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Social Innovation in the Energy Transition

Examining diversity, contributions and challenges

Scoping workshop report

Energy-SHIFTS

Energy
Social sciences &
Humanities
Innovation
Forum
Targeting the
SET-Plan

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September 2019

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Executive summary

This report presents findings from a literature review and a workshop on the topic of social innovation in the energy transition that were conducted and organised in the spring of 2019, as part of a series of scoping workshops on priority themes within the Energy-SHIFTS project. In the literature review, we discuss how social innovation in energy is currently researched, how it is considered to contribute to energy transitions and what the most pressing challenges and dilemmas are as outlined in the literature. Here we find that the majority of work in this space is focussed on community-based energy initiatives, as well as finding that the demarcation of what constitutes the energy transition or energy is set rather narrowly, focussing mostly on household consumption and production. With regard to the (potential) contributions of social innovation in energy, we observe how many studies discuss how social innovation might 1) accelerate the energy transition; 2) address democratisation and equity; 3) mainstream new practices; and 4) create new actor configurations and relations. Building on those insights, as well as the main challenges identified for social innovation in energy within the field itself, we explain the design of the scoping workshop that was hosted in Rotterdam on April 4, 2019.

After outlining the details of the workshop, we reflect on the main discussions that took place between participants at the event. Drawing on ideas from transition studies, we argue that these discussions centre on a particular phase within the energy transition: acceleration. In correspondence with the findings of the literature review, community energy constituted an entry point of discussion during the workshop. However, notably, discussions soon shifted towards the role of incumbents, and to how equity and justice can be safeguarded. Other questions concerned how to foster democratic innovations, as well as how the role of the municipality shifts as a consequence. According to the transition studies literature, these are typically questions that arise as transition initiatives move out of their ‘niches’. Finally, the issue of linking experiments to long-term visions also resulted in new questions for research and policy. We end this report by stating recommendations for activities within the Energy-SHIFTS project as well as for the wider research community and funders.

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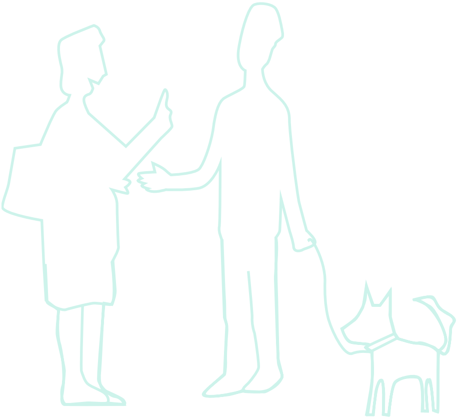

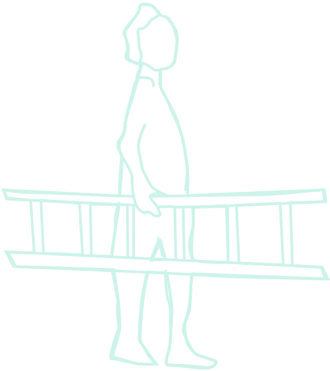

1. Introduction

In this report, we aim to provide an overview of the most urgent discussions in the field of social innovation and energy today. Besides this aim, we identify potential new fields of study that future research might address. For this purpose, we conducted a literature review, and organised a scoping workshop with a wide range of stakeholders in April 2019.

This publication is part of a series of reports on four scoping workshops held in 2019 as part of the EU-funded Horizon 2020 project Energy-SHIFTS[1]. Combined, the insights from these workshops inform future activities within the Energy-SHIFTS project. The objective of Energy-SHIFTS is to further the contribution of Social Science and Humanities (SSH) to the energy transition and to help policy to benefit from these insights to accelerate the transition. The insights of these reports will be used to shape the process of scanning the horizon of SSH research to inform the EU's next research funding framework (Horizon Europe) through four working groups, as well as guide the process of matching policy makers to researchers in Europe in the Energy-SHIFTS policy fellowship programme.

This report is structured around different sections that cascade onto each other. Section two provides the foundation for how the scoping workshop was designed by reporting on the results of a literature review. Section three then details how the workshop was implemented, who participated and how the workshop was evaluated by the participants. Consequently, section four constitutes the core of this publication, in which we cover the most critical issues discussed during the scoping workshop. Finally, based on the literature review and workshop, we make recommendations for the Energy-SHIFTS project, as well as the wider research community and funders.

We hope this report will provide insights into the latest discussions and new frontiers of social innovation in the energy domain. Should you have any questions about the content of this publication, do not hesitate to get in touch with Tessa de Geus at geus@drift.eur.nl.

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[1] energy-shifts.eu

2. Social innovation and energy: current debates

Over the past two decades, social innovation has been gaining significance as a concept to describe efforts for social change. While the absence of a clear cut definition of the term remains contentious (Van der Have and Rubalcaba, 2016), social innovation seems to be high on the EU policy agenda. This is illustrated by the support Commissioner Carlos Moedas gave for the Lisbon Declaration on social innovation, where he outlined that "*The EU will fund more social innovation because it's the future of innovation*" (Roberts, 2018). The inception of the EU Social Challenges Innovation Platform[2], the European Social Innovation Competition[3], as well as social innovation being part of the EU social investment package[4], are other examples of the EU's interest in social innovation. Another indicator signifying the relevance of the term is the many conferences organised on the theme, such as SIX Wayfinder or the Social Innovation Summit.

There has also been increased academic interest in the topic, for example through the EU-funded research projects TRANSIT[5], SI-DRIVE[6] and ITSSOIN[7]. In the context of energy transitions, it seems that scholars have increasingly picked up the term since 2016. There are now several scientific conferences wholly dedicated to the topic (e.g. Social Innovation and the Energy Transition hosted by the TU Delft and the SCENE2050 conference by SIMRA) as well as dedicated panels, such as at the International Social Innovation Research Conference 2019 in Glasgow. This is not to say that scholars have previously been ignoring the social dimensions of energy transitions - there are dedicated streams of publications on topics such as community energy (e.g. Seyfang et al., 2014), emerging business models (e.g. Bidmon and Knab, 2018) or social trade-offs of new technologies. However, it is only lately that the term 'social innovation' is used to refer to these aspects.

Arguably, attention to social innovation could heighten the awareness that energy transitions are not just about technological innovation. However, in the longer term, it may prove difficult to deliver on the high expectations projected onto social innovation as a solution to social ills and transitions. This becomes particularly apparent when acknowledging that the term social innovation is used to refer to a wide array of different activities, approaches and framings. Therefore, it is important to take stock of knowledge about the meaning, contribution and frontiers of social innovation in the energy sector.

The scoping work of the Energy-SHIFTS platform provides the opportunity for such consolidation. Since social innovation as a term is only just emerging in the context of energy transitions, it seems reasonable to first take stock of the literature, followed by an exploratory workshop. On the basis of a simple literature review with the search string "Social innovation" AND Energy[8], we discuss here what phenomena are referred to as social innovation in energy (Section 2.1). Following this, we distill how the contributions and relevance of social innovation have been studied up until this moment (Section 2.2). Third, we demonstrate how these insights have led to the design of our scoping workshop (Section 2.3).

2.1. What is social innovation in energy?

In the literature on social innovation in energy, the term social innovation is used in a myriad of ways. In fact, only a handful of studies actually engage in a conceptualisation of the meaning of social innovation. These include an editorial synthesis by Hoppe and De Vries, who conceptualise social innovation in the energy transition as: "*Innovations that are social in their means and contribute to low carbon energy transition, civic empowerment and social goals pertaining to the general well-being of communities*" (2018, p. 13). By coining this definition, they build on the definition by the Bureau of European Policy (BEPA), in which the outcome of a social innovation process is explicitly referred to as being positive (2011, p. 33). Another example is the definition by Hewitt et al., who explicitly link social innovation to the role of civil society: "*Social innovation refers to the reconfiguring of social practices in response to societal challenges, with the aim of improving societal well-being through the engagement of civil society actors*" (2017, cited in Hewitt et al., 2019, p. 2).

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[2] https://www.socialchallenges.eu/
[3] https://eusic.challenges.org/
[4] https://ec.europa.eu/social/main.jsp?catId=1044&langId=en
[5] http://www.transitsocialinnovation.eu/
[6] https://www.si-drive.eu/
[7] http://itssoin.eu/

[8] This search string was used to run a search in SCOPUS in March 2019 resulting in 69 peer-reviewed articles, out of which 37 proved relevant after having screened the abstracts. These were read and analysed and used as a basis for scoping the topic. This approach explicitly focused on analysing the use of the term 'social innovation' rather than on stock-taking the phenomena the term refers to, which of course have been studied for a long time under different nominators, concepts and terms.

While both the definitions by Hoppe and de Vries and Hewitt et al., refer to a certain reconfiguring of social practices as an outcome, the definitions are also distinctly different. Whereas Hewitt et al., refer to 'an aim' of improving societal well-being, Hoppe and De Vries suggest that something can only be a social innovation when it contributes to the low carbon energy transition, civic empowerment, etc. Besides, the definition by Hoppe and De Vries does not indicate what actors are directly involved in social innovation, meaning it could be anyone from a civil servant or private individual to a business CEO, while Hewitt et al., inherently link social innovation to the involvement of civil society actors.

In other studies, the meaning of the term is implied and up for interpretation by the reader (e.g. Walker (2011), Yalçin-Riollet et al., (2014), Magnani and Osti (2016), Gabaldón-Estevan et al., (2018), Bianchi and Ginelli (2018), and Wierling et al., (2018)). Others use the term to refer to ways in which technical innovation affects a societal issue (e.g. Yuan and Zhang (2014) and Chatfield and Reddick (2016)). This way of using the term might point towards the dominance of STEM (Science, Technology, Engineering and Mathematics) perspectives in the energy transition over contributions from SSH. In a different variation, Dóci et al., juxtapose the concept of social innovation with technological innovation: "*While technological innovations developing in market or technological niches always entail the emergence of social innovations, such as new practices, generic rules and lessons, if social innovations are in the focus of the niche development, this process does not necessarily require the presence of technological innovations (e.g. bio-agricultural communities, community development) too.*" (2015, p. 94).

Indeed, social innovations might simultaneously entail technological, economic and policy innovations, and vice versa. As such, different types of innovation can overlap and are not clearly delineated. Business innovations such as crowdfunding or social enterprises can also be regarded as social innovations. Other concrete examples of social innovation in energy include community projects that facilitate retrofitting (Vergragt and Brown, 2012), peer to peer energy trading schemes (Lavrijssen and Parra, 2017), and citizen-financed wind power firms (Maruyama et al., 2007). The overlap of different types of innovation is also seen in section 2.2, in which democratic innovation as a form of social innovation is discussed.

Next to the fragmented conceptualisation, three main issues can be distinguished with regard to the use of social innovation as a term: a strong focus on community-based energy initiatives, a narrow demarcation of the energy transition, and a limited delineation of what 'energy' entails. Firstly, there seems to be a strong emphasis on bottom-up community energy as a type of social innovation in energy. Meanwhile, other actor configurations, including government, receive relatively little attention. This focus on community is discussed using various wording, including 'renewable energy communities' (Dóci et al., 2015) and 'community energy' (Nolden, 2013; Hewitt et al., 2019). Alternatively, it is discussed along the lines of 'grassroots initiatives' (Yalçin-Riollet et al., 2014), 'grassroots innovations' (Van der Schoor et al., 2016), 'citizen participation initiatives' (CPIs) (Hatzl et al., 2016), 'community-based initiatives' (Walker 2011), or 'bottom-up initiatives' (Reinsberger et al., 2015). Community, bottom-up, and grassroots are all overlapping but non-identical terms used in relation to social innovation.

This community focus means that social innovation in government or for/ in industry is understudied. While authors such as Hoppe and De Vries (2018) and Hewitt et al., (2019) do mention the need to create appropriate institutional settings for social innovation, only De Leeuw and Groenleer (2018) frame regional government itself as a socially innovative 'living lab' approach. In short, the role of the state as an agent of social innovation is hardly explicitly addressed.

Secondly, in conducting the literature review, the demarcation of what the energy transition constitutes is notable. Many authors choose to focus on energy performance per individual household, in terms of heating and cooking (e.g. see Isoda et al., 2017; Karvonen, 2013; Lavrijssen and Para, 2017). Only some, such as Hölsgens et al. (2018), employ a broader interpretation including issues such as food waste and recycling. Lorek and Spangenberg (2019) critically discuss how narrowing down the field of energy to mere household consumption may obscure other ways energy is consumed, for instance through mobility or lifestyle choices. They argue that an understanding of what the energy transition entails should therefore be clearly discussed in academia, rather than assumed.

Thirdly, the scope of most articles mainly covers behaviour relating to energy demand and energy production issues, as opposed to optimisation issues, i.e. using fossil fuels as efficiently as possible. Together, energy reduction, production and optimisation are considered the 'trias energetica', which is a key concept for sustainable design (Rijksdienst voor Ondernemend Nederland, 2013). While the majority of social innovation articles focus on reducing energy demand (e.g. Lorek and Spangenberg, 2019; Hölsgens et al., 2018; Isoda et al., 2017), and the production of sustainable energy (e.g. Reinsberger et al., 2015, Sung and Park, 2018, Maruyama et al., 2007, Wierling et al., 2018, Dóci et al., 2015), only one article reviews the possibility of optimising the use of fossil fuels (Jerneck and Olsen, 2013).

2.2. How does social innovation contribute to the energy transition?

Based on our analysis of the literature, we distinguish between four types of (potential) contributions that social innovations make to energy transitions: 1) Accelerating the energy transition through bottom-up innovation; 2) Addressing issues of democratisation and equity; 3) Mainstreaming new practices; and 4) Creating new (local) actor configurations and relations. We end this section with a short overview of the main impediments for social innovation to contribute to the energy transition.

First of all, and in general, critical evaluations of the contributions of social innovation are scarce. Often, a positive contribution to the energy transition seems more or less assumed, without providing clear argumentation. Indeed, when reflecting on the conceptualisations of social innovation in the energy transition discussed in section 2.1, the term seemed to be considered inherently positive. Following that line of reasoning, no critical appraisal seems to be necessary, since it is automatically positive. Therefore, only by uncoupling the means from the end can we do proper assessments of the impact of social innovation, as argued by Haxeltine et al. (2017).

Nevertheless, normative assumptions are manifold throughout literature on social innovation and energy. Dóci et al., simply state that renewable energy communities "*can be drivers of energy transitions*" (2015, p. 86), Gabaldón-Estevan et al. mention how social innovation counters 'regime power' (2018, p. 12), while Reinsberger et al. assert how grassroots initiatives can "*prove useful in reaching European energy targets*" (2015, p. 178). As suggested by Hiteva and Sovocool, scholars might also assess social innovation 'failures' for a more critical perspective (2017, p. 638). For example, the issue of exacerbated intersectional inequalities due to social innovation is not often addressed, while such an evaluation of exclusionary processes should actually be a key study area for social innovation as Walker (2011), Jerneck and Olsen (2013) and Magnani and Osti (2016) argue.

As mentioned above in section 2.1, bottom-up community energy initiatives are often the primary focus of social innovation and energy literature. Consequently, outcomes of social innovation through bottom-up activities are considered its primary contribution. Work by Wierling et al. (2018) suggests that community energy has a statistically significant effect on the renewable energy transition. Others use figures from case studies to indicate the concrete contribution of social innovation, such as Goyal et al. (2017) who describe the 200,000 solar home lighting systems installed in rural India by social enterprise Selco, or Ornetzeder (2010) who discusses the rise of a self construction movement in Austria through which the number of self-built solar water heaters surged to 30,000 in 2001 (p. 110). Other scholars, such as Magnani and Osti, take a qualitative approach to describe the benefits of community energy social innovation as "*a source of social and organisational innovation promoting a variety of energy pathways alternative to the dominant traditional ones*" (2016, p. 148), as 'locally appropriate solutions', as well as a way to reduce transaction costs of renewable energy (idem, p. 149).

The second contribution is social innovation's capacity to address issues of democratisation and equity. Van der Schoor et al. (2016) establish that regional networks and cooperative energy providers challenge the dominant energy system in favour of a more democratic energy system, in which citizens have more agency about how they generate energy. Social innovations such as participatory design (Lorek and Spangenberg, 2019), or participative research (Hoppe and De Vries, 2018) are also mentioned as potential ways to increase the influence of citizens on energy outcomes. Furthermore, Hiteva and Sovacool describe how new business models in the energy sector have the potential to be more socially just, where just is understood as referring to '*equitable distribution of costs and benefits, affordability, due process and greater participation for users in decision-making*' (2017, p. 632).

Thirdly, social innovation is considered to support the mainstreaming of new practices. This is a salient point, as it indicates an interest in instrumentalising the contributions of social innovation for certain policy purposes. Throughout the articles, social innovation is often considered a *tool* for enabling learning, building capacity and increasing awareness among people (e.g. Isoda et al. (2017), Karvonen (2013), Hatzl et al. (2016), Jerneck and Olsen (2013), Magnani and Osti (2016)). For instance, Lorek and Spangenberg stress how "*needs-based tailored support, pioneering practices, challenges,* *competitions, games, learning by doing, peer-to-peer change*" might incentivise sustainable living (2019, p. 290).

The fourth point raised in the literature concerns the impact of social innovation on (local) actor configurations and relations. Social innovation in the energy transition can have an impact on modifying individual citizens' behaviour (Hoppe and De Vries, 2018, Isoda et al., 2017, Jerneck and Olsen, 2013), shifting professional roles (for instance architects and planners, see Lorek and Spangenberg, 2019), and forging new relations within and between communities (see Maruyama et al., 2007). Nolden mentions how social innovations in Germany, in this context understood as community energy (CE) initiatives, may even fundamentally transform the local economy and labour market: "*Various forms of CE in Germany (...) in many cases lay the foundation for local economic regeneration and a workforce geared towards exploiting localised energy derived economies*" (2013, p. 546). This statement is confirmed by Yalcin-Roliet et al.'s (2014) study in France, as well as in the study by Marayuma et al. (2007) Japan, where they found that citizen-financed wind farms sparked a new notion of local identity, leading to a boom in selling local goods.

Finally, the literature also indicates several impediments and obstacles that prevent social innovation from contributing to the energy transition. Access to finance is almost universally considered a major challenge for social innovation in the energy transition, in particular for community energy. Nolden (2013) and Warnecke and Houndonougbo (2016) describe the lack of finance as an obstacle to scaling up, whereas Wierling et al. (2018) observe how feed-in tariffs are a statistically significant driver for community energy. As indicated by Reinsberger et al., "*there is clearly a need for a more long-term funding strategy on the part of national authorities.*" (2015, p. 186).

Access to finance is closely related to the volatility of political support, which is also a recurrent theme. As Gabaldón-Estevan et al. illustrate (regarding renewable developments), the lobby of the Spanish energy industry impacted political support, which undermined social innovation: "*This (...) resulted in a reduction in the number of investors combined with a lack of trust in both local and foreign investors, affecting also social innovations in energy transitions*" (2018, p. 1). Furthermore, to innovate and experiment with new types of business models, Hiteva and Sovocool remark that 'supportive environments' are imperative (2017, p. 638), while Hatzel et al. (2016) recommend intermediary actors to translate the needs of citizens' participation initiatives to existing institutions.

2.3. Setting the scene: the scoping workshop

Summing up, the term 'social innovation' in academic literature in the context of the energy sector is thus mainly used to refer to community energy, rather than to other innovations in the social sphere. Furthermore, articles often propose a narrow understanding of what the energy transition as well as energy itself constitutes. Regarding its (potential) contribution, the general assumption of social innovation as something inherently positive prevents a better understanding of possible negative effects of social innovation. Instead, there is a distinct focus on how social innovation might accelerate the energy transition, address democratisation and equity, mainstream new practices, and create new actor configurations and relations. Social innovation and energy is an emerging field, with a limited number of publications referring to the social practices involved, and there is therefore a need to tap into the knowledge and expertise of diverse stakeholders. Whereas this review provides an initial insight into the main focus points and gaps in the energy-related literature, conversations with academics, policyworkers and practitioners can deepen our understanding of current debates. We used the scope of social innovation found in the literature, as well as omissions and vulnerabilities of the field, to frame a scoping workshop. In order to provide a degree of structure, while still maintaining space for wide input from the participants, we chose to focus on 1) Types and diversity; 2) Contributions and relevance; and 3) Criticisms and challenges. These topics were the basis for the scoping workshop agenda, as explained in section three.

3. Workshop: 'Social innovation in the Energy Transition'

On Thursday, April 4th 2019, we organised a 'pressure cooker' workshop under the name 'Examining diversity, contributions and challenges of social innovation for energy transitions'. It was held at the Gemaal op Zuid in Rotterdam, The Netherlands. The 'pressure cooker' format meant that many different sub questions were introduced through rounds of short pitches by speakers, followed by intensive one-hour breakout group discussions.

This workshop gathered policyworkers, researchers, representatives of Non-Governmental Organisations (NGOs) and individuals from the semi-private sector for a discussion on the priority themes within social innovation in the energy transition. For the production of this workshop, DRIFT collaborated with Energy Cities[9], the European Association of local authorities in the energy transition. Please refer to Appendix I for a blog about the session.

3.1. Agenda

(NOT) FOR SALE

9.00 – 09.30	*Doors open - coffee/tea*
9:30 – 10:00	*Welcome and introductions by Julia Wittmayer, Tessa de Geus and Stėphane Dupas*
Session 1	
10:00 – 10:30	Three pitches on social innovation in energy transitions
10:30 – 11:00	Reflection by discussant, comments and plenary discussion
11:00 – 12:00	Collaborative work and discussions in working groups
12:00 – 12:30	Collection of critical inputs and agenda points
12:30 – 13:30	*Vegetarian lunch*
Session 2	
13:30 – 14:00	Three pitches on social innovation in energy transitions
14:00 – 14:30	Reflection by discussant, comments and plenary discussion
14:30 – 15:30	Collaborative work and discussions in working groups
15:30 – 16:00	*Coffee Break*
16:00 – 16:30	Collection of critical inputs and agenda points
16:30 – 17:00	Closing of the day and next steps

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[9] http://www.energy-cities.eu/

3.2. Attendees and their affiliations

The group of 27 workshop attendees consisted of researchers (15 persons), governmental policyworkers (2 persons), NGO representatives (7 persons), and people working at semi-public institutions (3 persons), of which 10 were male and 17 female. Representing 9 countries of institutional affiliation across Northern (2 persons), Southern (3 persons), Eastern (1 person) and Western Europe (21 persons), all of the participants represent a professional as well as private 'citizen' perspective.

Two early stage researchers were present, and scholars represented a wide range of disciplines including science policy studies, biology, public management, public administration, environmental technology, international management, transition studies, human geography and geosciences. Arguably, the absence of the business perspective in the group presented a bias to the discussions.

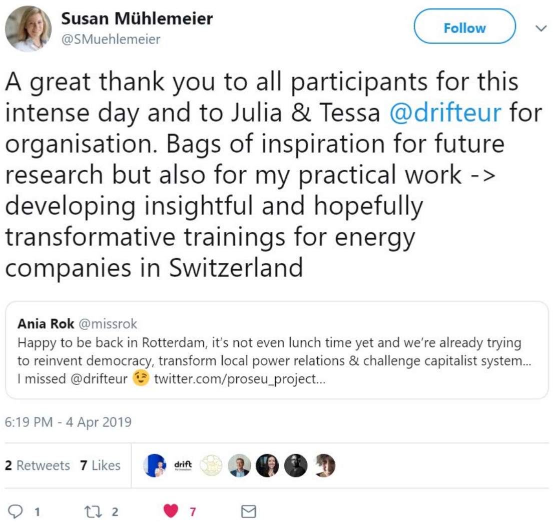
On Twitter, Ania Rok (@missrok), Susan Muehlemeier (@SMuehlemeier) and the PROSEU

Project (@Proseu_project) were among those tweeting about the workshop.

Participant feedback

As a response to the question 'What did you like most about the workshop?', participants answered:

- *"People, informal setting, interactive design, moderation and the topic!"*
- *"The long creative and open spaces to talk about topics we could choose ourselves, with people from a very varied array of backgrounds who thus contributed very interesting points of view to the debate."*
- *"The positive, enthusiastic, innovative atmosphere of co-creation."*



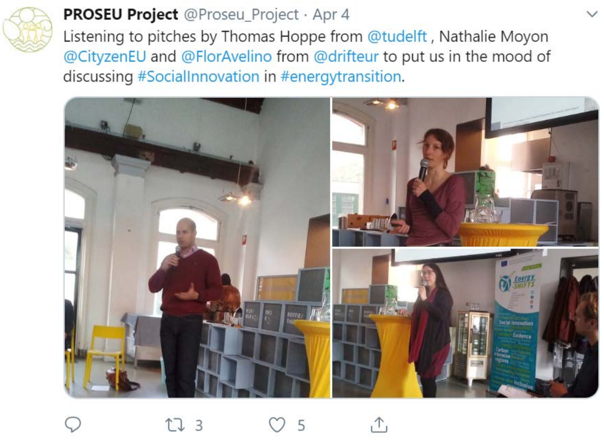
Susan Mühlemeier @SMuehlemeier

A great thank you to all participants for this intense day and to Julia & Tessa @drifteur for organisation. Bags of inspiration for future research but also for my practical work -> developing insightful and hopefully transformative trainings for energy companies in Switzerland

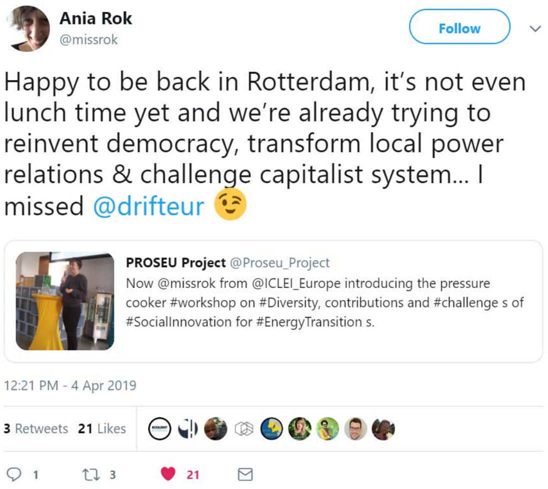
Ania Rok @missrok
Happy to be back in Rotterdam, it's not even lunch time yet and we're already trying to reinvent democracy, transform local power relations & challenge capitalist system... I missed @drifteur 😉 twitter.com/proseu_project...

6:19 PM - 4 Apr 2019

2 Retweets **7** Likes



PROSEU Project @Proseu_Project · Apr 4
Listening to pitches by Thomas Hoppe from @tudelft , Nathalie Moyon @CityzenEU and @FlorAvelino from @drifteur to put us in the mood of discussing #SocialInnovation in #energytransition.



Ania Rok @missrok

Happy to be back in Rotterdam, it's not even lunch time yet and we're already trying to reinvent democracy, transform local power relations & challenge capitalist system... I missed @drifteur 😉

PROSEU Project @Proseu_Project
Now @missrok from @ICLEI_Europe introducing the pressure cooker #workshop on #Diversity, contributions and #challenge s of #SocialInnovation for #EnergyTransition s.

12:21 PM - 4 Apr 2019

3 Retweets **21** Likes

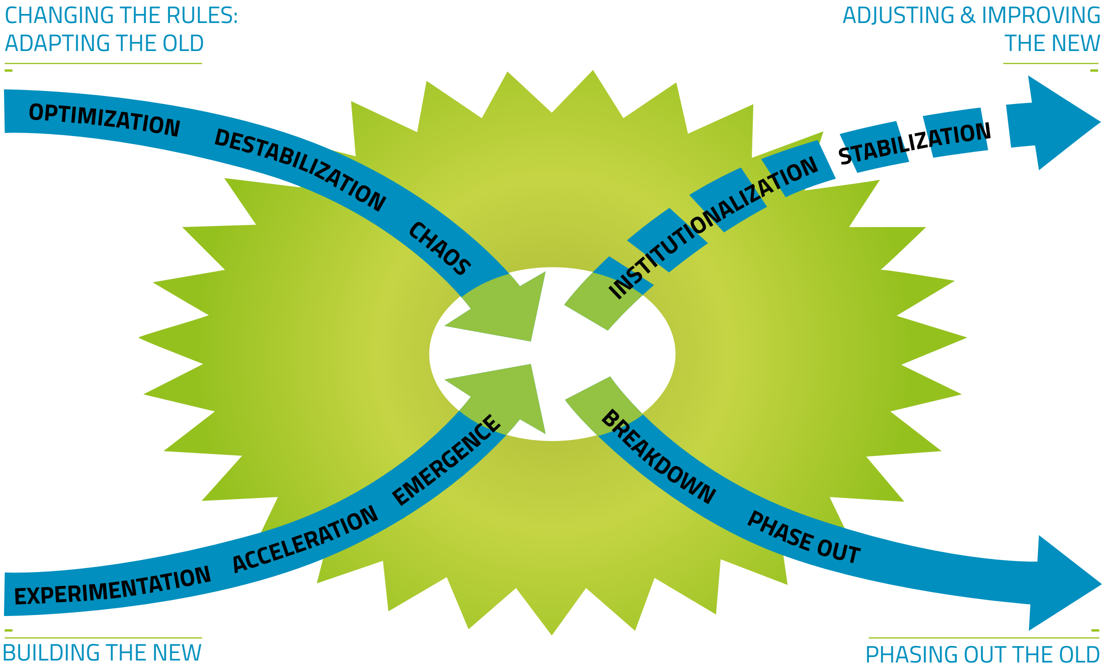


Figure 1: X-curve, Loorbach et al. (2017), p. 607.

4. The scoping workshop: discussions

The workshop's pressure cooker format created a space for participants to share their insights and experiences while discussing the state of the art research findings and research gaps in the field of social innovation and energy. Pitching sessions were followed by plenary discussions that ended with the invitation to participants to suggest topics for further discussion. Rather than reporting back on each session in turn, we synthesised the findings and report back on the most significant and engaged discussion themes that emerged during the workshop. As a result, the structure of this section deviates from the original programme structure. Understandings of the meaning and contributions of social innovation in energy can be found throughout this chapter.

In retrospect, the five main discussion points can be framed using the transition X-curve (fig. 1.), which indicates different phases in transitions (Loorbach, 2017, p. 607):

- We start at discussions on bottom-up or community energy in section 4.1, which can be understood as a phenomenon from the lower left segment, of experimentation. While already quite extensively researched, we discussed how 'niches' of frontrunning community energy initiatives relate to social innovation.
- However, several developments point towards the idea that we are now in the phase in which the role of incumbents is becoming increasingly uncertain, namely acceleration. Section 4.2 outlines the discussion on the role of incumbents and who should be involved and how.
- Another result of entering the acceleration phase is that issues of equity and inclusiveness become evermore pressing. This is discussed in section 4.3.
- Arguably, an acceleration of innovations means that there is a need for democratic innovation. In section 4.4 we report on discussions on new forms of participation.
- Linked to this, and as explained in section 4.5, it was asserted that municipalities will need fundamental reforms at a local level moving forward. This relates to the institutionalisation element as indicated on the top right corner of the X-curve.
- Finally, participants debated the balancing act of operating within a vision of where the transition ought to be heading (i.e. directionality), while also continuously learning from experiments and being open to change. This discussion is reflected in section 4.6.

In the following sections, we summarise the workshop discussions, including illustrative participant statements.

4.1. Community energy

During the scoping workshop, community energy initiatives, in the form of energy cooperatives in particular, were considered an important type of social innovation in the energy transition. An energy cooperative is a specific legal form that groups use to manage energy generation as a community. Over the past few years, much research has focussed on renewable energy system cooperatives, also known as REScoops. The emphasis on this type of social innovation in research was attributed to the perceived popularity of REScoops with policy makers. Besides, many local sustainable energy initiatives choose the legal entity of a cooperative, which in turn makes for a clear delineation of a group and thus a convenient research topic.

The establishment of energy cooperatives took a surge after 2010, rising from approximately 20 to 375 in 2018 in the Netherlands[10]. Participants discussed how social innovation through REScoops directly affects individuals' behaviour, as members tend to demonstrate lower rates of energy consumption after having become a member. Europe-wide, big differences can be identified: the field of cooperatives in The Netherlands, Germany, and the United Kingdom is considered matured and covered by research. Countries like Portugal or Poland however, hardly have any cooperatives, likely due to historical, geographical and cultural reasons. During the workshop, it was asserted that there is a need for more comparative research between geographical areas, to improve our understanding of how different political situations affect the prevalence of energy cooperatives. Additionally, a need for performing longitudinal studies was discussed, for which the work by Prof. Tine de Moor (Utrecht University) was named as an example.

Another salient issue discussed concerned the relation between research and policy; specifically, the high expectations policyworkers tend to foster with regard to the potential of cooperatives. These high expectations are not always realistic, and in fact, participants felt that many policyworkers could do much more to address institutional barriers for REScoops. More research is needed on how (regional) governments respond to the emergence of REScoops, and what role these organisations can play in building more democratic energy systems. The need for further knowledge about how to design and set up effective experiments for REScoops was deemed a priority. Such experiments could help create a better understanding of how gender, socio-economic background and age affect the public value created through these cooperatives (i.e. inclusiveness and accessibility). Namely, the decision making boards of REScoops often seems to consist of male, white, pensioned engineers, which might influence the scope of issues covered by these groups (e.g. being less focused on issues of energy poverty or inclusivity). Inclusivity is discussed further in section 4.3 below.

Research on business models, governance responses to REScoops, behavioural change within cooperatives and the role of intermediaries (such as LochemEnergie) need more scientific research to understand the full scope of the impact REScoops can have. As such, questions that are addressed at the TU Delft and in the Horizon 2020 (H2020) project PROSEU[11], include: 'How do cooperatives influence their members?'; 'How can energy cooperatives grow beyond 'usual suspects' without losing their radical core?'; and 'What are feasible business models for REScoops?'.

4.2. Acceleration: redefining roles

As indicated by the X-curve, while entering the acceleration phase of transition, the focus shifts from the emergence of alternative practices to strategies of institutionalisation, scaling and mainstreaming of alternatives. In this context, the actor landscape changes, roles of incumbent actors develop, and new norms are formed.

The first point that was explored with regard to social innovation entering a new phase of the energy transition was the changing role of incumbent actors. One of the presenters pitched on the role of a university, arguably an incumbent actor. He discussed the process of making their real estate more sustainable through retrofitting their city centre campus. Through this process, they had learned not to underestimate the influence of people outside of the project and to invest in good local relationships. However, due to the traditional bureaucratic organisation of a university, this remains challenging. During the workshop, participants argued that the role of the university ought to be pushed further. The university could initiate a living lab to experiment with improving the impoverished public space that is part of its campus. The collaboration established by John Robinson between the city of Vancouver and The University of British Columbia (Munro et al., 2016) was named as a relevant example in this regard.

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[10] Also see HierOpgewekt (2019) Lokale Energiemonitor, available here: https://www.hieropgewekt.nl/uploads/inline/2018%20PDF%20Lokale%20Energie%20Monitor%20DEF02_0.pdf

[11] https://drift.eur.nl/projects/proseu-renewable-energy-prosumerism/

Another presentation sparked a different motivation to discuss the roles of incumbents. A researcher introduced the concept of business model innovation in the energy transition. Her research findings demonstrated how there is often too little budget available for the type of capital-intensive and slow innovation that is associated with the energy transition. The researcher observed a high level of failure among crowdfunding initiatives, as well as a strong geographical bias, with Eastern Europe being strongly underserved in terms of crowdfunding platforms. During the workshop, participants discussed how crowdfunding might be a vehicle to build a movement. Nevertheless, in order to access the necessary funds, collaboration with incumbent actors was considered essential.

A debate ensued about whether incumbents who seem ‘still undecided’ on what role to take up in the transition could be convinced to take a leading position. Participants considered how there is much unused potential, particularly with regard to accessing venture capital and divesting from unsustainable energy sources, that needs to be activated in order to accelerate energy transitions. To come to a better understanding, it seems crucial to identify what prevents them from taking an active and desirable role: fear, covert resistance, or lack of awareness? A typology of incumbents could provide insights into who to involve and how. If anything, participants agreed that a strategic common vision is needed, connected to sharing practical insights on what (incumbent) actors do, why, how and when. Key questions include: How can incumbents concretely participate in transitions? How can we convey that taking part in a transition is an opportunity for progress, rather than a threat to their existence? What is the role of education on the incumbent level?

4.3. Equity and inclusiveness

A further issue that was discussed with regard to the acceleration phase of social innovation in the energy transition, was equity and inclusiveness. A researcher presented a multi-actor perspective on the energy transition teasing out how individuals have agency in all the different roles they enact, including being a family member, voter and consumer. The key question that she raised concerned how to avoid social innovation being co-opted to undermine social justice. For instance, innovative grassroots peer-to-peer energy schemes might be co-opted by market players, the way Airbnb turned the concept of CouchSurfing into a billion dollar private company. More public deliberation, discussion and awareness need to be organised around what power relations we would like to see in our future energy system; in particular, when it comes to the mainstreaming and upscaling of innovative practices.

Inequalities are intersectional, meaning they can be identified across a range of spectrums: for instance urban-rural inequalities, global inequalities, national inequalities, age inequalities or ethnic inequalities. Current energy systems serve people unequally, and reflect geographically entrenched inequality, for instance within different neighbourhoods in urban regions. Moreover, local communities themselves are not monolithic: any discussion about shifting power or resources to ‘the community’ will almost inevitably have consequences for the power relations within a community; for example, within a REScoop.

Within the inequality debate, participants agreed that it is key to acknowledge recent social unrest and resistance to change in the energy system, as well as the rise of populist movements across Europe. Movements such as the yellow vests movement indicate that energy transitions happen alongside social struggles that need to be considered in their full scope. If we fail to consider these movements, some argued that the transition towards decarbonisation will come to an inevitable standstill.

An important question that social innovation therefore needs to address is how the energy transition can be framed in relation to current societal unrest. There is a need to tap into people’s motivations and how the energy transition can be linked to tangible improvements in quality of life and (economic) opportunities. As stated by a researcher, in the Polish context it is very important to demonstrate what short term gains people get from energy measures. Climate change alone is not perceived as important enough to effect long lasting change, and social innovation might just be a tangible way to demonstrate those short term gains.

The issue of inequality also translates to how the EU deals with the energy transition, according to some participants. If the fossil fuel industry continues to be sponsored through subsidies and tax cuts, there is an unequal playing field. This should be closely investigated, as according to one participant, investment in social innovation remains marginal in comparison to those budgets. Social innovation in the energy transition cannot flourish without also considering what institutional measures and aspects need to be broken down, as is also reflected in the X-curve (fig. 1).

4.4. A need for democratic innovation

If we acknowledge that the energy transition has entered the acceleration phase, and that accordingly, shifting norms and roles should be critically assessed, a need for appropriate democratic tools and strategies emerges. One of the main topics of discussion was how social innovation can strengthen local democratic innovation and experimentation.

Whether the urgency of the energy transition is at odds with elaborate democratic innovations aimed at inclusiveness and empowerment was a hot topic for discussion. Eventually, participants seemed to agree that robust democratic processes to forge a shared vision on a democratic energy system are a precondition for fostering and, eventually, speeding up the energy transition. Participants agreed that the energy transition ought to be 'for the people and by the people': all processes should be democratic, from creating a vision, drafting strategies and operationalising local action plans.

Importantly, it was noted how establishing sound democratic processes presupposes many conditions including education, understanding democratic tools, implementing democracy at different levels or scales of governance, and providing a foundation of trust in the government. Besides these prerequisites for democratic debate, participants also discussed how a minimum income is a precondition, to allow for the financial freedom for people to take part in a democratic process on the energy transition. Initiatives such as instituting a Universal Basic Income (UBI) were debated in this regard.

Experiences from the Transition Network[12] point towards the importance of understanding whether people believe themselves to be able to influence the debate. To understand how people can be empowered to participate, a better understanding of cultural, social, and economic barriers is needed. This was underscored by a researcher who studies to what extent citizens from an underserved urban district felt welcome to participate in a deliberative democratic process. According to her findings, citizens tend to have assumptions about not being knowledgeable enough to participate, or not feeling comfortable with the way a democratic process is organised (e.g. discussion sessions).

Building on that finding, participants seemed to agree that there is a need to diversify the range of democratic tools, in order to tailor them to all groups of citizens. Another focus was social innovation as a vehicle for democratic discussion on the energy transition in school classrooms. A civil servant from Grenoble presented the Positive Energy School Challenge, through which children had learned about energy systems as well as their own impact on energy use through radical hands-on energy reduction in their school. Greater awareness directly resulted in higher numbers of children switching off lights. Other suggestions of democratic innovation included e-consultation of constituencies, serious gaming, citizen lottery, climate labour unions, and citizen debates with experts. Again, these suggestions demonstrate how social innovation and governance innovation are deeply overlapping concepts.

Another precondition for a sound democratic process is providing a clear understanding of the content that is up for discussion, and the scope of decision-making power, including its potential consequences. The Brexit referendum was mentioned as an example of a democratic tool that British people had no tradition in using. This unfamiliarity with the tool and the scope of the question at hand, together with unclear consequences of their vote and false claims influencing the debate were proposed as reasons for the current Brexit debacle. Similarly, communicating about the energy transition was considered a contentious issue, as it is often an abstract, complex issue where causes and consequences are not easily pinpointed.

Participants discussed how we might reduce the complexity of the energy transition. Connecting energy transitions with local well-being issues such as safety, green-space maintenance or space for pedestrians could, for instance, support making the abstract process more concrete. Consequently, 'How can we communicate about the energy transition in terms of quality of life?', and 'How do we communicate shared responsibilities and benefits of the energy transition, and how can social innovation help?' were considered urgent questions for social innovation in the energy transition.

Finally, as part of democratic innovation as social innovation, the issue of scale was discussed. In order to allow for citizens to have co-ownership over energy strategies and to manage as well as monitor the quality of these processes, localised approaches were considered key. In particular, the municipal level plays a crucial role in this regard, as will be discussed in the next section.

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[12] https://transitionnetwork.org/

4.5. Institutionalisation and the rise of municipalities

Municipalities were considered an important site or source of leverage for instituting experimentation and institutional change. In particular, cities were considered as a testbed to experiment with accelerating the transition and providing guidance and stepping stones (e.g. Liege's Ceinture Aliment-Terre project). Correspondingly, as indicated in the X-curve (fig. 1), local and regional government organisations, next to the national government, have an important role in the acceleration phase, in institutionalising changing roles, norms and practices.

Currently however, municipalities too often fail in supporting socially innovative practices, according to the participants. Then, in rethinking how municipalities could be organised, participants raised the following activities: co-producing public services, facilitating, triggering or inviting bottom-up social innovations, raising funds for local initiatives, and organising a learning system for social change (amongst others). Besides, municipalities also have the potential of managing public ownership of renewable energy infrastructure, which is a common issue in Switzerland, and has also been undertaken in the city of Hamburg. Arguably, ownership at a municipal level could help overcome the potential fragmentation of cooperatively owned energy systems, in which energy cooperatives each only provide energy to a small area of inhabitants.

While participants seemed to unanimously agree on the need to redesign municipalities, it was also acknowledged that such a transformation would risk creating new elites. For instance, should municipalities strengthen their collaboration with frontrunners, old and new privileges are likely to shape this process, which in turn leads back to the discussion about democratic innovation as covered in section 4.4.

Indeed, participants mentioned how municipalities all too often design participation schemes behind a drawing board, rather than through 'learning-by-doing'. Moreover, municipalities often hire external consultants to initiate and design such processes. However, once these consultants are gone the required knowledge to implement these plans disappears too. Therefore, as mentioned by an independent researcher from France, social innovation with municipalities should include building competencies among civil servants. Innovation requires people to have certain skills to tackle techno-social issues. Civil servants working on the energy transition must be able to visit municipal districts and have direct discussions with constituents about what they want and how they can participate. This requires civil servants to consider their task as part of a broader goal in its full diversity and complexity. To experiment with this, a Dutch civil servant mentioned how he is involved with the pilot programme 'Ambtenaren met lef' (tr. 'Bold civil servants'). In this programme, civil servants are trained to enter a dialogue with citizens without having answers ready and prepared. Not all civil servants are excited about such prospects: the possibility of passive resistance by civil servants was discussed by participants as a potential threat for the role of municipalities in energy transitions.

Beyond a focus on civil servants' skills, organisational experiments such as Holacracy were suggested as ways to experiment with organisational forms to fit the dynamics of the energy transition. As explained by one of the participants, Holocracy is an innovative management system in which autonomy, self-organisation and distributed power are central concepts. Namely, siloed departments were identified as a primary barrier to social innovation. In this regard, a Dutch policy professional gave the example of energy poverty in the Netherlands. Officially, Dutch policy does not recognise the existence of energy poverty in the Netherlands, citing the fact that in Dutch law, no citizen may be cut off from energy in wintertime. In reality however, citizens do suffer from energy poverty (i.e. high fuel costs relative to their income) and resulting debts and low living standards. The policy professional argued that the Department of Energy and the Department of Social Affairs do not collaborate to link the two issues to each other. As a result, there is little relevant data on how social issues and energy consumption relate, let alone how people can be supported in accessing basic energy services.

Realistically, limited capacity, access to resources and influence on national policy are grand obstacles to re-inventing the role of municipalities. Ideally, lessons learned and insights from municipalities would 'flow up' to inform national policies. Municipalities are in a prime position to signal what institutional barriers prevent the energy transition at a local level taking shape. As stated by a researcher, it will be key to consider multiple scale-levels and perspectives at the same time, from the neighbourhood to the urban, national, regional and global. The energy transition should therefore always be considered in terms of an integral vision, linking implications and effects of measures across all of these levels.

4.6. Directionality: connecting experiments to vision

While during the scoping workshop municipalities were considered a prime focus of energy-related social innovation, the question remained how stand-alone social innovation initiatives and experiments are connected to a wider movement. A participant suggested that the frame of social innovation might even disguise the need for systems change, and instead shift responsibility to an individual level. This calls into question the legitimacy of social innovation.

Therefore, participants discussed how to reconcile the need for a culture of experimentation with rethinking system architectures. This means that social innovation experiments need to be intrinsically linked to visions on the directionality (i.e. desired outcomes) of the energy transition. Indeed, it was asserted that while there are plenty of forecasts for technology, there remains a lack of social visions about energy systems in 2030 or 2050.

Further discussions on creating a 'culture of experimentation' addressed ways to foster radical experiments. One proposal was to organise experiments around the concept of 'slow energy'. This concept starts from the notion of an energy crisis, and questions the 24/7 availability of electricity. Thinking about innovation without starting from our current infrastructure might open up ways to think beyond current dominant assumptions and frames, such as growth economics. It was suggested that, while often the logic of the current system is used to build up a 'new system' in innovations, a culture of experimentation would invite a complete redesign of our system architecture. What would we like to keep, and how will new systems work for all different actors? Islands were proposed as geographical entities where a culture of experimentation can take form. There, renewable energy systems can be rethought from scratch more easily. For such a redesign to happen in practice, people would have to feel that it would improve their lives.

According to some participants, building up an energy system from an imagined 'clean slate' would allow people to design their ideal energy system from scratch more creatively. This way, people would get a better idea of how infrastructure and the associated system of power relations work. Taking this experimental vantage point, all citizens, including children, could be involved in learning to build and design energy interventions. Besides, issues such as the influence of fossil fuel corporations on state policies can be examined closely. Useful tools within an experimental approach might be serious games, energy demand reduction battles or competitions, or creative interventions such as climate escape rooms, earth hour or car-free days to increase people's energy awareness and open up new ways of thinking.

5. Recommendations

In this section we provide recommendations for specific work packages within the Energy-SHIFTS project, as well as for the wider research community. For details of the Energy-SHIFTS work packages, please refer to https://energy-shifts.eu.

5.1. Energy-SHIFTS activities

- General: The SSH agenda on social innovation should move beyond the concept of community energy, and incorporate issues such as multi-level governance, democratic innovation, re-inventing municipalities and exploring the roles of incumbents.
- Working groups: For the horizon scanning exercise we recommend inviting experts beyond academic researchers. If we want a research agenda with relevant outcomes for policy and practice, the agenda cannot be formulated by academic researchers alone.
- Working groups: The topics of working groups have been decided on based on four SET Plan themes of renewables, smart consumption, energy efficiency and transport. As demonstrated in this report, many other topics might have proven relevant for the horizon scan. This bias should be openly discussed in the final document, reflecting on potential limiting factors.
- Working groups and policy fellowships: The role of incumbents came to the fore as an important point that could be taken up by working groups as a research topic, but also in the selection of Policy Fellows.
- Policy fellowships: Considering the salience of the municipal level for social innovation in the energy transition, we recommend recruiting a substantial number of fellows, for instance one-third of the 20 selected fellows, from municipalities, taking into account the agency of municipalities in respective H2020 countries. The likelihood that policyworkers from different municipalities experience similar challenges is high. Therefore, working and publishing on possible solutions and best practices for these challenges could increase the impact of our activities.
- Policy fellowships: A possible criterion for selecting policy fellows might be to select similar policy questions on different policy levels in particular countries. This way, we might build a better understanding of the embeddedness of social innovation in the energy transition. However, including a diverse range of countries is also a consideration.

5.2. Research community and funders

- To increase our understanding of the diversity, contributions and challenges of social innovations in the energy transition, diverse research approaches are needed including experimental action research/ participatory research, transdisciplinary research, longitudinal studies and cross-case comparison. A critical evaluation of the merits and dilemmas of different approaches and methodologies can help mature the field.
- Much research and policy effort is addressed at people with the lowest energy consumption (or that are energy poor), rather than critically researching those with the highest energy consumption. According to the workshop participants, social innovation could also be a vehicle to address and study the energy use of the high consuming elite, addressing questions such as ‘What discrepancies or correlation do we see between climate change awareness and energy behaviour? ’ or ‘What motivates people with high energy consumption to voluntarily decrease their energy consumption?’.

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Appendices

Appendix 1 - Blogs and video

- 'Pressure-cooker workshop on social innovation for energy transitions: lessons learned' by Vivian Visser (Erasmus University, Rotterdam) on https://energy-shifts.eu/social-innovation-energy-transition/;
- 'But what even is social innovation?' by Bryony Parrish (University of Sussex, UK) on https://energy-shifts.eu/social-innovation/.
- A video with participants' interviews and comments from the workshop can be found here: https://www.youtube.com/watch?v=7xMm3DoHgZg

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