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Co-creating a community visioning methodology for energy transitions: Principles, practices, and reflections

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ABSTRACT

Visions of energy futures produced via co-created methodologies can provide robust alternatives to the prevailing imaginaries held by international and state actors – crucial for sustaining progress towards energy transitions that meet community needs and realities. This paper explores the co-creative design of a methodology for community visions for energy transitions. Insights are drawn from the development and outputs of a collaborative workshop aimed at adapting community visioning to different local contexts with four partners from across Europe. We analyse empirical evidence, including transcripts of conversations with participating local authorities and NGO representatives and resources prepared for the workshop, to detail how collaboration proceeded. The results highlight that practices fostering inclusion, mutual learning, and relationship building can give partners ownership over visioning to better ensure that its design reflects local, situated knowledges and is well suited to communities. However, the messy, human nature of co-creation requires commitment to flexibility and ongoing dialogue. Overall, the experiences highlighted in this paper serve as a valuable resource for future researchers and practitioners interested in exploring how to further energy system transformation and support community-driven local energy transitions.

1. Introduction

The European Green Deal has emerged as a political framing to address climate change and shape the transition to carbon-emission-free societies. It presents a vision for Europe's future, including a just, green energy transition, to influence the energy policies of the European Union and its Member States [1]. Such visions of energy futures can be a foundation for change leading to more liveable and healthier systems that address climate change. However, many of the dominant visions for energy futures are those of powerful actors, like the European Union, nation-states or international organisations [2,3]. Recent scholarship has highlighted that influential visions should represent more than powerful, ruling elites; they should be co-created by and speak for broader swathes of society to contribute to equitable, fair, and just energy futures [4–6].

Community visioning, a process involving stakeholders coming together to imagine a desired future, usually with a theme in mind (e.g. energy futures) [7], is increasingly invoked to facilitate inclusive engagement in energy transition [8]. Yet the design of the visioning process itself is not always a collaborative effort, in contradiction with co-production principles that promote the inclusion of partners from a project's initial stages.

In this paper, we describe a co-creative process undertaken to design community visioning programmes for clean energy futures with practitioners in four locations in Europe. Our central research question is: how can community visioning for energy transition be designed in a way that centres the community's role in addressing environmental and social challenges? Further, what principles can underlie such a community visioning approach, and what can be learned from the successes and challenges of attempting this co-creative design? This paper explores how one important stage of our process, an in-person training workshop, met or challenged our expectations about inclusion, mutual learning and relationship building in co-creation. This is a significant contribution to the literature, as studies of co-creation in energy research are needed to improve approaches to discussing energy with people given its "invisibility" in our daily lives [9].

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In Section 2, our literature review summarises how co-creative community visioning can be a tool for a just energy transition. In Section 3, we present our methodology, engaged capacity building workshops, and describe our data sources: transcripts, field notes, and reflections from our workshop. Section 4 critically examines how co-creation proceeded during collaborative planning for community visioning. In Sections 5 and 6, we reflect on the opportunities, limitations, and challenges encountered, as well as on how this contributes to our understanding of co-creation for energy research and advancing the European Green Deal.

2. Literature review

The so-called energy transition will not happen through technological solutions alone; energy systems are inherently social and thus the energy transition is inherently a social transition [10]. It is not only energy professionals or experts, but also individuals and groups who use energy in their everyday lives that should be involved in designing the transition. This is both a matter of democratic principle and a way of arriving at better solutions that fit localities and the people that live there, reducing conflict over energy issues and legitimising the role of non-expert individuals and communities in energy transition [11–13].

Recognising this, systemic approaches to mapping, assessing and designing participation, which consider existing "ecologies of participation" and propose inclusionary engagement methods, are on the rise [14]. These methods view people and communities not as passive consumers and affected groups, but as active shapers of their own environment and futures [15,16]. They bring diverse local groups together in inclusive, community-led initiatives, rejecting prevalent approaches that impose technical solutions or best practices from other locations and then attempt to make them "publicly acceptable" through traditional consultation [17,18]. Some methods also seek to address the fact that not everyone has equal access to democratising energy practices and their benefits [19,20].

One way to tap into the participatory potential of energy transitions is to foster and reveal imaginaries of energy futures [21]. Socio-technical imaginaries, "collectively held, institutionally stabilised, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" [22], have been recognised as key for energy system transformation. However, the dominant imaginaries and visions of energy, those which "order both society and technology", exist on the part of bodies like the European Union or nation states [23]. They tend to be, as in the case of the European Union, "techno-economic" rather than focused on society: they view technological advances and economic competitiveness as primary avenues to address climate change [24]. These play a dominant role in shaping energy futures, even when alternatives such as community-based energy or democratic decision-making are also present [2,3,25].

These imaginaries are not fixed, but are "value-laden" and contested, and represent expert rather than local and experiential knowledge [26–28]. Yet communities have some knowledge of and concern about climate-change-related issues felt locally, such as extreme heat, flooding, air pollution, and changes to agricultural production. Visioning can foster and uncover diverse perspectives on these challenges and possible solutions through imaginative, creative techniques. Visioning with non-experts often supports "distributed" energy systems that "recognise the roles of society" [29], providing a plurality of alternatives that promote new pathways, challenge dominant narratives, and impact both individual behaviours and social structures [5,30,31]. Community visioning is therefore invoked to facilitate inclusive engagement in the transition to carbon-free, renewable, and community energy [8,32], as well as to contribute to a "fairer futuring research agenda" [33]. Those interested in renewable community energy, improved energy efficiency and sufficiency in buildings, or transitions away from fossil fuel industries in their area may find community visioning a helpful technique.

Community visioning requires co-productive approaches to elicit creative scenarios, images, or pathways for how a locality could be [34–36]. Norström et al. [37] define co-production for sustainability research as "iterative and collaborative processes involving diverse types of expertise, knowledge and actors to produce context-specific knowledge and pathways towards a sustainable future". Co-production is distinguished by its commitment to transforming the relationship between actors to ensure research or policy making is done *with* rather than *for* [38], elucidating context-based, situated and experiential forms of knowledge, and ensuring unheard voices are heard to contribute to more equitable outcomes [35,39,40]. It can challenge the hegemony of certain knowledge systems; make the research process fairer [38,41]; address complex problems that require multiple forms of knowledge [42]; lead to anticipatory transformational learning on sustainability [43]; and align outcomes with real needs [39].

Co-productive visioning should involve a wide variety of groups who are traditionally not involved in research, policy, or planning, providing local, situated knowledge and helping to deliver more just, sustainable solutions while all partners learn more about possible futures [5,44,45]. Rather than strictly defining the "community" that co-creates visions, this process is open to those united by place, but also by interest [46], as well as to communities that emerge from the visioning process itself [47]. A fully co-productive process also requires that the very design of visioning is done in collaborative partnership, bringing the community into discussions about how visioning should be structured, what activities should be undertaken, who should be included, and how they should be communicated with. Whereas community members should take ownership and drive the design with local knowledge, experts from outside the community with knowledge of visioning can provide the necessary convening power ("strategies of intermediation") and techniques to "unsettle existing knowledge claims" ("tactics of unsettling") [48], as well as coaching or training [49].

By co-creatively designing community visioning programmes, the aim – although not guaranteed – is that the visions reflect, represent and are supported by the community who made them and will carry them forward; are relevant for communities based on the local context; and increase the chances of more just energy outcomes. Although it is not feasible to invite the entire community into the planning process, co-productive community visioning without proper commitment to inclusion and participation at all stages may reproduce unjust power dynamics, further entrenching existing social and economic inequalities [50]. This is a challenge, because co-production brings researchers into political processes where they must deal with values, societal change, and contestation [37,48,51]. It requires a time consuming, emotional, and relational commitment to a process that holds space for diversity, pluralism, and uncertainty and actively, reflexively challenges power dynamics [42,52–55]. It is not always clear how to do co-production, who to do it with, or how to navigate the relationships that are part of the process.

Many community visioning case studies describe and critique processes of envisioning [e.g. 34,46,54,56,57], most focusing on the outcomes of visioning. Yet academic papers tend to gloss over the relational and social interactions that take place when partners with diverse backgrounds and expertise collaborate to design community visioning endeavours, which are crucial to the resulting programme [49 is notable]. The design may be mentioned as a part of a larger process, alongside reflexive findings, but it is typically not investigated in detail [58,59]. Within this paper, we proffer that the process of community visioning from start to finish is as important as the outcome; therefore, there is a need for accounts of community visioning design processes [60].

Critical accounts of the relational and discursive process of developing futuring methods or practices help us understand the political, economic and social factors that shape the present and possible futures; interrogating our process thus aims to create space for more diverse imaginaries in the long run [61]. Such considerations are crucial in

energy studies, where a pressing topic is how to engage people in conversations about energy. Although there is consensus that people should be involved in the transition, energy is notoriously difficult to talk about because of its "invisibility" in our daily lives [9]. Rather than simply making it more visible through technical fixes, research suggests a need for deep discussion about the social and cultural role of energy [62]. Yet it can be difficult for people who are not confidently and actively engaged in energy issues to become meaningfully involved. Focusing attention on how these discussions are set up and take place, this paper contributes to addressing this challenge in current energy research.

Our aim is to give adequate space to describing how co-creation works in detail; analysing the visioning that followed the design process is beyond the scope of this paper. This is particularly important as we seek ways to make energy easier to discuss among diverse groups. The lessons that arise from co-creative design workshops with practitioners help us understand how to navigate the real, human contexts in which energy is situated, as well as how to improve visioning and other forms of co-production research, making energy outcomes fairer and more sustainable.

3. Methodology

3.1. The "Clean Energy" social experiment: A layered co-creation model

The co-creative community visioning design described in this paper is part of the EU-funded Horizon 2020 research project SHARED GREEN DEAL, which brings a consortium of research and practice partners together to experiment with local mechanisms for achieving the goals of the European Green Deal. The five-year project undertakes six one-year social experiments[1] in Green Deal policy areas, including "Clean Energy". The "Clean Energy" social experiment's goal is to run and study a set of workshops to envision clean energy futures in each of four locations: three workshops with different stakeholder groups (policy, business, and residents) and one final joint workshop. SHARED GREEN DEAL ***consortium partners*** (individuals from two academic institutions and one non-governmental organisation) selected and funded four ***local partners*** (two local authorities and two non-governmental organisations)[2] from across Europe via an open call. Local partners are involved in energy (i.e. county energy planning offices, environmental and social organisations) and interested in engaging diverse communities in some aspect of their work: promoting energy communities, addressing energy poverty, or including more women in energy transition.

As the experiment is intended to help local partners enhance engagement in their energy transition activities, partnerships between different actors are built into every stage of the project to ensure it reflects real needs and constraints. Yet in our aim to centre the community in designing visioning, we were constrained by the realities of funding structures and timelines. Thus, different partners participated at different stages to incorporate community perspectives as much as possible. We conceived of this as a layered co-creation[3] approach to community visioning design and implementation (Fig. 1). This paper focuses on layer 2, community visioning workshop design.

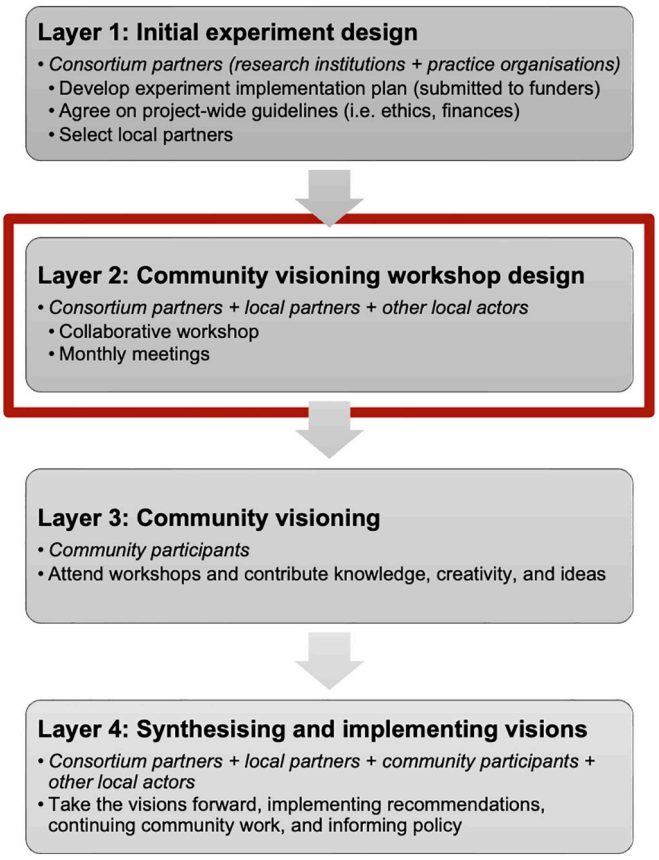

Fig. 1. Layered approach to co-creation for community visioning. Source: Authors.

3.2. Co-creation method: Engaged capacity-building workshops

Upon selecting four local partners, who would run visioning workshops in their respective locations in fall 2023 and winter 2024, we needed to integrate them into the project and prepare them to organise visioning. We adapted the method of engaged capacity-building workshops to develop a collaborative training [64]. In this method, a group engages in collaborative activities over a period to "create significant change in the systems in which they work", leading to learning for all participants [64]. Our 16-month engagement with local partners included an initial in-person workshop (April 2023), twelve monthly one-on-one meetings, four full-group check-ins to facilitate cross-partner exchange, and a study tour to one local partner location (February 2024).

When preparing our capacity-building workshop, we drew upon a few key co-production approaches. Smith and McGannon's [39] "equitable and experientially-informed research" approach highlights the importance of forming collaborative, equitable partnerships with actors typically not included in research (such as our local partners), uncovering and affirming lived experience and experiential knowledge. In addition, we brought together Bremer and Meisch's [65] "institutional lens" on co-production – building capacity within governance institutions – with their "extended science lens" – integrating knowledge from non-scientists into scientific knowledge production.

We could have focused the training purely on project requirements and left local partners to devise visioning programmes on their own; alternatively, we could have provided a strict visioning programme for them to follow. With co-production approaches in mind, we instead identified that the most effective way to ensure visioning met the needs of each locality was to co-create unique visioning programmes with each local partner [66]. This meant that within the general framework for the

[1] "Social experiment" is understood not in the traditional positivist meaning (i.e. a randomised control trial), but as implementing innovative, pioneering activities that may lead to social and behavioural change. Experimentation is an engaging and popular way to identify challenges and opportunities that can lead to transformative pathways for the European Green Deal in local contexts [63].

[2] Details about the local partners have been anonymised to prevent identification of the individuals involved.

[3] We use the term "co-creation" rather than "co-production" when discussing our process in recognition of the fact that the entire project contains co-creative elements, but not all elements of the research are subject to co-creation by all partners.

visioning (described in Section 3.1), local partners could be afforded significant flexibility to design a programme that fit their context and needs. Local partners, embedded in their communities, brought their own extensive experience to the project, as well as deep knowledge of the places where the experiments were conducted [37,39]. As the researchers organising and facilitating this project, with backgrounds in academic and policy research on energy, sustainability and community development, we sought to convene the group and structure activities in such a way that: 1) local partners were included through equitable partnerships [38–40]; 2) all partners benefitted from learning and took ownership of the project [41,43,65]; 3) partnership was based on committed relationships [55,67,68]; and 4) improvements to socio-energy systems resulted [39,42]. We designed our process to meet these goals, with the understanding that things might turn out differently and an openness towards unexpected outcomes and impacts [40,69,70].

Table 1
Fundamental principles for community visioning.

1. Co-creation: the basis of the experiments	Co-creation ensures diverse voices can be heard for more just outcomes. This occurs between project partners to design the experiment and between community members to envision the future [38,40].
2. Situated knowledge	Rather than there being one truth to uncover, a community may contain many complex, place-based perceptions and understandings of energy. Understanding context is fundamental to understanding possible energy futures for a location and can lead to greater insights into the complexities of energy transitions [27,73,74].
3. Responsiveness to community situations, needs, interests, and cultures	There is no one way to do community visioning. Recognising the different energy systems; cultural, political, social, and place-based circumstances; and distinctive local, regional, and national contexts, everyone's visioning process and outcome can be different [56,57,66].
4. Process-oriented	Rather than reach consensus, experiments focus on the process of visioning as part of a framework for transformative change. There is no "right answer". The aim is to spark creativity and learning about the role energy plays in our lives, support community ownership over energy, and facilitate participation in shaping the future [5,34,35,63].
5. Not just technology – also society	Rather than finding ways to get people to accept a certain technology, we look at the complex and comprehensive imaginaries for the future that are present within a community around how life can be lived with technological change [22].
6. Big picture creativity, real impact	Experiments foster big-picture creativity while also being embedded in real, ongoing energy transition. They are first and foremost a community process that should have value for participants and the place they inhabit [35].
7. Justice lens	Visioning is based on the goals of decarbonisation, renewable energy, increased energy efficiency, no harm to the environment or nature, etc. It fosters more just outcomes, gender equality and inter-generational learning [8,71].
8. Feasible and affordable	Any community that wants to do visioning should be able to implement a high-quality, effective process that does not require significant financial resources or too much time [66,75,76].

Source: Authors.

3.2.1. The workshop: Structuring co-creation

The in-person training workshop took place over 1.5 days in Vienna, Austria in April 2023 (for the full agenda, see Supplementary Material: Workshop Agenda). Four individuals representing local partners and five individuals representing consortium partners attended. The workshop's goals were to: 1) align all partners on key principles and goals; 2) begin planning the visioning workshops in detail; and 3) build relationships that would support the experiment. The agenda included obligatory sessions on project information but was primarily dedicated to collaborative planning. To unite diverse approaches to visioning upon a common foundation, we decided to develop and agree on shared principles (Table 1) that would guide the development of different local approaches [71,72]. At the training, consortium partners presented a proposal for the shared principles and local partners suggested amendments based on their experiences.

The second aspect of our shared yet flexible approach to visioning was a set of guidelines on how to run community visioning (see Supplementary Material: Community visioning guidelines and workshop plan template) [49]. Consortium partners based these guidelines on existing guides for community visioning, as well as examples of similar projects in the academic literature. Planning sessions paired one consortium partner with one local partner to discuss the local partner's plans for the experiment and tailor the general guidelines to their local context. In these discussions, consortium partners led the local partners through the guidelines, asking them to explain their local context and how it related to general "best practices" for visioning. Notes taken during these conversations were later fed into the initial visioning plan. This was a chance to clarify the degree of flexibility each partner had to adapt the project's requirements and guidelines, encourage new ideas and discoveries, and identify issues for further discussion. It was also a chance to get to know each other and build rapport. Following the workshop, local partners finalised their plans and implemented community visioning with the support of their consortium partner.

3.3. Data sources and analysis

We collected data through participant observation of the workshop in the form of meeting notes and fieldnotes (approximately 12 pages), transcribed audio recordings from the one-on-one sessions (approximately 5.5 h total) and a group session (approximately 45 min), workshop outputs (photos of charts, written comments on the community visioning guide), and team reflections (approximately 2 pages). Local partners completed monthly surveys to provide updates on their progress after the training, accompanied by online meetings; the first three sets of surveys (75 pages) and meeting notes (22 pages) were also analysed (see Supplementary Material: Data Sources).

We applied a thematic analysis [77] to our data, drawing on a grounded theory approach. One member of the research team performed the primary analysis. They first familiarised themselves with the data, generating broad, descriptive codes. From these and the foundational principles, they constructed themes and reviewed these in relation to the data to name, define, refine, and expand the themes. Major codes and subcodes were organised as a code tree (see Supplementary Material: Coding Structure) and the data was recoded. These included: 1) co-creation and collaboration, which included topics like partners' roles, starting points, local adaptation of guidelines, and relationship building; 2) successes, including aligning expectations, contributions made to the project, learning, or new ideas generated; 3) challenges, including tensions, logistical issues, and the level of interaction; and 4) responses or reactions, including "eye-openers" and post-workshop reflections. All coded data was organised by theme and code in a spreadsheet. The researcher analysed this, developing overall summaries for each code and identifying patterns and outliers. The resulting codebook included themes and subthemes, along with definitions and summaries of the findings for each. The other three members of the research team conducted quality checks following this.

4. Findings

The specific design process that partners undertake [60] influences to what extent community visioning programmes are locally-specific, inclusive, and participatory [36,39,50]; build the community's capacity and sense of ownership to address energy issues [5]; and produce visions of energy futures that both reflect the community and provide robust alternatives to the status quo [6,29]. Giving community-based partners a meaningful role in design attempts to ensure that the social aspects of the transition do not get left behind as technology progresses. Although our workshop attendees were energy experts rather than community members without formal energy expertise, their different backgrounds and relationships to local communities offered diverse perspectives on how to shape community visioning and make it more feasible to discuss energy with diverse groups [9]. In the following analysis, we detail how co-creation proceeded, focusing on our attempts to form inclusive partnerships, support mutual learning, and build relationships. Our findings show that in many ways, our workshop succeeded at meeting our expectations, but also point to the challenges in doing so.

4.1. Inclusion: Aligning expectations across different forms of expertise

Inclusivity is concerned with the process of forming collaborative, equitable partnerships [39]. To build such partnerships, consortium partners sought to structure the training in a way that gave local partners adequate information to feel confident about the project, but also established their ownership over the community visioning programmes they would undertake in their locations (see Section 4.2) [41,50].

A key strategy to include local partners was the alignment of expectations. We expected that through aligning partners on the foundational principles guiding all four community visioning programmes and on the goals of the overall experiment, we would achieve a common basis from which locally adapted visioning programmes could be developed.

We began co-creation by proposing a set of foundational principles for discussion (Table 1). These were perceived to reflect everyone's values: one local partner said, "*I'm very much aligned with your ideas and concepts, and I will go with that*" (Training workshop - Foundational principles session transcript). Local partners identified where principles could be further aligned, such as the values underlying certain futuring techniques:

> *...I think there's often an assumption that a workshop is heavily discursive... And there's good reason to think sometimes that's very patriarchal or paternalistic. And things that are coming out [from the other local partners] is that we're looking to subvert or do away with that patriarchalism in this engagement. That's why I think it might be good to... encourage the fact that in welcoming input, it needn't be around that structure, and that's why I thought [another local partner's idea to use creative methods] was really interesting as ways to foster and nourish that engagement from whatever group is in the workshop...* (Training workshop - Foundational principles session transcript)

In the one-on-one sessions, partners talked through how these principles could apply to each context. One pair, for example, agreed that the visioning workshops could focus on topics other than energy to ensure the project would be well-received by the community and contribute to structural change:

- Consortium partner: *... I think the whole thing, the bigger picture than energy, that can be quite useful...*
- Local partner: *Yeah. That's the linchpin, I think. Because I doubt they care... about their emissions whatsoever. But it's what that can do for them, it's [a] very instrumental way of treating energy. Which is fine. You know, you can't expect people to care about emissions or decarbonisation or anything like that. But once you let them know that, look, this can lead to some interesting things in terms of your social betterment...* (Pair 3 transcript)

Consortium partners reflected that expectations alignment was one of the workshop's most important outcomes: *"We accomplished a lot: [we] achieved a shared understanding of the goals of the experiment..."* (Team reflections). However, attempts to solicit local partners' input did not always garner a response (Team reflections). Although local partners spoke extensively about their locations and communities, they provided minimal feedback to the foundational principles, indicating that it may have been difficult to connect abstract principles and practices to action:

> *I went through [the guide]... thinking, yeah, that makes sense. That applies. That's okay. But... I already mentioned the local context and power, and all of this is always at the back of my head... So, at the outset, yeah, everything looks fine. Implementing it and turning it into a local initiative is the challenge, but this is why we are here...* (Pair 1 transcript)

A key reason for this could be the project's structure, which local partners were not able to influence from the outset. For example, consortium partners prepared draft materials for review rather than drafting these materials in cooperation with the local partners, reducing the scope of co-creation. A consortium partner reflected: "*Co-creation in this case was set up as[:] the [consortium] partners created something and the local partners were supposed to comment on it in any way they wanted. This is perhaps what led to limited engagement*" (Consortium partner 4 fieldnotes). However, could be other possible reasons, such as partners' level of comfort speaking in a group, expectations of project roles, internalised understandings of power relations, familiarity with the concepts and methods, balancing of other work commitments, or level of preparation. In addition, some local partners attended the workshop but had not written the project application or were not responsible for the project; they may have known less about their organisations' plans, affecting the depth of the contributions to the fundamental goals guiding the experiments (Consortium partner 4 fieldnotes, Team reflections).

4.2. Shared benefits: Fostering mutual learning and ownership

Mutual learning refers to changes in knowledge, beliefs, opinions, values, and plans that are experienced by all participants [43]. It is one outcome of successful co-production [43] and visioning, particularly important for energy transition planning with communities [5,30]. We expected all participants would advance their knowledge about energy, but also arrive at new ideas about how to do visioning with communities, specifically on the difficult topic of energy, and how it could be implemented to meaningfully and positively impact people in specific locations [37]. Ownership here refers to a belief that the project belongs to oneself, crucial for successful, lasting work with communities [45]. Local partners are already connected to or embedded in place-based communities and will continue their work once the project is over. We expected that adapting the project to local contexts would help consortium partners, who designed the overall experiment, transfer ownership to local partners, who would implement their own version of it. This approach is intended to ground the research in the community and facilitate its ongoing practical impact once the project ends [48].

4.2.1. Learning: Development through discussion

All partners shared what they hoped to learn at the beginning of the workshop and reflections on what they learned at the end. Hopes converged around wanting to know more about engagement and facilitation for lasting impact (e.g. "*How to ensure genuine inclusive participation in the experiment*"; "*Bridging the gap between a local area energy plan and its concrete implementation*"; "*How best to capture and facilitate input from reluctant demographi[c]s/stakeholders?*"). Consortium partners hoped to uncover local knowledge, be responsive to local partners, and become invested in bringing about experiments' local benefits (Workshop notes).

Local partners learned about the project, but also about how to consider their local energy transition differently based on the method of community visioning, the ideas behind the project, and the situations of other local partners. Their final reflections showed they learned more about the importance of relationship building and being mindful of power relations with visioning participants, recognised the need for careful consideration of self-presentation and choice of workshop location, and considered how the order of workshops could indicate implicit values about which participant group is prioritised. Local partners also learned from each other: one commented that because of another local partner's concern for gender relations in their community, they had started to think about challenging male-dominated decision-making spaces in their own (Workshop notes). Consortium partners' learning mostly took the form of new knowledge about energy transition in specific local contexts (Section 4.2.2).

Questions raised were not always easily resolved. Partners left the training still considering ways to create environments for safe, open participation, how talking about the future can be difficult, and creative visioning formats. Debates around complex topics emerged, such as different understandings of "community":

> *I mean, who decides? So, what kind of workshop am I gonna facilitate in this… community if they… feel like, "Oh, this is not the community we belong to"?… So, my thinking is, [should we say]… this is like an abstract level of the notion of energy community and let the people decide what is [their] community? I mean, what [the] local level constitutes and makes up a community for [them]. Is it just your neighbours? Is it a region?* (Training workshop - Foundational principles session transcript)

Everyone agreed there was no single answer to this question. Other significant unresolved challenges were how to work visioning into long-term plans and managing participants' expectations regarding what community visioning can realistically deliver (Workshop notes).

4.2.2. Local adaptation and ownership

Local partners came to the workshop with different concerns about energy; in one location, the "*debate focused on [introducing] electromobility and other technology*", whereas in another, energy was "*mainly a matter of social acceptance/income*" (Workshop notes). Although we intended for the principles and general guidelines to apply to all experiments, we also wanted local partners to have the flexibility to implement a programme they thought would meet the needs of their community and their energy-related goals. Through the process of adapting community visioning guidelines to each location, local partners began to understand that the programme they would carry out belonged to them and they could meaningfully influence its trajectory in accordance with their energy and community contexts.

In one-on-one meetings that paired a consortium and local partner, this adaptation often took the form of collaborative learning. Partners built upon each other's ideas about how community visioning could work in a location, such as in the following exchange about the kinds of activities they could incorporate:

- Consortium partner: *Do you think you need to… be prepared for some kind of community anger as well?*
- Local partner: *Yeah, I think so… But it can be constructive anger…*
- Consortium partner: *… I think that kind of goes into… this idea, about there not being a right answer… [A]t the end of the day, they're the people living there, aren't they? They're the experts about all this injustice, aren't they?*
- Local partner: *Yeah. So, you've just got to be prepared to absorb that. I think if you're coming from a space of genuine empathy, then the anger is not an issue… [T]hat's an interesting approach, is just to connect shared history and understanding… Narratives basically, it's just introducing a narrative element to this sort of thing. Oral history, like you say…*
- Consortium partner: *… I wonder if that's something to do… maybe informally asking people about their life story and saying, look, we want to capture this… And we want to… think about that past potentially informing the future and… how we value the past stories to understand the context.*
- Local partner: *Yeah, that will go down enormously well, I think.* (Pair 3 transcript)

A different set of partners discussed ways to recruit older participants:

- Local partner: *We work with young people, it is easy to include them. It may be more complicated to find older people, but it's possible.*
- Consortium partner: *Maybe young people have older people in their family, and they can come together.*
- Local partner: *Yes, it's possible.* (Pair 4 transcript, translated)

A third local partner wanted to conduct all workshops with women from their community, which departed from our original proposal for gender diversity: "*There will be gender inequality*," they said (Consortium partner 4 fieldnotes). After some discussion, this local partner adapted the proposed experiment design to *"one classical workshop with decision makers and business representatives and two with citizens using innovative techniques*", such as storytelling, improvisation, and design thinking (Workshop notes).

4.2.3. Learning and adaptation challenges: The bounds of engagement and flexibility

The most critical question that arose was how much flexibility local partners had to design a project that met local needs, even if it did not meet project requirements or core aspects of community visioning (Team reflections). This tested the concept of ownership. For example, the experiment's open call for local partners required visioning to include intergenerational dialogue and learning, but at the training local partners expressed that it would be challenging to attract older and younger populations (Pair 1 transcript, Pair 3 transcript, Pair 4 transcript). Pair 1 brainstormed ways to include youth, highlighting tensions between "the programme" and "making it local":

- Local partner: *… I understand why the youth is important. I agree. It's just a little tricky to implement… [M]aybe we could lower the age to… 13 years or 14 years, but I don't know if that would match… with your programme. If we talk to youngsters and teenagers, I mean, because they don't really have much to say. They ride a bike and they have an iPhone and an iPad.*
- Consortium partner: *Would they really be interested, and be relevant, actually.*
- Local partner: *Yeah, exactly. So, this is some of the only issues I have with this. I mean, we're making it local, specific, but…*
- Consortium partner: *… I think it's a challenge anyway, but maybe it's even bigger in your region because of the specificity.*
- Local partner: *But… there are ways to go about it and actually make it a success, because they had a concept that I went to a couple of years ago… to get the youth who had moved away for studies… to come back and share their knowledge and longing for their home community… And it actually became quite a success… Maybe we could actually… say… come back home to your… community and then do something good with your knowledge, what you have learned in [the capital city]… It might just work.* (Pair 1 transcript)

It was clear that legalistic aspects like the participant age minimum of 18 years or informed consent for workshop participants were not negotiable, whereas workshop themes or how far into the future the visioning looked were flexible (Pair 3 transcript, Workshop notes). Whereas using diverse methods (oral history, storytelling) within the visioning process was met with excitement (Pair 3 transcript, Workshop notes), there was more uncertainty around the local partner's proposal to invite only women as participants (Pair 4 transcript).

Tensions arising from local adaptation continued after the workshop. One pair had to adjust the experiment plan when the local partner requested the integration of a new organisation into the partnership and changed their goals to align with other EU-level opportunities (Monthly survey 1.3, Monthly meeting notes 1.3). In another, a new individual became responsible for the project and questioned the experiment's method of separating stakeholder groups in different workshops rather than mixing them (Monthly survey 3.3, Monthly meeting notes 3.3).

Keeping the principles of experimentation and flexibility in mind, consortium partners tried to ensure co-creation continued to be a collaborative and ultimately effective planning process for the local partners, despite its inherent challenges. One consortium partner reflected: "*[W]e shouldn't really forget that this is an experiment… [I]t's useful to bear in mind some of those goals that aren't necessarily about producing something. It is about the connections, the networks, it is about that aspect of giving people a voice*" (Pair 3 transcript). Following the workshop, consortium partners agreed to take a flexible, reflexive, and balanced approach to supporting local partners if their plans strayed from the guidelines (Team reflections).

4.3. Building relationships: Committing to an emotional, relational, contested, and time-consuming journey

Energy transition is shaped by society and culture [15,16] and relationships affect how the future is viewed and made [61]. The relationships built during the design of visioning are thus consequential. To foster relationship building, which refers to creating "bonds through personal interaction" [67], the workshop agenda included introductions, substantial time for discussion and reflection, the chance to work intensively with a partner, and a group dinner. We expected relationships between partners would encourage a trusting but discursive environment focused on people – a focus intended to be carried through in the visioning process (Table 1). Much of this depends on the specific individuals involved and their backgrounds – previous experience, personal philosophies, and knowledge of the task at hand [55,67,68].

4.3.1. Relational moments

Throughout the workshop, partners naturally built relationships through their interactions. This is nevertheless significant because it reinforced the value of people and society in the visioning and in energy transition, and also because it can have an impact on the subsequent planning and implementation of visioning. Consortium partners identified relationship building as one of the workshop's successes: "*We had a great positive atmosphere with a lot of engagement and excellent relationship building. It was great to meet people and start to work with them, especially in our one-on-one sessions where local partners and [consortium] partners were matched up…*" (Team reflections). Moments of mutual understanding or personal sharing contributed to an open environment for exchange and generating new ideas. One pair shared personal stories and details, such as the following anecdote about the local partner's previous work:

> *I mean, you never know, I did… an [electric vehicle] charging workshop once and it was just a lot of very loud, angry men, and it was very unpleasant… Luckily, I didn't have to facilitate, it was a team from [a university]. But I had to work really hard to keep that on track. It was brutal, I think, is that the right way to describe it? It would be good to avoid that [in this experiment].* (Pair 3 transcript)

They also exchanged opinions on how the conversation was going so far, which built rapport:

- Consortium partner: *Sure… Obviously, tell me if we're going through this not quickly enough, or if you feel like we're repeating too much… I've found it personally very useful, but it needs to be useful for both of us…*
- Local partner: *No. I'm happy, this pace is good, because it's like a dialogue that helps to refine my own thinking. So, I say, no, it's all good for me, as long as I'm not tremendously boring.*
- Consortium partner: *No! Oh, do you know, I love this. I think I'm at a stage in my career where… I don't get to do the research myself… I'm honestly just beside myself… I'm doing it! I'm not delegating, you know, it's excellent.* (Pair 3 transcript)

Sidebars on non sequitur topics, searching for photos of the local partner's location, and comments on the misbehaviour of a computer also functioned to enhance rapport (Pair 3 transcript).

4.3.2. Relationship dynamics

Unavoidable local partner staff changes had implications for the effectiveness of this relationship building, however. Two months after the training, only one local partner attendee still had primary responsibility for their experiment. We reflected: "*We are not sure how this will affect our future partnership with them and planning. Co-creation at the meeting might not have been that effective for this… reason…*" (Team reflections). Much of the relationship building and expectations alignment had to start over with new individuals, yet this time online, on a monthly and as-needed basis. The new individuals planned their programme without the support structure of the workshop (Pair 2 Guide). Based on the high level of detail in their plans, this may not have meaningfully impacted whether they could complete the planning but may have affected alignment on expectations and principles, incorporation of learning from other partners, and the level of trust they had in their consortium partner.

Participants who attended the workshop knowing someone else would take over after may not have had much information about the project or their organisations' proposals, or they may not have been able to take part in discussions due to lack of decision-making responsibilities. There was also no guarantee that the information participants obtained would be transferred to their colleagues. Consortium partners attempted to contact one attendee and the new colleague replacing them for several weeks in order to obtain workshop notes when audio recordings failed, for example (Workshop notes, Team reflections).

4.3.3. Building bridges through language

Language challenges meaningfully affected co-creation in one case where a local partner did not have sufficient English language proficiency to fully participate in the workshop. English proficiency was a project requirement intended to facilitate cross-country collaboration, but indeed privileges those who speak English as their first language in various ways. The local partner mitigated this by translating preparatory documents in advance, bringing printed copies, and preparing statements and comments in English beforehand. Nevertheless, they could not participate fully and freely in group conversations, potentially reducing exchange, affecting learning, and increasing their discomfort or stress (Workshop notes, Consortium partner 4 fieldnotes). Because their assigned consortium partner had some level of proficiency in the local partner's language, the one-on-one conversation switched between two languages and involved constant translation:

- Local partner: [in English:] *It's difficult.* [switches to first language:] *I don't know how to say it in English.* [translated]
- Consortium partner: [in local partner's first language:] *You don't have to. You can do it in [your language].* [translated] (Pair 4 transcript)

Both requested clarifications, interpreted and reinterpreted, misunderstood each other, and helped each other express themselves. This affected the speed of the conversation, and some ideas may have been lost or changed, but language itself became a relationship-building factor. As the two partners tried to accommodate each other, they were able to help each other, as well as discuss and laugh at the difficulties of language (Pair 4 transcript, Consortium partner 4 fieldnotes).

5. Discussion: Reflections on the practice of co-creation

Our attempt to centre communities in the co-creative design of community visioning for energy transitions was successful in several ways, supporting much of the literature referenced. Our workshop brought local partners into the project, opened space for sharing ideas, and gave them ownership over designing community visioning programmes. Establishing shared principles and guidelines proved an effective way to reach a shared understanding about the project's goals and integrate local partners [71]. Our design process uncovered local partners' context-based, situated and experiential knowledge [37,39]. This allowed for community visioning to become more aligned with local partners' needs, and to some extent their communities' needs [38–41].

However, the messy, human nature of co-creation required partners to be flexible, engage in ongoing dialogue, and remain open to change. Inclusivity was fostered through activities structured around expectations alignment, but it was challenging to engage all local partners equally actively in these processes. Discussion emerged over values and priorities [37,48,51], but at the same time, there was limited contestation over the foundational principles and guidelines for visioning. Transferring ownership to partners allowed local and situated knowledges to drive the design of visioning, but an ever-present tension between flexibility and experimentation on the one hand and methodological constraints and project requirements on the other may affect the local specificity of activities [42,43]. We considered the complex problem of how to talk about energy [9]; although the workshop generated some ideas about this, we still left with significant questions about the best methods for doing so. Deep, in-person conversation helped build relationships – but staff changes may have interrupted these benefits. Such challenges are intimately linked to people and society – they are part of the energy transition and must be considered in research and practice.

Our design process was not able to fully achieve some of the goals we have for the visioning itself – notably, creating space for unheard voices to be heard and including non-experts [40]. Co-creation with local partners and/or communities from the beginning of the experiment design was not possible. For this reason, we adopted a layered co-creation process and allowed for visioning to be flexible rather than a single programme copied and pasted in different locations. The design workshop itself was structured – it did not start from an open question of local partners' needs and how to meet them but proffered a tool to interested parties. Thus, although this method offers one way of making community-centred co-creation feasible in a large, multi-country project, it is not clear how "centred" any given community is. One of the risks inherent in this is that the project may not meet the needs of local partners or their communities, but also that local partners may implement the project in a way that diverges from even the most flexible of guidelines, jeopardising the research results and their compatibility in a strict sense. We believe it is therein, however, that the experiment lies, and take such divergent outcomes as important findings, in line with work that understands problems or failures as the seeds of new ideas or change [5,69,70].

Furthermore, despite a degree of diversity among the partners (professional background, country of work, gender), all workshop attendees were both knowledgeable about and invested in energy transition and interested in applying visioning to reveal and foster energy visions. Local partners were representatives of their locations in some ways, but not representatives of their entire community in many other important ways. For example, their organisations are all established and financially secure enough to apply for and receive EU funding, indicating that there is a high level of professionalisation and a certain skill set associated with their work. Thus, there may be limits to the extent to which their input captures the realities of local communities in the design process.

The choices that the authors of this paper made in their roles as researchers also mattered. The structure and format we facilitated opened space for collaborative design and learning [48]. With our commitment to making the experiment useful for local partners, we shaped experiment priorities towards energy and community needs as they defined them. Nevertheless, had we made different choices in structuring and facilitating the workshop, these may have led to different experiences. Merely having researchers in the room has the potential to affect behaviour, as local partners were aware that we were collecting data from the workshop. Our presence as simultaneous researchers and project leaders was also not always clear to the local partners. As some of the above quotations show, energy experts familiar with EU-funded projects may not expect to be asked to give input to the foundations of a project. Furthermore, following the workshop, they tended to assume our main interests were deliverables and financing rather than following the detailed trajectory of an uncertain process.

Finally, this paper cannot speak to the impact of the design process on the subsequent visioning and energy activities (our fourth goal regarding improvements to socio-energy systems), which will be the topic of forthcoming papers. However, co-creation did not stop after this workshop. Partners participated in regular meetings, which offered ongoing support throughout the experiment and ensured the lessons and questions raised during the workshop were addressed and/or incorporated in the final community visioning design and implementation.

6. Conclusion

In this paper, we have tried to capture our co-creative process and some of the ways in which one important stage, an in-person training workshop, met or challenged our expectations about inclusion, relationship building, and mutual learning. In prioritising the design process, this paper presents a substantial contribution to this emerging field, pointing out that to better understand how to talk about energy, we need to engage with a range of social factors. Co-creation may not be a perfect tool, but it can support further transformational changes in energy systems and community-driven local energy transitions. The experiences presented in this paper demonstrate the importance of committing to co-creation in the design phase of visioning, but also show that we need to know more about methods for doing this – particularly given that we are never designing such projects under perfect conditions. Future projects should consider new and experimental ways to actively engage local partners in setting shared expectations, grapple with the bounds of flexibility, and build relationships in diverse and changing environments. There are also opportunities for further studies on co-creative research processes themselves, to enhance our understanding of the impacts of collaborative modes of work.

We have highlighted the need for alternative visions that reflect local actors and realities to make energy transition in Europe more participatory. But these visions must be able to influence the European Green Deal's energy imaginary in order for communities to have a voice in transition, as well as to help bring about the futures communities desire. This paper has also shown that involving communities in visioning is a complex, involved, and human process. In seeking to achieve the goal of a just, green energy transition, therefore, actors must take the time to co-create: to deal with context, unclear and uncertain situations, and interpersonal interactions. To provide these robust energy transition alternatives that can shape the European Green Deal, we must approach these messy, human factors as a central part of our work rather than something to be abstracted away from.

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CRediT authorship contribution statement

Emily K. Gray: Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Frances Fahy:** Writing – review & editing, Supervision, Methodology,

Investigation, Funding acquisition, Conceptualization. **Rachel McArdle:** Writing – review & editing, Supervision, Methodology. **Melanie Rohse:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Conceptualization.

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Data availability

The data that has been used is confidential.

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