sørlie, 2016).

However, the gender distribution remains skewed, with men comprising the majority in most age groups up to 65–69 years. This gender imbalance is characteristic of rural communities, particularly those with economies rooted in agriculture and other primary industries.

As part of the Trøndelag commuter region, Overhalla form a commuter sub-region together with several other rural municipalities. Data from 2018 indicate that 46,9% of the municipality's workforce commutes to work outside the municipality (Trondelagfylke.no).

## Joint critical reflections as method

Inspired by approaches found in collaborative autoethnography (Adams et al., 2021; Chang et al., 2016; Duncan, 2004), and drawing on reflexivity (e.g., Olmos-Vega et al., 2022), we developed a novel methodological approach that combines collaborative autoethnography with reflexive practices to conduct joint critical reflections as a core method. Autoethnography is defined as "a research method that uses personal experience [of the researcher] ('auto') to describe and interpret ('graphy') cultural texts, experiences, beliefs, and practices ('ethno')" (Adams et al., 2017, 2). In this approach, the researcher assumes a dual role as both investigator and participant, critically examining their own perspectives while leading the research (Chang et al., 2016: 22). While our study does not adopt an orthodox autoethnographic approach, we do embrace certain elements of self-inquiry and critical reflection.

This integration allows us to critically reflect on our research approach, the ongoing adjustments throughout the process, and how these adaptations influenced the co-design process. By merging

collaborative autoethnography and reflexivity, we bridge personal narratives with collective analysis, creating a methodological space that is both introspective and dialogical. This approach fosters a deeper understanding of how our positions, experiences, and interactions with stakeholder's shape and inform the research process. In doing so, we not only engage in self-inquiry but also systematically interrogate the research dynamics within the collaborative space, allowing for more nuanced interpretations of the co-design process.

Our co-design process, that forms the basis of our critical reflections, consisted of a three-year qualitative study (2021-2023) conducted through a Citizen Action Lab (CAL). The CAL responded to one of the main objectives of DIALOGUES: to "engage citizens in co-creating the way towards deeper, inclusive energy citizenship" (Schibel et al., 2022). It functioned as an open innovation space for citizens, researchers and stakeholders working collaboratively on creating environments that will help to understand how to foster deep, inclusive energy citizenship in rural contexts.

The DIALOGUES project designed a common protocol for all partners to guide the design and implementation of local CALs. This protocol highlighted the focus on diversity, encouraging the involvement groups that are not the most represented in energy transitions and including various socio-demographic characteristics, such as gender, age, socio-cultural-economic status and ethnicity (Clément et al., 2022).

As a place-based co-design process, the CAL focused on actively involving "people with lived experiences" (McKercher, 2020 in Örnekoğlu-Selçuk et al. 2023) and the overarching intention was empowerment of people in decision-making processes through a mutual learning experience (Örnekoğlu-Selçuk et al., 2023) in a local context. The CAL-methodology shares similarities with co-design approaches such as Living laboratories (Bulkeley et al., 2019), Future Workshops (Jungk and Müllert, 1987), and Real-World Labs. However, we opted to conceptualize our efforts as an "action lab" to maintain methodological flexibility and avoid rigid definitions (Sahakian et al., 2025: 13; Schibel et al., 2022).

The Norwegian CAL aimed to explore rural energy citizenship through collaboration with local stakeholders. We chose the municipality of Overhalla as the location for the CAL due to its representativeness of Norwegian rural areas in three key aspects: First, its remoteness (Norwegian centrality index 6 out of 6) necessitates that they have to address all services locally. Second, the municipality has a strong focus on demographics, actively working to attract younger generations to ensure the continuity of the community. Third, the presence of local industry creates a demand for skilled labour, requiring recruitment from outside the municipality.

A diverse range of representatives was involved including citizens, municipal employees, representatives from local industry and members of local organisations, all with vested interest in future decision-making and local development. Rather than approaching these participants as research subjects, we regarded them as "experts of their experience"' (Sahakian et al., 2025: 18). In line with a phenomenological perspective, we emphasized capturing both the expressed and interactional experiences of participants, while critically reflecting on the dialogues throughout the co-design process (Tjora 2021, p. 30-31).

Particular to the Norwegian CAL was the examination of the interplay between place, architecture, and energy use, aiming to enhance understanding of how rurality, energy, and societal transformation intersect. The project also explored visions of well-being in relation to the green transition, with a particular focus on place development and the built environment. The action lab concentrated on co-designing housing and social spaces to attract young, early-career professionals, particularly those completing vocational apprenticeships or recently graduated.

The focus on attracting young early-career professionals emerged through early dialogue with local representatives, who framed it as a shared priority across industry, public administration, and the broader community. This group was identified as essential to ensuring the continuity of the community, particularly in light of an ageing population and the growing need for new skills and knowledge in various local initiatives. To reach young professionals who had already migrated to the area—whether temporarily through vocational apprenticeships or more permanently via employment—local industry companies played a key role in recruiting participants. This recruitment strategy was used solely to leverage local networks to reach the young professionals, as their participation in the workforce was a key defining criterion. However, the participants joined as individuals, and neither industry representatives nor other company personnel (e.g., CEOs, owners, superintendents) were present during the workshops to ensure a safe space to voice opinions.

The goal was to explore how energy citizenship materializes among young professionals within the local context across home, work, and leisure spaces and to identify viable, sustainable options (Zhan & Sahakian, 2023). By integrating local knowledge, practical solutions, construction expertise and academic insights, the CAL aimed to co-create innovative housing and social meeting places that support low-emission lifestyles in rural contexts. Ultimately, the CAL sought to produce both policy-relevant knowledge for decision-making and empowerment knowledge for citizens, allowing them to take active roles in co-creating the social, economic, aesthetic, and environmental dimensions of the energy transition (Schibel, et al., 2022).

The gender imbalance characteristic of rural Norway, including our project site, was reflected in the composition of our CAL, where only two women participated in the CAL. It raised important questions about whose perspectives shape visions of future housing and community life in Overhalla. While our recruitment strategy—focused on young

professionals in response to local concerns about demographic continuity—enabled strong engagement with a key stakeholder group, it also limited broader inclusiveness. Further, it highlights how structural gendered dynamics, such as migration patterns, shape who is present in rural participatory spaces and, consequently, the possibilities for inclusive energy citizenship (Epp et al., 2025).

Thus, although our research study was not initially conceived as an autoethnographic endeavour, particularly given the practical and collaborative nature of our CAL, our critical reflection, which forms the analysis presented in this paper, represents a retrospective narration that challenges established norms in research practice (Adams et al., 2021: 4).

## Co-design phases as processes of constant adjustments

In the following we present our research approach through the different phases of the process (see figure 2), our continuous adjustments throughout this process and our critical reflections on how this affected the CAL-process and its participants.

| Phases |
|---|
| 1. Using the joint protocol as guiding script and mission |
| 2. Translating the script into a rural Norwegian context |
| 3. Using the script as approach to discuss energy citizenship with young professionals |
| 4. Adapting activities to context specific lifestyles, challenges and expectations |
| 5. Exploring future imaginaries and scenarios for low-emission rural lifestyles |
| 6. Critical reflections on the need for context-specific co-design methods |

*Figure 2. Phases of the local CAL process*

**Phase 1: Using the joint protocol as a guiding script and mission**
The DIALOGUES project emphasises inclusivity and diversity, aiming to foster equitable participation in developing sustainable energy practices. A vital component of this process was the creation of the common protocol—which worked as a guiding script for partners to design their CALs. The protocol sought to ensure that the co-design process would be accessible and representative of diverse perspectives. In this context, diversity also encompassed various socio-demographic factors, including gender, age, socio-economic status, race, ethnicity, and intersections between these characteristics. Moreover, it recognised the different levels of knowledge, experience, and access to resources, such as energy consumption and living conditions, which shape individuals' participation in energy transition efforts. These socio-demographic considerations, along with the aim to represent diverse perspectives, led partners in different countries to adopt context-specific notions of inclusivity—engaging various underrepresented, marginalized, or hard-to-reach groups in their CALs based on local challenges.

In the Norwegian context, the common protocol navigated us to explore the lived experiences of young professionals in rural municipalities like Overhalla—settings where mobility and temporary residence patterns pose distinct challenges for young residents. For many young professionals employed in the municipality, particularly those without local roots, residence in Overhalla was regarded as temporary. Their stay often lasts only a few years, typically serving as a stepping stone at the beginning of their careers before relocating to other places. This recurring pattern raises important questions about the social, economic, and cultural factors that may influence whether such individuals choose to establish long-term residence in Overhalla.

**Phase 2: Translating the script to a Norwegian context: Engaging with local partners**
The initial phase of translating the common protocol to a Norwegian context involved reaching out to local industry representatives and municipal actors in Overhalla. Members of the research team had prior experience collaborating with stakeholders in the municipality, which facilitated the initiation of discussions about energy citizenship and co-design activities. These initial conversations were guided by the principles of inclusiveness, equality, and representation outlined in the DIALOGUES CAL Guidelines. Practical considerations also played a role in this phase, as we sought to identify actors with the capacity to connect with diverse local groups. The response to these outreach efforts was overwhelmingly positive, with actors from the municipality, local industry, and community members expressing enthusiasm about the initiative's potential to foster local knowledge-building and engagement.

The choice of the research focus was informed by broader challenges faced by several rural communities in Norway and site-specific conditions identified in collaboration with the local industry park. As a core actor in the municipality's energy transition and sustainability efforts, the industry park provided valuable insights into pressing local issues and potential avenues for engagement.

Through this collaborative process with the industry park, we identified young professionals as a key target group for the initiative. This decision was based on demographic patterns prevalent in many Norwegian rural municipalities, including an aging population and high rates of out-commuting for work. Consequently, a central question emerged: *How can the municipality create conditions for young professionals to settle, thrive, and actively contribute to the local green transition?*

By framing the research around this demographic group, we aimed to explore potential pathways for strengthening the local labour force while fostering energy citizenship in the context of rural sustainable development efforts.

### Phase 3: Using the script as approach to discuss energy citizenship with young professionals

To better understand the perspectives of young professionals, we organised a three-hour workshop session with seven participants—two women and five young men. The session focused on their current living situations, working life in the municipality, social activities, and future aspirations. The workshop took the form of an open, facilitated group discussion, where researchers asked questions and provided reflections to stimulate dialogue among the participants and with the researchers. An audio recording of the session was transcribed and coded to identify key themes, which were subsequently woven into a coherent narrative capturing the participants' perspectives on life in Overhalla. This narrative was shared with the participants for review, ensuring it accurately reflected their collective experiences and insights.

As background and to inform the workshop design, we conducted interviews with key local actors who have insight into the lives of young people in Overhalla: a municipal employee working in mental health among youth and young adults, a teacher at a lower secondary school, and a central figure in the municipality's volunteer sector. We also carried out a detailed mapping of leisure activities in the area. In addition, we participated in a local event organised by industrial actors, where upper secondary school students participated to learn about career opportunities in local industrial companies.

Prior to the workshop, we anticipated that participants would highlight a lack of social gathering places, cultural offerings such as cafés, bars, and outdoor public spaces, and limited public transportation options as central factors having negative impact on their daily life. However, the workshop revealed that the participants' lifestyles, social habits, and perceptions of the municipality differed significantly from our initial assumptions, shaped by our experiences in urban contexts. These insights underscored the importance of grounding our participatory process in the lived realities of our target group rather than preconceived assumptions based on external perspectives on lifestyle among young adults.

### Phase 4: Adapting activities to context specific lifestyles, challenges and expectations

We discovered that our CAL approach needed significant adjustments to the specific context in which it took place and that our former experience in participatory approaches centred around urban issues and places. In our case, initial assumptions centred on creating social gathering places to retain young professionals in the municipality. One proposal involved co-creating a temporary pop-up meeting place using modular wooden structures to test the viability of such spaces. Workshop discussions revealed distinct challenges faced by young adults, including car dependency, a lack of evening social venues, and difficulties in finding suitable housing.

While most participants maintained social networks through work or childhood connections, they did not express a strong need for social lives centred around places like a café or a bar, even if they highlighted the absence of such places. Instead, their social activities focused on fishing, hunting, video gaming, home gatherings, and hiking, all of which were readily accessible in the area. This feedback indicated that our initial idea of a pop-up meeting place did not align well with the more evident needs and preferences of the young professionals.

A pressing challenge affecting the young adults' ability to live and work in the municipality was the housing situation. Purchasing a home often required several years due to limited availability. Many available houses were in poor condition, and refurbishing them was rarely profitable, particularly for those considering future resale. The financial burden of purchasing, renovating, and reselling these large properties was a significant concern for them.

The young adults expressed a preference for detached homes with garages and ample space for outdoor projects. Although 150 square meters was considered a reasonable home size, many noted that much of this space often remained unused. Participants also emphasized the importance of having generous space around their homes and maintaining distance from neighbours.

In response to these findings, we explored more adaptable, modular housing designs that could better accommodate changing life stages and needs. Additionally, we engaged participants in discussions about the potential benefits of denser residential patterns, smaller gardens, and closer proximity to neighbours to reduce energy consumption and environmental impact. Further, we challenged them to reconsider their need for space and to explore the potential for denser, environmentally friendly, low emission living situations through engagement with and awareness of measures for energy efficiency in housing.

### Phase 5: Exploring future imaginaries and scenarios for low-emission rural lifestyles

Building on insights from the previous phases, we carried out home design workshop to gain insights from young professionals' housing preferences and the potential for compact, energy-efficient dwellings. Seven participants (two female and five male), all of whom had attended earlier workshops, took part in this workshop.

The workshop began with one-on-one interviews, each lasting one to two hours, during which participants reflected on their current housing situations. Discussions centred on how their home environments influenced social interactions, hobbies, daily routines, economic considerations, and overall well-being. The conversation then shifted to future scenarios, where participants were invited to imagine their lives in smaller, more flexible housing options.

To facilitate this process, we introduced 1:100 scale models of a microhouse developed within the DIALOGUES project, along with

three prototype designs created by the CAL team based on findings from earlier phases. Participants were encouraged to critique these models, suggesting changes and sharing reflections on how these spaces might accommodate their day-to-day needs and aspirations.

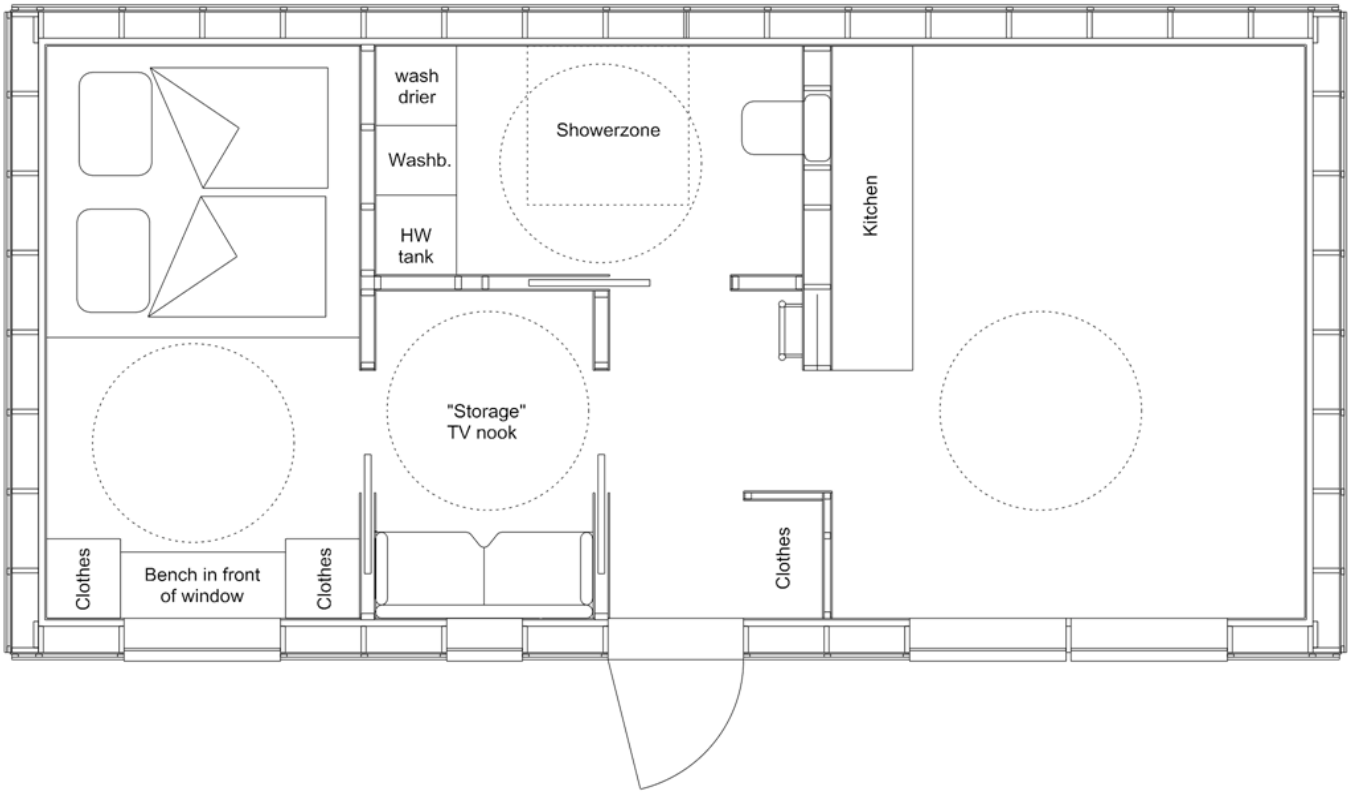


*Figure 3. An example of a plan drawing for a 40sqm dwelling co-developed with local young professionals.*

As part of this co-design process, we engaged local industry representatives to assess the feasibility of the proposed housing concepts. The ongoing dialogue with industry actors was essential in translating participants' ideas into practical, scalable housing solutions.

The co-design process ultimately led to the design of a 40-square-meter modular house (see figure 3) to be ready to fabricate for the element-based house production line available locally, specifically tailored to young professionals' needs, desires, and economic situations.

The layout of the modular house was surprising, as it deviated significantly from conventional layouts in current home construction in Norway. Notably, only one facade has windows; the living room is omitted and replaced with a small TV/gaming nook, and the kitchen becomes the main social space when having visitors. In addition, the omission of familiar comforts, such as floor heating, was accepted as long as it could be seen as a cost-saving measure in construction. The participants directly expressed their interest in the design, as they considered it much better adapted to their needs than what is available locally: either a large house connected to a farm or a generic apartment that poorly supports their lifestyle.

### Phase 6: Critical reflections on the need for context-specific co-design methods

Our initial assumptions, shaped by research experiences from urban settings, did not align with the lived realities of the young professionals involved in the process. In this context, the young adult's social lives were centred around nature-based activities and home gatherings rather than public spaces, and their housing preferences were influenced by factors such as household size and availability.

The iterative and adaptive nature of the co-design process proved essential in identifying these context-specific dynamics. By continuously adjusting our methods based on participants' feedback, we could co-create housing concepts that better align with their needs and aspirations, while at the same time challenging them to consider future energy consumption and their willingness to participate in a sustainable and just energy transition in line with the energy citizenship concept. Furthermore, collaborating with local industry actors demonstrated the potential of participatory design to bridge knowledge gaps and promote locally grounded solutions for sustainable development.

Our experiences made us critically reflect on the assumptions embedded in co-design approaches and tailor methods to the

specific characteristics of the context and community we engaged with. In the context of rural energy citizenship, this entailed acknowledging and leveraging the existing social practices, spatial configurations, and economic realities that shape everyday life.

## Discussion: Script tales from a rural co-design process

The following discussion is structured around challenges that emerged through our phases of joint critical reflections on the CAL in rural Norway. These challenges are explored through three co-existing script tales, each highlighting different dynamics within the CAL-process. In doing so, we address our research question: *How are expectations for a more participatory energy transition enacted in a rural community?* The chapter contributes to broader discussions on the need for energy citizenship to be adapted to diverse contexts and the role of participatory research in sustainable and just rural energy transitions.

### Subscription: Embracing the Energy Citizenship Script

The CAL-process revealed instances of subscription, where local industry and municipal actors actively adopted the energy citizenship script, seeing it as a promising framework for community engagement and local energy transition efforts. The pathway to subscription was iterative. Firstly, the actors closest to the activity wished to showcase to a broader public within the local community, inviting the research team to present their preliminary findings at an industry seminar. Secondly, multiple actors approached the research team with their own stories during and after the seminar. They found that the script had helped them connect the dots on some of the observations they had made in their own organisations. From here, the research team was invited to participate in various meetings, primarily online, to discuss not only their findings, but also how different organisations might operationalise and engage in energy citizenship.

Local industry actors from the industry park therefore demonstrated a willingness to align with the energy citizenship concept as envisioned by the CAL protocol and the researchers. Their engagement was evident in both formal interviews and informal conversations, where they expressed enthusiasm for initiatives connecting young professionals to the municipality's sustainability goals. This subscription illustrates how external policy narratives, like energy citizenship, can be locally translated and adopted when actors perceive them as aligned with their own objectives.

Additionally, this aligns with the broader theoretical understanding of scripts (Akrich, 1992), where artefacts and associated meanings are more readily adopted when they resonate with local social practices, capacities and economic conditions. The active engagement of industry stakeholders highlights how policy concepts like energy citizenship can be translated into action through collaborative, context-sensitive design practices.

From our experiences, participatory methods have the potential to act as mediators between abstract policy goals and practical, local applications, especially when participants see clear benefits for their local community. The industry's subscription suggests that rural contexts, despite their unique characteristics, can contribute significantly to energy transitions when participatory and collaborative processes are adapted to local conditions. This demonstrate the potential for communities to engage meaningfully in energy transitions when methods are adjusted for context-specific conditions.

### De-Inscription: Challenging Urban-Centric Assumptions

In contrast, some of the young professionals did not recognise or identify with the proposed ideas [the subscription], leading to processes of de-inscription. This lack of recognition often stemmed from the perception that the CAL's proposed interventions did not account for the realities and capacities of rural life.

In line with Funch and colleagues (2020) workshops revealed challenges regarding rural housing, and scepticism toward compact living in dense residential settings. Participants highlighted the importance of indoor space for hobbies and home-based social gatherings and storage for equipment for activities such as sports, hiking, hunting and fishing. The researcher's initial emphasis on social gathering places was not the most evident challenge, as participants explained that their social networks primarily functioned through private and nature-based gatherings. These reactions illustrate how predefined scripts for energy citizenship often fail to resonate locally when they overlook the unique cultural practices and spatial dynamics of diverse contexts.

This resistance can be understood through Akrich's concept of de-inscription (1992), where artefacts (in this case, the CAL's proposed interventions) are rejected or reinterpreted. The scepticism towards the compact living proposals reflects participants' concerns about lifestyle compromises and a broader cultural attachment to space and privacy.

As Pineda (2008) explains, resistance to the script may also be performed by non-human actors. In this case, the scepticism toward new, more small-scale and energy-efficient housing models may relate to the existing layout and design of the residential housing. None of the existing housing - and what participants might see at the reference point - supports the proposed CAL script.

The observed de-inscription emphasises the need for us as researchers to critically reflect on the transferability of participatory energy transition methods from urban to rural contexts. It shows how assumptions about residential and social lifestyles risk undermining engagement and trust in co-design processes of energy transition when they are not problematized.

**User Scripts: Co-Creating New Narratives**

Throughout the CAL process, researchers and participants engaged in co-design processes, resulting in new user scripts. The workshop design, combined with reflections on initial misconceptions, led to adaptations of the CAL's original direction.

Recognizing the disconnect between the researchers' assumptions and participants lived experiences prompted adjustments. The focus shifted from promoting urban-style social gathering places to exploring housing models better suited to local lifestyles. As Abouaiana and Battisti (2023) explain, rural housing often lacks energy savings design. Therefore, our CAL could contribute to more knowledge on energy-saving design for private housing that aligns with local needs, by co-designing modular, small-scale homes designed to match local housing preferences while promoting energy efficiency.

The introduction of these new user scripts – accommodating other usage patterns (Gjøen and Hård, 2002) than expected, demonstrates how participatory energy transition processes can lead to the redefinition of design goals when participants' feedback is actively incorporated. The emergence of context-specific housing concepts shows the potential for CALs to facilitate place-based innovation by responding to local knowledge and practices.

In the absence of rural-specific models, our CAL drew on general knowledge of common rural challenges—such as demographic shifts, youth outmigration, housing development, and the loss of skilled labour. While Overhalla shares many of these traits, what stood out was the richness of local resources, knowledge, and collaborative practices. These elements, often overlooked in mainstream research, suggest a local mindset oriented toward inclusion, problem-solving, and resilience.

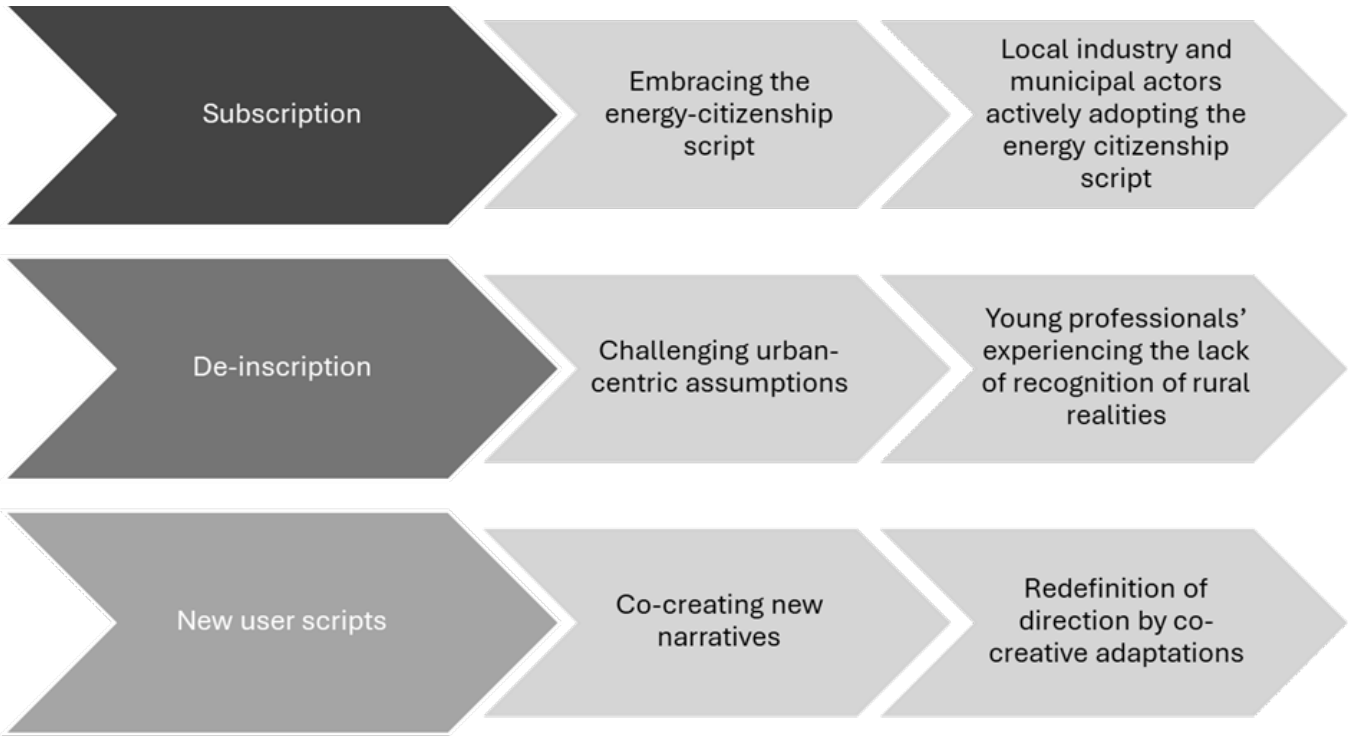


*Figure 4. Processes of subscription, de-inscription and new user scripts*

## Concluding remarks

In summary, this paper addresses three key gaps in current scholarship: the limited attention to rural energy citizenship within energy citizenship literature, the underexplored nature of participation in rural energy transitions, and the overlooked insights rural contexts offer for advancing broader energy transition research.

Our analysis of script tales highlights the value of context-sensitive participatory energy transitions, conceptualising rural energy transition as a distinct domain—one that foregrounds place-based approaches and recognises the unique resources, capacities, and lived experiences of rural communities. In Overhalla, energy citizenship - and the focus on how to incorporate sustainable energy transitions into the everyday practices of individuals and collectives and their willingness to participate in a just and sustainable energy transition- was shaped through subscription, de-inscription, and the emergence of new user scripts. These experiences show that participatory methods, when aligned with local conditions, practices and values, can foster meaningful

engagement in rural energy transitions and help identify viable, sustainable options.

We also gained broader methodological insights: participatory energy transition methods developed for urban settings require significant adaptation in rural areas. Factors like dispersed housing, nature-based social practices, and distinct interaction patterns demand tailored methods.

Policymakers should account for the socio-spatial dynamics and diversity of rural communities when designing energy transition strategies. Recognising local practices, spatial layouts, and economic and political conditions enables more inclusive engagement. Co-design processes must remain flexible to reflect local perspectives and foster relevant outcomes. Future research should explore how participatory energy transitions can be adapted across contexts and assess their long-term impact on energy citizenship.

Our CAL process demonstrates that adapting methods to local lifestyles is essential for inclusive, grounded energy transitions. This discussion ties back to our theoretical framing, emphasising the need to tailor participatory methods to rural contexts and contribute to debates on energy citizenship in sustainable transitions. The emergence of new user scripts shows how context-sensitive participation can connect abstract policy concepts with everyday place-based practices. Ultimately, continued research should examine how co-design fosters locally relevant engagement in energy transitions, helping drive sustainable and just place development that is both locally grounded and globally significant.

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