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How to? Co-productionist relational engagement in European Union energy projects

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ABSTRACT

Public engagement is key in sustainable energy transitions. Engagement with energy often takes place in European Union energy projects, which is repeatedly criticized for not living to its potential to grapple with social issues. Work on co-productionist relational engagement by Science and Technology Studies (STS) can help to overcome this critique with a more reflexive perspective. In this paper we explore how relational engagement can be brought into practice in the contexts of EU energy projects. We underline the need to consider contexts of engagement when aiming to operationalise relational engagement. We make a novel connection between STS engagement literature and project management literature, and combine this with empirical insights from EU H2020 energy projects. We identify three components for enacting relational engagement in EU energy projects. First, *practicing*, entails reflecting and responding upon the way engagement evolves. Second, *enabling*, means that projects should enable relational reflections and responses with flexibility for engagement. Third, engagement in the flexible spaces needs to be *steered* through indicators and engagement practitioners' skills. This shows that relational reflections and responses are bounded by the EU energy project contexts through levels of flexibility, indicators and skills. Nevertheless, we see opportunities to work with and within the boundaries to bring relational engagement into practice. We emphasize that rather than understanding relational engagement in practice as an all-or-nothing issue, opportunities for practicing relational engagement can be embraced to foster relational engagement that reflexively opens up more diversified engagement to addresses societal challenges for inclusive energy transitions.

1. Introduction

Public engagement is seen as a key element in achieving goals in the transition towards a more sustainable energy system [1,2]. This transition requires the increase of renewable energy usage and the transformation of the whole energy system [3]. Engaging publics in the energy transition is important, because on the one hand publics are impacted by the transition, and on the other hand efforts by publics are desired to enact the transition [4].

Public engagement with energy often takes place in EU energy projects [2,5,6]. The format of projects in energy transitions is part of a wider trend in the public sector, in which projects are increasingly used to enact public policies [7,8]. A substantive EU programme emphasizing the importance of active consumer participation in the energy transition is the EUs' Horizon 2020 (H2020) programme, with a funding of 5.9 billion euros on projects for 'secure, clean and efficient energy' between 2014 and 2020 [5,9,10]. This is succeeded by the EUs' Horizon Europe

programme [11], which continues funding for EU energy projects that work on public engagement with 15.1 billion euros [6] for 'climate, energy and mobility' projects in 2021-2027 [11]. Public engagement has been part of EU energy projects in the past, and will continue to be in the future.

Public engagement in EU energy projects has been repeatedly criticized for missing opportunities to grapple with social issues by being too instrumentally motivated [1,12–14]. A valuable perspective on engagement that can help overcoming this critique, is the co-productionist relational perspective on engagement as developed by Science and Technology Studies (STS). This co-productionist relational perspective offers a more reflexive, diverse and dynamic understanding of engagement that helps attending to the social issues and processes underlying engagement [15,16].

In this paper we investigate how this STS co-productionist relational engagement perspective can be brought into practice in EU energy projects, to help overcoming the critique on engagement in EU energy

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projects. We draw upon STS work on co-productionist relational engagement, which has been focussed on analytical and conceptual development of the perspective. A starting position for bringing this perspective into practice is offered by Chilvers and Kearnes [15] with four pathways for remaking participation in science and democracy in a co-productionist relational manner. We build upon this work by investigating how these insights can be brought into practice in the contexts of EU energy projects.

In our analysis we underline the need to consider the contexts of engagement, as also put forward by STS relational engagement literature. The contexts of engagement are understood to shape the way engagement is practiced, whilst at the same time contexts can be impacted by engagement practices [17]. For example, existing work uses co-productionist relational engagement as analytical lens to show how contexts stabilize certain forms of engagement in the case of a Community of Practice on citizen engagement and deliberative democracy at the European Commission's Joint Research Centre [18]. This research underlines the importance of understanding contexts of engagement, but does not indicate how contexts can shape engagement to be practiced in a co-productionist relational manner. Therefore we investigate how co-productionist relational engagement can be brought into practice with special focus on the way contexts need to put this operationalisation forward, and ask: *how can co-productionist relational engagement be brought into practice in the contexts of EU energy projects?*

To this end, we draw upon three sources. First, STS work on co-productionist relational engagement contributes to our understanding on how engagement can be practiced in a more nuanced and dynamic way, and how contexts of engagement have been theorized. Second, we make a helpful novel connection with project management literature. This offers us deeper insights on how projects are organised, which informs on how projects can enact engagement activities from a project management perspective. Last, we empirically analyse engagement in European Horizon 2020 (H2020) energy projects that aim to test and develop certain energy technologies [19]. As these projects are not explicitly practicing co-productionist relational engagement, our empirical analysis shows how engagement is currently unfolding in EU energy projects to explore the potential of enacting co-productionist relational engagement in existing EU energy projects.

The article continues with the theoretical background of our research in Section 2. Next, in Section 3, the methodology of the research is explained. In Section 4, we synthesize theory with our empirical findings to present three components that need to be in place to enact relational engagement in EU energy projects: the *practicing*, *enabling* and *steering* components. Last, Section 5 concludes and discusses the implications of the research.

2. Theoretical background

In this section we first provide a background of the co-productionist relational engagement perspective that we take in this research. Based on this we explore insights in relational engagement literature that offers our starting point for bringing the perspective into practice. Lastly, we turn to the body of literature on project management to understand how activities in projects are shaped, especially with flexibility and structure, which will be shown to be key elements in our analysis.

2.1. The STS co-productionist relational perspective

In this study we take a co-productionist relational perspective on engagement as put forward by some scholars in the field of STS. Public participation with science and technology is a key notion in the field of STS [20], e.g. [21,22], also in the intersection with energy social science [23]. The work of STS on participation is focused on the ways in which society is shaping, and being shaped by scientific knowledge and technological artifacts [23]. Because the energy transition consists of

interacting social and technical transitions [4], STS research on relational engagement provides an insightful perspective for understanding the social complexities of public participation in EU energy projects. This deeper, more nuanced, and contextualised relational perspective builds upon critical STS thinking, and became a common critical approach by STS scholars working on public participation [15,17,23].

We understand the STS co-productionist relational perspective as focussed on the relations in socio-material collectives of engagement. We understand engagement to be co-produced, meaning that participants (subjects: who?), topics of engagement (objects: what?), and engagement practices (forms: how?) are shaping each other, whilst interacting with wider extant orders [15,16]. This understanding highlights that engagement is not static, but instead emerging and evolving over time. The perspective also emphasizes the relevance of attending to the diversities of engagement practices, as engagement is understood to emerge and evolve in a diversity of ways. Moreover, the perspective points out that engagement practices cannot be seen separately from the wider extant orders and need to be understood in their contexts [15,16]. Relational perspectives enable to address the assumptions and processes that underly engagement practices, and attend to their contexts. In these ways, the relational perspective offers a more sensitive, contextualised, and nuanced understanding of engagement, which we will follow in our research.

STS scholars distinguish the relational perspective that they develop, from what they call the residual realist perspective [15,17]. Residual realist views on public participation favour pragmatic, outcome-oriented, and standardized guiding in how to practice engagement. The residual realist perspective is identified by STS scholars to be the most established perspective in research and practice [15,17]. Scholars working with a residual realist perspective tend to focus on the development and evaluation of engagement methods e.g. [24], the identification of successes and failures in public participation e.g. [1], and the identification and categorisation of publics and engagement methods, aiming to determine this as pre-given categories e.g. [25]. At the same time, those views are criticized for approaching engagement as static, pre-given and decontextualized and for understanding engagement as discrete, isolated events that can be bolted on, separated from, or instrumentally fitted into science and democracy [15,17].

This critique of STS scholars on residual realist approaches to engagement, resonates with the often-heard critique of engagement in EU energy projects being too instrumentally focussed [1,12–14]. An instrumental rationale for engagement is centred on securing and improving outcomes of existing policy goals with the help of participation [1,27]. The instrumental focus of engagement in EU energy projects is problematised as it can reproduce existing power relations and limit the impact participants can have on the project outcomes [1,12–14], and thereby misses the opportunity to address social issues and processes to enable more responsible and just energy transitions.

2.2. Applying the STS co-productionist relational perspective in practice

To understand how relational engagement can be implemented in practice in EU energy projects, we draw especially upon the framework for remaking participation in science and democracy by Chilvers and Kearnes [15]. This framework sets out four interrelated pathways that articulate what relational engagement can mean for practice. First, relational engagement practices should be *reflexive*, encompassing critical reflections on framing effects and the constructions of participation practices. Second, relational engagement practices should be *ecologized*, meaning that the diversities and interrelations of participation practices should be recognized and attended to. Third, the framework calls for *responsible participation*, which entails more careful anticipation of future implications of participation. Fourth, the framework points to the need for *responsive participation*, meaning to respond to the systemic stabilities and distributed agencies of participation [15]. In this paper we focus especially on the first pathway, as this is a key pathway for engagement

practices at project level. This focus helps us to explore more specific implications of the directions set out in this peculiar pathway.

In our application of co-productionist relational engagement in EU energy projects we explicitly attend to the context of engagement, as context is an important aspect in STS co-productionist relational engagement perspective. STS scholars theorize contexts of engagement as ‘*wider extant orders*’ of engagement. Wider extant orders shape and are being shaped by engagement practices [15,16,28]. These wider extant orders are understood as systemic constitutional stabilities that form the wider social, political and technoscientific orders, like energy policies, regulations, and explicit and implicit standards [15,16,28]. The wider extant orders impact how certain forms of participation with energy become more prominent, normalised, and legitimate than other forms [15,16,28]. We expand these insights by identifying how EU energy project contexts can operationalise relational engagement in practice.

2.3. Project management: shaping activities

To gain theoretical insights on the contexts of EU energy projects, we draw upon project management research. In the broad field of project management research, scholars in the ‘behavioural’ school focus on the organisational processes that shape the activities that a project undertakes [29]. This offers insights on the ways in which projects manage, and thereby shape, engagement activities. The key elements of projects as identified in the behavioural school are originally identified with firms as reference points, but can be considered applicable to other project contexts [7,30], including public project organisations [7]. This implies that these understandings can also be valuable for EU energy projects, which are public project organisations.

Behavioural project management scholars understand projects as an organisational form that brings a project team together to fulfil a specific task within a specified timeframe, after which the project is disbanded [30]. Projects are distinguished from permanent organisations, as permanent organisations focus on long-term goals, aim for the long-term survival of the initiative, have more continuous employees, and strive for continuous development rather than transition. This leads to different management approaches between projects and permanent organisations [30]. This points to the need to understand the implications of the specific organisational format of projects.

The characteristics of projects lead to organisational management approaches that steer the activities in the project so that the activities fulfil the project task within time and budget. To fulfil the project task, projects tend to manage their activities in a structured manner, by predefining at the start of the project the activities, the planning, the budget, and the indicators to measure the progress towards the fulfilment of the project task [30,31]. The project task is understood to aim for transition: the task will create a difference between the before and after of the project [30].

This traditional project management can be criticized for offering limited opportunities that can accommodate change that lies outside the predefined plan. At the same time, traditional structured project management can be valued for offering a clear plan for the full project, which includes an overview of requirements and resources. All in all, managing projects in a more traditional, rigid, formalized, and structured manner is often seen as a trustworthy and secure way of steering the project in a way that the promised project outcomes are achieved [32]. This means that more structured project management can be valuable when aiming to steer that engagement is practiced in a specific manner, which will be relevant in our investigation later on how relational engagement can be enacted in EU energy projects.

The tendency of project managements to work with predefined project plans does not mean that the project is always executed as planned. Although projects often do not prepare for flexibility, they frequently use flexibility to respond to the uncertain environment [33]. Recently, scholars have been investigating agile project management, which offers a more flexible and iterative alternative for the traditionally

more rigid project management approaches. An agile project approach enables responses to continuously changing environments, public values, and needs [32,34,35]. In practice this entails more adaptable procedures and less requirements, thereby relying more on the skills of team members to leverage the flexibility to steer the project bottom-up [32,34].

Flexible project management can also be criticized, as its means that planning, resources, and interdependencies cannot be prepared beforehand, and project outcomes can only be broadly promised. But, more flexible project management can enable opportunities for learning by doing, and creating space for change between iterations when that would lead to the most valuable project outcome [32]. This indicates that more flexible project management approaches are a pertinent way to address unpredictable needs for engagement during projects, which will be key in our analysis later on how dynamic relational engagement practices can be enabled in EU energy projects.

When defining a project management approach for a project, the distinction between traditionally structured project management and flexible project management does not need to be understood as a dichotomy. Rather, depending on the project and its contexts, the most suitable balance between structure and flexibility can be configured, allowing to combine the best of both [34]. This means that project contexts can enact activities in the project, including engagement activities, in a variety of ways.

3. Methodology

We theoretically explore relational engagement in practice with relational engagement literature and project management literature, and combine this with our empirical insights from EU Horizon 2020 (H2020) energy projects. Based on our iterative analysis, we synthesised those sources into our exploration on how reflections and responsiveness for co-productionist relational engagement can be enacted in EU energy projects.

3.1. Literature: co-productionist relational engagement and project management

The analysis includes insights from both relational engagement literature and project management literature, based on a narrative literature review. This enabled us to iteratively search and interpret literature that helped us understand our research problem [36]. Insights from literature were starting points for the empirical analysis. Later in the research process, literature was searched that could put new empirical findings in a theoretical perspective, to strengthen our understanding.

The review of engagement literature is focussed on STS literature on the co-productionist relational engagement perspective. This literature included in the analysis provides insights in the conceptualisation of relational engagement, or provides directions for applying the perspective into practice. Furthermore, we reviewed project management literature to understand how project contexts can shape engagement activities, which complemented especially our empirical findings on flexibility.

3.2. Empirics: EU H2020 energy projects

3.2.1. Characteristics of the project sample

The empirical understanding is based on the analysis of 11 H2020 EU energy projects. The selected projects were funded under the H2020 work programme ‘*secure, clean and efficient energy*’. The projects responded to the call for project proposals named ‘*Call - building a low-carbon, climate resilient future: secure, clean and efficient energy [H2020-LC-SC3-2018-2019-2020]*’. This call puts specific emphasis on the role of public engagement in the energy transition [5].

The selected projects and their engagement processes were

comparable because the selected projects are all ‘Innovation Action’ projects that aim to develop and improve energy products, processes, or services [19]. The interviewed projects aim to test specific energy technologies in practice, for which each project organises public engagement in one to five ‘pilot’ or ‘demo’ sites per project. The energy technologies developed in the projects need to be at a high technology readiness level at the start of the projects. An overview of the projects’ energy technology focus is presented in Table 1, based on how the projects describe themselves on the European Commission website. The interviewed projects consist of 11 up to 20 consortium partners located across Europe. The projects are funded to be completed in three to four years [37]. The sample provides insights from across Europe, as the interviewed projects cover together 17 EU countries.

3.2.2. Data collection and analysis

Interviews were conducted with 14 practitioners who worked in the sample of 11 H2020 projects at the time of the interviews in 2021. The interviews were in-depth, and semi-structured by an iteratively updated topic guide. Topics that were asked for in the interviews were about the engagement activities, participants, planning and deadlines, project evaluation, collaboration, responsibility, decision-making, challenges, and motivations for engagement. The projects are not explicitly aiming to practice co-productionist relational engagement, so the interviews focussed on how engagement is currently unfolding in the projects. This helped us to understand how engagement practices are shaped in EU energy project contexts, to learn how co-productionist relational engagement could be practiced in EU energy project contexts.

To understand how engagement practices are shaped we focussed on ten interviews with engagement practitioners, as they are operating the engagement practices. To nuance the findings, four additional interviews were conducted with practitioners in other positions in the projects: a communication practitioner who works close to engagement, a data scientist for a perspective from the more technical work in the project, a pilot leader for insights on the actual practice of engagement

Table 1
Overview of interviewees and their projects.

| Interview tag | Interviewee | Projects’ technology focus | Date of interview |
|---------------|----------------------------|---|-------------------|
| #1 | Engagement practitioner | Demand response at consumer level, blockchain technology | 09/09/2021 |
| #2 | Data scientist | Digital platforms for energy communities | 20/09/2021 |
| #3 | Engagement practitioner | Demand response and home automation | 20/09/2021 |
| #4 | Engagement practitioner | Flexible energy storage and management for islands | 22/09/2021 |
| #12 | Project coordinator | | 05/10/2021 |
| #5 | Communication practitioner | Demand response software | 23/09/2021 |
| #6 | Engagement practitioner | Technologies for clean production and shared distribution of energy | 24/09/2021 |
| #7 | Pilot leader | Flexible and smart grid solutions | 24/09/2021 |
| #8 | Engagement practitioner | Local energy systems to support energy communities | 29/09/2021 |
| #13 | Engagement practitioner | | 05/10/2021 |
| #9 | Engagement practitioner | Blockchain platforms for flexible energy management | 30/09/2021 |
| #10 | Engagement practitioner | | 30/09/2021 |
| #11 | Engagement practitioner | Demand response ICT platform | 04/10/2021 |
| #14 | Engagement practitioner | Local flexibility platform through blockchain technologies | 15/10/2021 |

at the pilot level, and a project coordinator for the organisational perspective of the project.

The in-depth interviews across 11 H2020 projects gave us nuanced insights in the patterns that shape engagement in the projects. Additionally, we deepened our insights further with follow-up interview with some of the projects. After fourteen interviews we stopped conducting more interviews as we reached a point of saturation, meaning that the last interviews confirmed insights from earlier interviews [38]. Table 1 provides an overview of the interviewees and their projects.

Interviews took place via an online video platform, with an average duration of 1 h per interview. The interviews were transcribed, and iteratively coded with support of QRS International’s NVivo 12 software. The initial codes responded to single issues in the data, which were then categorized into different code groups that represented broader themes. This categorisation was deductively informed by STS relational engagement literature and project management literature. This was combined with inductive coding, to let themes emerge beyond the two bodies of literature. As a result, the key components for enacting relational engagement that we present in Section 4 have been derived iteratively, both deductively and inductively.

In addition, data was collected from publicly available documents about work programme of which the projects are part.¹ These documents provided us with insights about the requirements set by the EC to which the sample projects must comply. Furthermore, our research is informed by our active work in the European Commission’s initiative BRIDGE² that connects energy H2020 projects. Our participation in the working group *Consumer and Citizen Engagement* provided us contextual information about the ongoing discussions and topics that were important for H2020 engagement practitioners. Moreover, our collaborations in BRIDGE provided us a starting point for contacting participants for the interviews.

The combination of empirical insights deepened our theoretical exploration of STS co-productionist relational engagement literature and project management literature. This resulted in our investigation on how co-productionist relational engagement can be enacted, as presented in the next section.

4. Enacting co-productionist relational engagement in EU energy projects

In this section we identify three components that in combination can enact co-productionist relational engagement in EU energy projects: *practicing*, *enabling* and *steering*. First, to *practice* relational engagement it is key to reflect and respond to engagement. Second, we find that the reflections and responses need to be *enabled* with flexibility in the projects. Third, we point to a need to *steer* the reflections and responses with indicators and skills in the projects. The three components are summarised in Table 2, and further detailed in the section below.

4.1. Practicing: reflecting and responding

First, we found two key actions for co-productionist relational engagement practices: *reflecting*, and *responding* upon the way engagement evolves. We identified those actions by converting STS insights on the relational perspective into actions for practice. STS

¹ Documents included in the analysis: Horizon 2020 Work Programme 2018–2020. 10. *Secure, clean and efficient energy*. (European Commission Decision C(2020)6320 of 17 September 2020) [5]; Horizon 2020 Work Programme 2018–2020. 19. *General Annexes*. (European Commission Decision C(2019)4575 of 2 July 2019) [19].

² BRIDGE is an initiative of the European Commission (EC), and unites research and innovation projects in the areas of smart grid, energy storage, islands, and digitalization funded under EU’s H2020 and Horizon Europe [37] including the 11 projects of our sample.

Table 2
Enacting reflections and responsiveness for relational engagement in EU energy projects.

| Component | Practicing | Enabling | Steering |
|------------|---|--|--|
| <i>How</i> | Relational actions: 1. Reflecting 2. Responding | Flexible spaces: 1. Topic flexibility 2. Process flexibility | Tools: 1. Indicators 2. Skills of engagement practitioners |

relational engagement emphasizes the need for reflexivity on engagement [15]. In this paper, we focus on reflexivity on the framing effects of objects, subjects, and models of participation practices, and opening up participation practices accordingly. This reflexivity is emphasized in the first pathway for remaking participation by Chilvers and Kearnes [15]. In this first pathway, attention is on continuous reflexivity on the ways in which objects, subjects and models of participation emerge, rather than predefining understandings of these dimensions of participation. This includes for example reflexivity on underlying assumptions of participation, and on alternative framings of objects that were left out [15].

We put forward that reflexivity can be translated into the actions reflecting and responding. With this distinction we emphasize the need to not only think about critical reflections, but also to actually react upon this thinking by responding. Reflecting allows to critically consider the sensibilities that the relational engagement perspective advocates for, aiming to address the way engagement is co-produced, emergent and diverse [15]. This enables engagement practitioners to attend to the assumptions and procedures that shape engagement, and the effects of engagement. After reflecting, relational engagement practitioners need to act upon their critical reflections by responding. Responses can entail the further development of engagement approaches, and adjustments of engagement approaches that were planned.

When empirically analysing engagement in the H2020 projects we found potential for reflecting and responding in practice. We also found that these opportunities are shaped by the EU energy project contexts. In the next sections of the analysis, we explore how opportunities for these actions are shaped by the EU energy project contexts. This exploration is presented in Section 4.2 by focussing on how these opportunities can be enabled by the EU energy project contexts, and in Section 4.3 by showing how these opportunities can be steered by the EU energy project contexts.

4.2. Enabling: topic and process flexibility

We found that opportunities for reflecting and responding need to be enabled with flexible spaces for engagement. These flexible spaces create opportunities to develop and refine engagement practices during the project, instead of predefining beforehand how engagement will be practiced. This enables to reflect upon the way engagement evolves, and based on the reflections respond to unforeseen needs for engagement practices. To address evolving and unforeseen needs in projects, flexibility in project management is understood to be helpful, as highlighted in project management literature [32,34]. We found two types of flexibility that together form the flexible space for engagement: **topic flexibility** to let the topic of engagement evolve, and **process flexibility** to let the engagement process evolve. Moreover, we identified that in EU energy projects there are two facets that create topic and process flexibility: the degree to which the engagement is predefined in the project proposal, and the degree to which engagement practices can deviate from what was proposed during the project.

4.2.1. Topic flexibility

Topic flexibility enables relational reflections and responses on the topic about which engagement is organised, by offering flexibility to

develop and revise the topic during the project. In H2020 projects the topic flexibility was found to be limited due to the way the projects are organised, as all projects tailored engagement towards testing a certain energy technology in practice. Topic flexibility is especially offering space to open up the object (what) of engagement as referred to in the productionist framework for engagement [16].

In the H2020 projects the topic flexibility is partly limited in the project proposal, as the proposals predefined major design choices about the technology that needs to be tested with public engagement. This is done in response to the call for proposals by the EC, which requested the projects to be Innovation Action (IA) projects that aim to design products, processes or services and therefore may include testing and prototyping. This means that the technologies are validated in the lab before the start of the project [19]. Interviewees explain that the testing of the technology is in focus when organising engagement “we need to prove that it is possible to adapt people’s consumption with demand response tools and all these technical things [...] And how are we going to prove that? We need people to actually test it” (#3 engagement practitioner).

Interviewees feel that the way the technology is defined in the proposal determines what can be offered in the engagement practices: “you have to implement the technology that is set in stone from the proposal writing, while maybe, in these stakeholder engagement processes you would have come up with a different solution” (#6 engagement practitioner). The testing of the technology as defined in the proposal is felt to be the main aim of the project: “the user cannot affect our product a lot, except this part of the end user experience that you could make more beautiful or functional [...]. But for a technical [consortium partner], this part is not so important, it is just important that it [the technology] works” (#9 engagement practitioner). The proposal thus predefines that engagement will focus on the testing of a predefined technology, thereby limiting the topic flexibility to reflect and respond upon needs for engagement topics as they evolve in the project.

In addition, the topic flexibility is experienced to be limited as interviewees feel limited space to deviate from the proposed technology. Project officers from the European Commission monitor the projects’ progress, and are perceived to not allow major deviations from the proposed technology: “I think bigger changes are not possible, because the EU said, you had to think through the four years beforehand. And if you did not think of this change before, then it is kind of a mistake” (#12 project coordinator). Furthermore, it is also experienced to be challenging to deviate from the proposed technology because the consortium includes specific partners that provide specific hardware to the project, and a change in technology would also mean a change in consortium partners: “when you have formed a consortium, and hardware is provided and implemented [by specific consortium partners], then you are kind of locked-in at a certain point. [...] Once the project is confirmed it is not possible to kick someone out afterwards” (#12 project coordinator). This shows that also during the project it is difficult to shift the technology about which engagement is organised, thereby offering limited flexibility to open up the topic of engagement.

4.2.2. Process flexibility

We found that the H2020 project contexts offer more flexibility to revise and develop the engagement process, within the boundaries created by the overarching project structure. The process flexibility found in the H2020 projects enables engagement practitioners to reflect and respond upon the way engagement evolves, primarily in relation to the (how) forms of engagement as presented in the co-productionist framework [16]. H2020 engagement practitioners feel that there is space in the project to flexibly develop the engagement practices, for example: “we go in really small steps and see what is possible. What can we do now? What is the next step? And so far, the experience is that new possibilities pop up” (#4 engagement practitioner). Interviewees specified that their projects’ engagement approach is developed ‘iteratively’ or ‘step by step’, attending to what is needed during the project that is unpredictable. We found that process flexibility is shaped the

combination of the project proposal and the degree to which engagement practitioners can deviate from the proposal.

First, the H2020 project proposals tend to define engagement processes in a 'broad' and 'abstract' way: *"we did not decide we were going to do workshops or interviews. It was indicated in a very abstract way in the proposal: we are going to perform engagement activities. We gave a list of examples of what we could do, and then we adapted it to what was needed"* (#11 engagement practitioner). However, the overarching project structure outlined in the proposal sets boundaries within which the engagement process can be developed and revised. The proposal defines the overarching project planning, allocation of budget, subgoals depicted by indicators, a task division over the various consortium partners, within which engagement needs to fit.

The second facet that determines process flexibility for engagement, is the degree to which engagement practitioners can deviate from what was predefined in the proposal. These deviations from what was proposed need to be negotiated by engagement practitioners with both the project officers from European Commission (EC) and other consortium partners. This shows that engagement practices are not only shaped by EU energy projects, but that EU energy projects can also be shaped by engagement practices when engagement practitioners negotiate changes in the project plan.

First, in negotiations with the EC project officers, interviewees experience that the EC project officers are likely to accept deviations from the project proposal if the changes are requested with proper explanations. Changes that were for example possible, were shifting budget, time and partners between different activities, and postponing sequencing deadline: *"I think there was quite some flexibility with the deadlines. We were supposed to start performing workshops before the summer. We did now in September because of recruitment challenges, we did not have enough people. So it was better to wait until we could have the workshop with all the people that would get involved. I think there was quite some flexibility, of course within a range: we could not wait a year to do things"* (#11 engagement practitioner). Some projects postponed their engagement related deadlines with permission of the EC project officers, for example due to challenges related to COVID-19. Some of the projects updated their indicators for engagement based on insights generated throughout the project, for example decreasing the target number of households to engage in their project.

Changes in the overarching main project goal, indicators, time, budget, and partners are more challenging to negotiate with the EC project officers: *"you always have to stick with what you promised in the proposal and where you get the grant for. So I would not say that substantial changes are very easy to make [...]"* (#13 engagement practitioner) and *"[the proposal] is a contract that we have with the funding body. So we tried to somehow to stick to what we presented the proposal time"* (#15 engagement practitioner). Flexibility in the engagement process thus can be successfully requested to the EC project officers, but the practitioners experience that the EC project officers tends to steer the projects to keep the flexibility within the boundaries of the overarching main project outline.

Second, the process flexibility should be negotiated with other consortium partners if changes due to flexibility affect their work: *"you have talked with all the other partners that are involved and that will need the outcomes of your work later on. Like: can I do this change, or will this affect your work? So, I think of course some flexibility is needed, but only when taking everything into account and never losing the core structure of the project"* (#11 engagement practitioner). The experiences with this vary. On the one hand, cases were found in which it was more challenging to get the change accepted. This might arise from the different backgrounds and motivations of consortium partners. For example, for technical partners, the development of the technology might be the main goal: *"sometimes we experienced that technical people want to get going, which is understandable. Sometimes it is hard for them to wait for the user input. We have had some words up at the beginning"* (#5 communication practitioner). The technical partners in the consortium contribute to the

project because they want to test and develop their technologies. This means that changes in other activities, like the engagement approach, are not easily accepted if this fundamentally hinders the technology development.

On the other hand, other partners can be more easily convinced to accept the changes: *"We need financing schemes for the people. We need to know how they can finance generation assets and so on. But the work package that deals with this has a deadline for this in one year. For us it would be good to have something earlier than what was planned in the project. This can definitely happen. When everybody comes together, there is a lot of flexibility in shifting priorities"* (#4 engagement practitioner). This is more in line with interviewees who experience the collaboration in their project as a collaboration between 'a lot of different partners' that 'all work together to construct a very big result', thereby underlining that in the end all partners aim for the same goal and therefore can be willing provide process flexibility.

4.3. Steering: indicators and skills

Next, we found that flexible spaces for engagement in H2020 projects can *enable* relational reflections and responses on engagement, but *do not guarantee* that relational reflections and responses are taking place. We identified two tools in the EU energy project context that can steer engagement practices to use the flexible space for relational reflections and responses: top-down steering with *indicators*, and bottom-up steering with the *skills* of engagement practitioners.

4.3.1. Indicators

The engagement practices in H2020 projects are steered by the indicators. In H2020 projects the indicators with which project officers monitor progress are quantitative, which enacts engagement practices that reflect and responds upon the degree to which the quantitative indicators are achieved. The indicators are characterised by interviewees as 'hard', 'technical' and 'concrete' quantitative indicators, often focussed on the number of participating households or individuals. Interviewees seem to perceive the indicators to be part of the nature of their projects. For example, the interviewees explain that the indicators are needed to report the projects' progress to the EC. Moreover, interviewees describe that these target number of participants are necessary to support the projects' focus on technology testing: *"I think at the beginning the target for the number was more important, because at the end we do have to develop it [the technology], and if we do not have households to test it, we are going nowhere"* (#11 engagement practitioner) and *"sometimes they struggle to have many participants at all [...] they actually did have to put a lot of effort in bringing people in and reaching the critical size which makes the product viable in the market"* (#8 engagement practitioner).

In H2020 projects, these quantitative indicators steer engagement to be focussed on achieving these quantitative target indicators. To fulfil the quantitative target indicators, we found engagement practitioners to reflect and respond within the available flexible spaces on reaching the quantitative target indicators, therefore having less attention to the critical reflections and responses that relational engagement would entail. To ensure that the quantitative targets are reached within the available resources, engagement practitioners focus on engaging people who are considered to be easier to engage with: *"I think it is legitimate of the initiatives to rather go for the low hanging fruit within the limited time and try to bring those participants that they can, so they have something to show at the end of the project"* (#8 engagement practitioner).

This strategy of focussing on 'the low hanging fruit' participants to reach the targets, results in projects focussing on participants who are likely to have a positive attitude towards the project and its technology. This is often fostered by challenges to enroll participants in the first place: *"they don't concern themselves with reaching out to other groups, because it is already hard to reach those groups who have most affinity with the product as it is"* (#8 engagement practitioner). For example, some

projects target existing energy communities who are already working on topics related to the project. Similarly, projects target people who participated in similar projects before, as they are expected to have a positive attitude towards new engagement in a project: *“they were already geared to energy change, and renewable energy. So they are within this framework of being an innovation island living lab basically. So this made it easier for us to engage them, because they are naturally interested”* (#5 communication practitioner). The indicators set in EU energy projects thus enact certain forms of engagement that ensure that the quantitative targets are reached for technology testing. In the investigated H2020 projects, we found that the indicators steer especially who are engaged (subjects), by enacting focus on participants who are more easily reached and engaged. We see potential in building upon indicators by Chilvers and Kearnes [15] to also steer to broadening up objects and forms of engagement.

These findings are in line with project management theory, which emphasizes that predefining indicators, amongst other things, can be a beneficial measure to ensure that the project can be completed in a certain manner [30,31]. This would mean that to utilize the flexible space in a relational manner, it is key to put indicators in place that enact relational engagement.

In contrast, STS work on relational engagement tends to be less in favour of predefined indicators and resources for engagement. In STS work, predefining indicators for engagement is often associated with approaching engagement in a too rigid and normative manner, and predefined indicators tend to be more in line with residual realist understandings of engagement [15,26]. However, we argue that it could be valuable to consider indicators as a tool to steer engagement to be enacted in a relational manner, more in line with project management thinking that uses indicators to steer project work in a certain direction. This requires critical reflections upon the type of indicators that are put in place. Indicators for relational engagement do not need to steer what engagement exactly should be, but the indicators can enact critical reflections and responses in the specific projects, for example like the criteria for engagement presented by Chilvers and Kearnes [15]. Those relational minded criteria are not focussed on ‘best practice’ criteria like inclusion and representativeness [28], but instead focus on the quality of reflections and responses that take place [15]. In this way, the engagement approaches can be steered to be more in line with relational thinking from top-down, within the available flexible space for engagement. This does not mean that quantitative indicators to ensure the number of participants needed for technology testing needs to be expelled. In line with Chilvers and Kearnes [15] the indicators for relational engagement do not need to completely replace existing indicators, but can be complementary to infuse more co-productionist relational engagement thinking.

4.3.2. Skills of engagement practitioners

Another way in which engagement can be steered, is by the skills of engagement practitioners to approach engagement in a relational manner, and to negotiate these flexible spaces when needed. This requires engagement practitioners to be able to reflect and respond upon their engagement approach, and to be flexible to adjust their engagement practices during the project to what is needed. We found in the H2020 projects that engagement practitioners leverage the flexible spaces for engagement by iteratively adjusting their engagement approach, because they understand that engagement cannot be predefined: *“it is in the nature of engagement that it is completely unpredictable [...] Once it turns out to be unpredictable, I think you are doing it right”* (#8 engagement practitioner).

Although we found the engagement practitioners to be mainly focused on the fulfilment of the quantitative indicators, we did notice engagement practitioners attending to other aspects of engagement. We recognized engagement practitioners to be aware and interested in working on qualitative aspects of engagement, like for example diversity and inclusivity: *“we want to be as inclusive as possible, have as much variety*

and diversity in the type of people that lives in the different households that we engage” (#11 engagement practitioner). Nevertheless, in the H2020 projects interviewees often experience that there are not enough time and resources to actually act upon these reflections: *“at the end the practically comes first. With this project you are always in a rush. Things have to happen. So, you do as much as you can to achieve these qualitative goals, but then the limitations of carrying out the project on time always comes first”* (#11 engagement practitioner). This shows that to enact relational engagement, both the indicators and the skills, need to align to enact relational engagement.

Skills of engagement practitioners can also foster the creation of flexible space with other consortium partners and the EC. Skills are needed to negotiate flexible space for engagement with consortium partners, to explain well what is needed for engagement. For example, the engagement practitioner who created focus on an additional project goal explained the process: *“I held a presentation in front of the entire consortium of all partners and presented them exactly what is going on at the pilot site [...] so we wanted to mediate the scepticism [from the pilot site] to the consortium and then think about solutions”* (#8 engagement practitioner). Moreover, interviewees experience that the EC project officers accept deviations from the proposal if it is ‘justified properly’ and ‘if the concerns are legitimate’, showing a need for skills to negotiate this flexible space. With these skills to negotiate, the project structures can be broadened up to enact relational engagement [16].

The relevance of skills of engagement practitioners for practicing relational engagement can also be found in both STS theory and project management theory. In STS theory, focus is on the importance of critical thinking and critical reflections about engagement [15,26]. This implies a need for practitioners who understand and can act upon relational ways of thinking about engagement. This refers therefore to skills to reflect and respond upon all components of engagement: objects, subjects, forms and wider extant orders [16]. In project management theory, the ‘team’ component is seen as key aspect in the project. The project team is brought into being to fulfil the project task [30]. When bringing together the project team for relational engagement, it is thus relevant to consider the skills needed to enact relational engagement bottom-up in the project.

5. Conclusion and discussion

In this paper we investigated how co-productionist relational engagement can be enacted in EU energy project contexts. In this exploration, we built on the four pathways for remaking participation framework by Chilvers and Kearnes [15]. We focussed especially on their first pathway, by analysing how reflexivity on emerging objects, subjects and models of participation can be brought into practice [15]. We identified three components for enacting co-productionist relational engagement: practicing, enabling and steering. **Practicing** co-productionist relational engagement can be brought into action by critically reflecting and responding upon the way engagement evolves during the project. Next, those relational reflections and responses need to be **enabled** by flexible spaces for engagement in the projects. These flexible spaces can be created with topic flexibility to open up what participation is about (objects), and process flexibility to open up how engagement is organised (forms). To ensure that the flexible spaces are used for relational reflections and responses on objects, subjects, forms and wider extant orders of participation, we found that relational engagement needs to be **steered**. This can be done by setting indicators that foster relational reflections and responses top-down, and by employing engagement practitioners who are skilled to bring relational reflections and responses into practice bottom-up.

Relational engagement is key to put people in focus when addressing societal challenges. With our work we show how relational engagement can be operationalised in practice in the contexts of EU energy projects. By doing so, we contribute to research that aims to move the rich and reflexive insights on co-productionist relational engagement beyond

theoretical debates into practice. In this way, we support efforts to bridge STS theoretical insights with practical applications, to serve society in addressing pressing challenges [39–41].

Operationalising co-productionist relational engagement in EU energy projects creates opportunities to address societal challenges related to energy participation, by reflexively opening up to more diverse forms of engagement (how), to a broader range of subjects (who), and to more varied objects (what). This can help to address recognized needs to approach energy in closer relation to public's daily life experiences [42]. Moreover, relational engagement can address needs to focus on public relevance of engagement, rather than approaching engagement as a challenge of publics who are either engaged or not [15]. Especially in the development of technological energy solutions, relational engagement can support by opening up engagement. For example, in technological developments like smart grids, digitalisation and demand response flexibility, attendance to diverse daily life experiences could help to overcome marginalizations [43–45]. Our work shows opportunities for relational engagement in the specific contexts of projects that develop those types of energy technologies. For example, process flexibility can open up to more diverse forms of engagement to include also more marginalised publics to engage in ways that suits their preferences better. When aiming to closer align energy technology solutions with diverse public's needs, implementing topic flexibility can create opportunities to reconsider what technologies engagement should be about.

Existing theorizations of co-productionist relational engagement underline the importance to attend to contexts of engagement, often referred to as wider extant orders within which the objects, subjects and forms of engagement are shaped [16,28]. First, our work in this paper underlines the importance to consider contexts and their role in engagement efforts. In this paper we concentrated on the specific contexts of EU energy projects and their implications for enacting relational engagement. Second, our paper shows how such contexts set boundaries to the ways in which co-productionist relational engagement can unfold within the projects. Specifically, we spell out the boundaries of co-productionist relational engagement in the contexts of EU energy projects. We found that EU energy projects put boundaries on engagement practices, by defining certain flexible spaces in which engagement needs to fit, and by steering the engagement practices with indicators and skills. This means that the relational reflexivity in practice is not an unconstrained set of activities that can always be opened up further, but constrained by context boundaries.

Despite the identified boundaries on engagement, we see opportunities in EU energy projects to move away from instrumentally motivated engagement, towards more relational engagement practices that can address social issues more carefully. This means working within and with the boundaries of the contexts. In H2020 projects, there might be less flexibility to open up the topics of engagement, but we did observe the possibility to develop and refine the engagement processes within the overarching project structure. *Within* such boundaries, reflecting and responding are relational actions that can be practiced to enact co-productionist relational engagement. We also found opportunities to work *with* the boundaries of the H2020 project contexts, by using opportunities to negotiate flexibility and using the tools to steer engagement in a relational manner.

In practice these findings mean that not only engagement practitioners should be called upon when remaking participation more co-productionist and relational, but that this responsibility also lies with policy makers who define the boundaries and opportunities for relational engagement by designing the project requirements of the proposal stage. Policy makers need to create flexibility in the projects, carefully set reflexive engagement indicators, and foster project teams with skills for relational engagement.

Future research could explore how operationalisations of relational engagement can be brought further into practice. First, future research could specify the components identified in this research further, by

investigating how specific flexibility measures, indicators and skills can enact specific aspects of relational engagement. This could also include empirical analyses of implementations of those components in EU energy projects. For example, future work can investigate which specific indicators and skills can create more relational engagement. Work by Chilvers and Kearnes [15] can provide a starting point for further research into indicators and the ways in which relational indicators can be developed to steer engagement in a relational manner, and how engagement practitioners can be best trained in applying relational skills. Second, our work focussed on enacting reflexivity on the emerging subjects, objects, and models of participation, building upon the first pathway for remaking participation [15]. Future work could investigate how the other interrelated pathways can be enacted in relation to EU energy projects. Third, empirical insights in this study focussed on EU energy projects with high technology readiness levels. Future work could investigate how relational engagement can be enacted in other contexts, for example in projects with low technology readiness levels where we expect to find more topic flexibility. Fourth, our work provides empirical insights from mainly engagement practitioners and other employees within the projects. Future work could expand this focus towards perceptions of policy makers who shape the calls for project proposals and accept the project proposals, to learn how wider extant orders of participation in EU energy projects are constructed from their perspectives.

Concluding, we highlight the value of investigating how enacting more co-productionist relational engagement can take place with and within existing stabilities and institutional contexts. This underlines that bringing relational engagement into practice is not an all-or-nothing issue, so that even though the boundaries of contexts might not allow all co-productionist relational ideals, it is key to use opportunities that open up within and with existing contexts to further bring co-productionist relational engagement approaches into practice.

CRediT authorship contribution statement

Vera M.E. Kools: Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.
Johanna I. Höffken: Writing – review & editing, Supervision, Conceptualization.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

References

- [1] D. Stober, M. Suškevičs, S. Eiter, S. Müller, S. Martinát, M. Buchecker, What is the quality of participatory renewable energy planning in Europe? A comparative analysis of innovative practices in 25 projects, *Energy Res. Soc. Sci.* 71 (2021), <https://doi.org/10.1016/j.erss.2020.101804>.
- [2] F. Gangale, A. Mengolini, I. Onyeji, Consumer engagement: an insight from smart grid projects in Europe, *Energy Policy* 60 (2013) 621–628, <https://doi.org/10.1016/j.enpol.2013.05.031>.
- [3] World Energy Outlook 2021 [Online]. Available: www.iea.org/weo, 2021.

- [4] C.A. Miller, J. Richter, J. O'Leary, Socio-energy systems design: a policy framework for energy transitions, *Energy Res. Soc. Sci.* 6 (2015) 29–40, <https://doi.org/10.1016/j.erss.2014.11.004>.
- [5] European Commission, *Horizon 2020 Work Programme 2018–2020* 10. Secure, Clean and Efficient Energy, 2018.
- [6] European Commission, *Horizon Europe-Work Programme 2021–2022* 8. Climate, Energy and Mobility, Accessed: Jul. 11, 2022. [Online]. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-8-climate-energy-and-mobility_horizon-2021-2022_en.pdf, 2021.
- [7] S. Godenhjelm, R.A. Lundin, S. Sjöblom, Projectification in the public sector – the case of the European Union, *Int. J. Manag. Proj. Bus.* 8 (2015) 324–348, <https://doi.org/10.1108/IJMPB-05-2014-0049>.
- [8] E.J.A. Nylén, Projectified governance and sustainability transitions: how projects and framework programmes can accelerate transition processes, *Environ. Policy Gov.* 31 (2021) 605–618, <https://doi.org/10.1002/eet.1957>.
- [9] European Union, *Horizon 2020 structure and budget*, Accessed: Jul. 08, 2022. [Online]. Available: https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/applying-for-funding/find-a-call/h2020-structure-and-budget_en.htm.
- [10] European Union, *What is Horizon 2020*, Accessed: Aug. 11, 2021. [Online]. Available: <https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>.
- [11] Horizon Europe, doi: <https://data.europa.eu/doi/10.2777/202859>, Apr. 2021.
- [12] E. Galende-Sánchez, A.H. Sorman, From consultation toward co-production in science and policy: a critical systematic review of participatory climate and energy initiatives, *Energy Res. Soc. Sci.* 73 (2021), <https://doi.org/10.1016/j.erss.2020.101907>.
- [13] R. Shortall, A. Mengolini, F. Gangale, Citizen engagement in EU collective action energy projects, *Sustainability* 14 (2022), <https://doi.org/10.3390/su14105949>.
- [14] S. Ryder, C. Walker, S. Batel, H. Devine-Wright, P. Devine-Wright, F. Sherry-Brennan, Do the ends justify the means? Problematizing social acceptance and instrumentally-driven community engagement in proposed energy projects, *Socioeco Prac Res* (2023), <https://doi.org/10.1007/s42532-023-00148-8>.
- [15] J. Chilvers, M. Kearnes, Remaking participation in science and democracy, *Sci Technol Human Values* 45 (3) (2020) 347–380, <https://doi.org/10.1177/0162243919850885>.
- [16] J. Chilvers, N. Longhurst, Participation in transition(s): reconceiving public engagements in energy transitions as co-produced, emergent and diverse, *J. Environ. Policy Plan.* 18 (5) (2016) 585–607, <https://doi.org/10.1080/1523908X.2015.1110483>.
- [17] J. Chilvers, H. Pallett, Energy democracies and publics in the making: a relational agenda for research and practice, *Front Commun (Lausanne)* 3 (14) (2018), <https://doi.org/10.3389/fcomm.2018.00014>.
- [18] T. Völker, A.G. Pereira, 'What was that word? It's part of ensuring its future existence' exploring engagement collectives at the European Commission's Joint Research Centre, *Sci Technol Human Values* 48 (2) (2023) 428–453, <https://doi.org/10.1177/01622439211046049>.
- [19] European Commission, *Horizon 2020 Work Programme 2018–2020* 19. General Annexes, 2019.
- [20] S. Jasanoff, Technologies of humility: citizen participation in governing science, *Minerva* 41 (2003) 223–244.
- [21] J. Goven, Processes of inclusion, cultures of calculation, structures of power: scientific citizenship and the royal commission on genetic modification, *Sci Technol Human Values* 31 (5) (Sep. 2006) 565–598, <https://doi.org/10.1177/0162243906289612>.
- [22] A. Irwin, Constructing the scientific citizen: science and democracy in the biosciences, *Public Underst. Sci.* 10 (2001) 1–18 [Online]. Available: www.iop.org/Journals/ps.
- [23] D.J. Hess, B.K. Sovacool, Sociotechnical matters: reviewing and integrating science and technology studies with energy social science, *Energy Res. Soc. Sci.* 65 (2020), <https://doi.org/10.1016/j.erss.2020.101462>.
- [24] G. Rowe, L.J. Frewer, Public participation methods: a framework for evaluation, *Sci Technol Human Values* 25 (1) (2000) 3–29, <https://doi.org/10.1177/016224390002500101>.
- [25] G. Rowe, L.J. Frewer, A typology of public engagement mechanisms, *Sci Technol Human Values* 30 (2) (2005) 251–290, <https://doi.org/10.1177/0162243904271724>.
- [26] J. Chilvers, M. Kearnes, *Remaking Participation: Science, Environment and Emergent Publics*, First, Routledge, Oxon, 2016.
- [27] A. Stirling, 'Opening up' and 'closing down': power, participation, and pluralism in the social appraisal of technology, *Sci Technol Human Values* 33 (2) (2008) 262–294, <https://doi.org/10.1177/0162243907311265>.
- [28] J. Chilvers, H. Pallett, T. Hargreaves, Ecologies of participation in socio-technical change: the case of energy system transitions, *Energy Res. Soc. Sci.* 42 (2018) 199–210, <https://doi.org/10.1016/j.erss.2018.03.020>.
- [29] J. Söderlund, On the development of project management research: schools of thought and critique, *International Project Management Journal* 8 (1) (2002) 20–29 [Online]. Available: www.pry.fi/pmaf_mag.htm.
- [30] R.A. Lundin, A. Söderholm, A theory of the temporary organization, *Scandinavian Journal of Management* 11 (4) (1995) 437–455, [https://doi.org/10.1016/0956-5221\(95\)00036-U](https://doi.org/10.1016/0956-5221(95)00036-U).
- [31] J. Packendorff, Inquiring into the temporary organization: new directions for project management research, *Scand. J. Manag.* 11 (4) (1995) 319–333, [https://doi.org/10.1016/0956-5221\(95\)00018-Q](https://doi.org/10.1016/0956-5221(95)00018-Q).
- [32] D.J. Fernandez, J.D. Fernandez, Agile project management-agilism versus traditional approaches, *J. Comput. Inf. Syst.* 49 (2) (2008) 10–17, <https://doi.org/10.1080/08874417.2009.11646044>.
- [33] N.O.E. Olsson, Management of flexibility in projects, *Int. J. Proj. Manag.* 24 (2006) 66–74, <https://doi.org/10.1016/j.ijproman.2005.06.010>.
- [34] D. Ciric Lalic, B. Lalic, M. Delić, D. Gracanin, D. Stefanovic, How project management approach impact project success? From traditional to agile, *Int. J. Manag. Proj. Bus.* 15 (3) (2022) 494–521, <https://doi.org/10.1108/IJMPB-04-2021-0108>.
- [35] I. Mergel, S. Ganapati, A.B. Whitford, Agile: a new way of governing, *Public Adm. Rev.* 81 (1) (2020) 161–165, <https://doi.org/10.1111/puar.13202>.
- [36] T. Greenhalgh, S. Thorne, K. Malterud, Time to challenge the spurious hierarchy of systematic over narrative reviews? *Eur. J. Clin. Invest.* 48 (2018) <https://doi.org/10.1111/eci.12931>.
- [37] European Commission, *Bridge 2021 Brochure. The BRIDGE Initiative and Project Fact Sheets*, Sep. 2021.
- [38] M. Hennink, I. Hutter, A. Bailey, *Qualitative Research Methods*, SAGE Publications, Inc., Second, 2020.
- [39] A. Webster, Crossing boundaries: social science in the policy room, *Sci Technol Human Values* 32 (4) (Jul. 2007) 458–478, <https://doi.org/10.1177/0162243907301004>.
- [40] B.K. Sovacool, et al., Sociotechnical agendas: reviewing future directions for energy and climate research, *Energy Res. Soc. Sci.* 70 (2020), <https://doi.org/10.1016/j.erss.2020.101617>.
- [41] J. Köhler, et al., An agenda for sustainability transitions research: state of the art and future directions, *Environ Innov Soc Transit* 31 (2019) 1–32, <https://doi.org/10.1016/j.eist.2019.01.004>.
- [42] E. Shove, G. Walker, What is energy for? Social practice and energy demand, *Theory Cult. Soc.* 31 (5) (2014) 41–58, <https://doi.org/10.1177/0263276414536746>.
- [43] S. Sareen, Digitalisation and social inclusion in multi-scalar smart energy transitions, *Energy Res. Soc. Sci.* 81 (2021), <https://doi.org/10.1016/j.erss.2021.102251>.
- [44] P. Calver, N. Simcock, Demand response and energy justice: a critical overview of ethical risks and opportunities within digital, decentralised, and decarbonised futures, *Energy Policy* 151 (Apr. 2021), <https://doi.org/10.1016/j.enpol.2021.112198>.
- [45] E. Tarasova, H. Rohrachner, Marginalising household users in smart grids, *Technol. Soc.* 72 (2023), <https://doi.org/10.1016/j.techsoc.2022.102185>.