

The Unified Citizen Engagement Approach: a design-oriented framework for involving citizens in the energy transition



Cyril Tjahja¹, Ifigenia Psarra², Joke Kort³

¹TNO – The Netherlands Organisation for Applied Scientific Research
cyril.tjahja@tno.nl

²Hanze University of Applied Sciences
i.psarra@pl.hanze.nl

³TNO – The Netherlands Organisation for Applied Scientific Research
joke.kort@tno.nl

Abstract

The paper describes the first implementation of the Unified Citizen Engagement Approach (UCEA), a newly developed design-oriented framework for citizen engagement in the energy transition. The preliminary testing and evaluation of several of its pathways in Groningen, the Netherlands, show that the role of design in the energy transition is not limited to the adoption of (co)design tools and methods. Instead, design should be integrated in the process in a more holistic way and on multiple levels, taking into account broader issues than energy, the maturity of local initiatives, and effective communication with stakeholders.

Author keywords

co-design, citizen engagement, energy transition, positive energy districts

Introduction

The transition from fossil-fuels to renewable energy sources has become increasingly urgent, not only in the context of reaching the climate goals, but also due to the recent rising costs in energy. Although the energy transition is often perceived to be the responsibility of (national) governments, regions or local governments such as municipalities, it is the citizens who play a pivotal role in the process, as in most cases they are the ones who will ultimately have to implement the appropriate sustainability measures in their homes, change their energy production and consumption patterns and bear any financial consequences (Kalkbrenner & Roosen, 2016; Lennon et al., 2020).

In several countries, such as in the Netherlands, the importance of local energy initiatives, consisting of similarly-minded citizens who have organised themselves in order to collectively address energy-related issues in their own neighbourhoods is acknowledged (Arentsen & Bellekom, 2014; Hasanov & Zuidema, 2018; Soares da Silva & Horlings, 2020). Oftentimes functioning as intermediaries, these initiatives act as repositories for knowledge and manage relations between stakeholders, while in some cases they can play an active role in the strategy formulation for the local energy transition of their district (Hargreaves et al., 2013).

Specifically, the citizen-centred perspective on the energy transition, has led to an interest in exploring the role of co-creation and co-design in the process (Ambole et al., 2019; Ryszawska et al., 2021; Sillak et al., 2021), as the stakeholders involved need to agree on a joint vision in order to successfully implement sustainable interventions, often consisting of (technically and logistically) complex, long-term projects that can have significant impact on a neighbourhood and its residents.

Citizen engagement approaches relating to energy transition are oftentimes designed to only address one actor or stakeholder, leaning towards either technological or social aspects. In the context of this study, the *Unified Citizen Engagement Approach* (UCEA) has been developed, adopting a more integrated and designerly stance, by combining the perspectives of three main actors (the individual, the initiative and the municipality), and by mainly consisting of (co) design methods and tools.

This paper will discuss the preliminary findings of the testing of several 'pathways' that have been taken through the UCEA by local initiatives in the city of Groningen during the MAKING-CITY project during 2020-2022. The research provides a unique opportunity to evaluate this design-based citizen engagement approach from the local initiatives' perspective, by gaining insights into the implemented co-design tools, as well as into the strength of the model itself in practice.

Background

MAKING-CITY, a Horizon 2020 project funded by the European Commission, aims to demonstrate the possibilities of Positive Energy Districts (PEDs), which are districts that annually generate more (sustainable) energy than they consume (MAKING-CITY, 2023). Eight European cities participate in the project, with Groningen in the Netherlands designated as a pilot city, along with Oulu in Finland. As co-designing the PED together with local residents was one of the main tasks in MAKING-CITY, the project partners in Groningen developed the UCEA, which was based on some of the partners' existing approaches. These include the *Customer Journey to a Natural Gas-free Home* (De Koning et

al., 2020), the *Cooperative Approach* (Grunneger Power, 2023) and the *District Energy Approach* (Municipality of Groningen, 2019). In addition, the Hanze University of Applied Sciences (HUAS) conducted social research, which supported the UCEA's construction.

Co-design in citizen engagement approaches

In the Netherlands, the importance of citizen engagement in the energy transition, particularly through local energy initiatives, has been acknowledged since the past decade (Hisschemoller, 2012; Dóci & Vasileiadou, 2015). Therefore, several

citizen engagement approaches have already been developed, such as the *Smart Energy Cities* (SEC) model (Smart Energy Cities, 2023), which integrates the technological and social routes. Other approaches focus on specific audiences, such as *Becoming Sustainable Together with Residents* (Kort et al., 2022), *Moving Together Locally* (Eerland et al., 2020), the *Toolkit Engaging Entrepreneurs in the Energy Transition* (Van Nijkerk et al., 2023) and the aforementioned *Customer Journey*, which focus on home owners associations, local initiatives, entrepreneurs and individual citizens, respectively. Examples of approaches which include multiple stakeholders

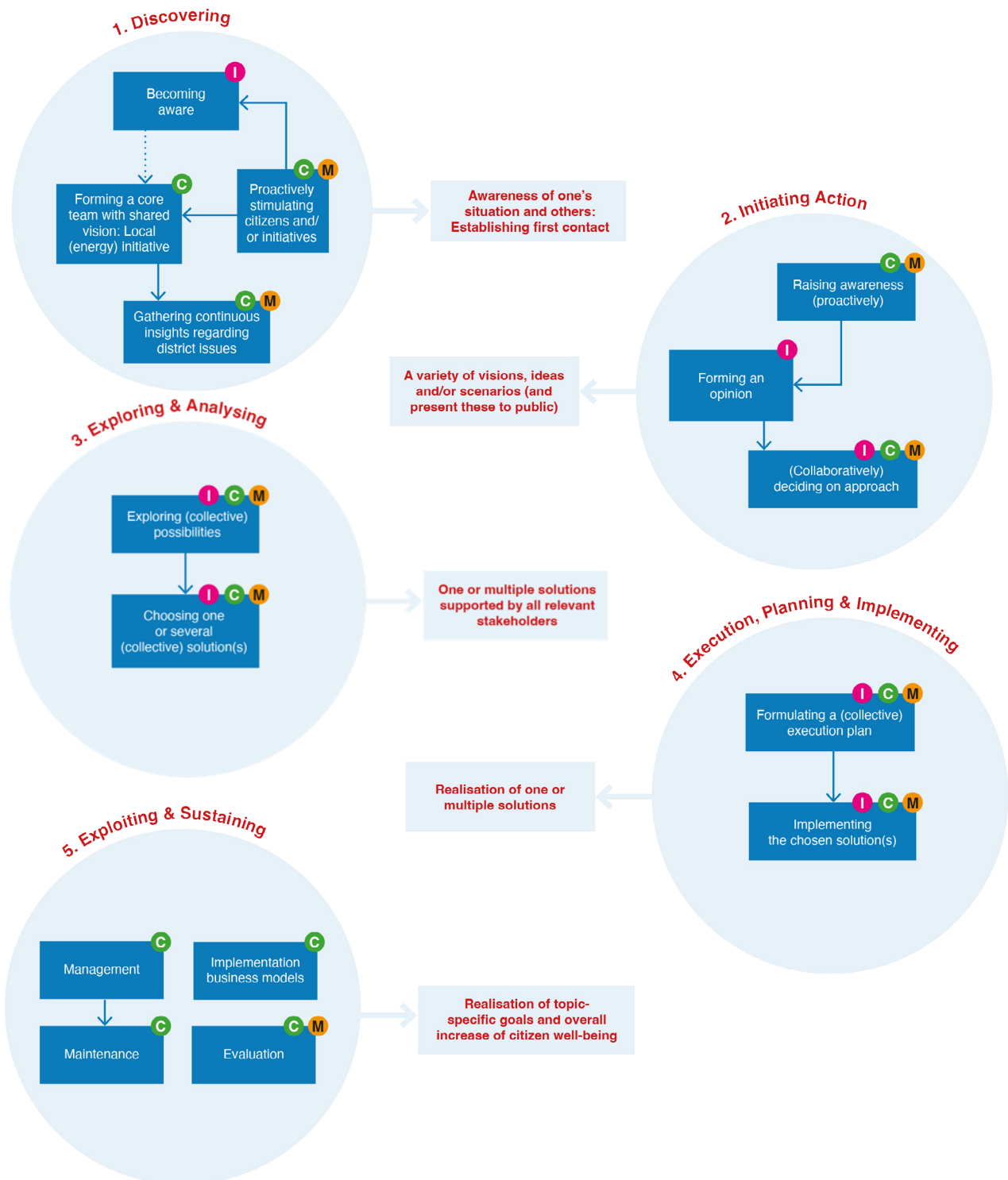


Figure 1. The five phases of the Unified Citizen Engagement Approach (UCEA), outlining actions for the three main actors: the (I) individual, the (C) cooperative or initiative, and the (M) municipality.

include serious games such as the *WE-Energy Game* (Ouariachi, 2021) and *Energy Safari* (Ampatzidou & Gugerell, 2019).

Despite the increasing interest of involving a variety of stakeholders in the energy transition, implementing co-design in the process is currently far from being standard practice. In the citizen engagement approaches discussed above, for example, co-design is not an integral part of the process, or in some cases, is not included at all. Shortall et al. (2022) reviewed 28 recent EU-funded energy transition projects, discussing the extent of citizen participation alongside the associated methods and tools. Although the authors consider co-design as one of most inclusive forms of participation, their review shows in only six projects a form of co-design was used, with only three projects taking a (co)design philosophy as their departure point.

The UCEA aims to go one step further, by including multiple actors and integrating (co)design tools and methods in all of its phases as well as fostering the dynamic nature of the design process, which is reflected in its iterative approach.

The Unified Citizen Engagement Approach (UCEA)

The UCEA consists of five iterative phases, or spaces: 1) *Discovering*, (2) *Initiating Action*, (3) *Exploring & Analysing*, (4) *Executing, Planning & Implementing* and (5) *Exploiting & Sustaining*. Within each space, key activities are outlined for the (I)ndividual, the (C)ooperative or initiative and the (M)unicipality, supported by (co-design) tools that can be used by these actors to reach the objectives within the respective phase (see figure 1). In addition, each activity comes with associated (design) tools and methods (see table 1), which are aimed to help the actor move forward in the process.

The spaces can be initiated or accessed at any time, depending on the questions or needs of the respective actor(s). Activities by different actors can occur simultaneously, both within a phase and in multiple phases. Similarly, going back-and-forth between spaces is also possible, particularly in the first three spaces. This flexibility is inherent to the approach and was designed on purpose, since experience from the field has shown that citizen engagement often does not necessarily follow a linear path. For example, if an activity in a certain phase did not yield the expected result, an actor could choose to initiate an activity from another phase or even take a step back to a previous phase.

Table 1. Excerpt of list of tools & methods for UCEA Phase 1 (Discovering), listing the relevant actors

Tools	Activity		
	Raising awareness (proactively)	Forming an opinion	(Collaboratively) deciding on approach
Collective SWOT analysis		I C M	I C M
Design charrettes		I C M	I C M
Ecosystem mapping	C M	C M	C M
Fast idea generator		I C M	

Methodology

The development of the UCEA was preceded by an extensive social research phase conducted by a multidisciplinary research team in close collaboration with local citizen initiatives, which providing insight into various social aspects, such as social cohesion, sustainable behaviour and appropriate communication (Tjahja, 2022). These qualitative research studies, which were conducted during the development of the UCEA, informed the design process of the approach, and influenced the testing and evaluation process.

As it was not feasible within the scope of the project and the time span of the five UCEA phases to test the entire approach, since this would require several years and long-term commitment of stakeholders, a number of pathways through the model have been tested in three districts in Groningen: Hoogkerk, Oosterpark and Oosterpoort (see figure 2). The districts differ in terms of built environment, spatial development and sociodemographics, and the key criterion for selection was the willingness of the respective local neighbourhood initiatives to participate in the project.

All three districts started with the first phase of the UCEA, taking the perspective of the cooperative/initiative, as the pathways were designed in close collaboration with the collaborating local initiatives, considering their current progress, needs and respective local socio-economic context. In addition, each pathway consisted of activities spanning multiple phases, with some of the tools and methods being tested during co-creation events organised by the project partners in collaboration with the local initiatives. The tools were evaluated by means of surveys and interviews with some of the participating actors, such as key members of the initiatives and municipality representatives.

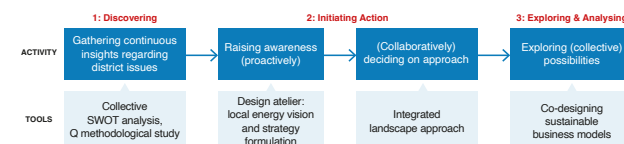


Figure 2. An example of one of the three pathways. In this case, the pathway tested in the district of Hoogkerk in Groningen (October 2021 – June 2022).

Findings

The main findings of the preliminary evaluation of the UCEA have been grouped in broader themes, which will be discussed separately in the following sections.

Broadening the focus

Both the social research studies, as well as the evaluation of the implemented UCEA path in Hoogkerk, show that co-creation events with residents should have a broader focus than only energy transition. Oftentimes, issues related to sustainable energy are intertwined with other (social) issues in the neighbourhood, such as (energy) poverty, social exclusion and safety. Addressing these issues separately is therefore not conducive, necessitating the adoption of a more comprehensive approach. In Hoogkerk, the implementation of the *integrated energy landscape approach* (De Boer & Zuidema, 2015; Picchi et al., 2019), in a number of participatory events, was particularly useful when co-designing a PED-district, as it takes into account the values assigned to the place by the local community.

Maturity and flexibility

The choice of tools and methods used in each stage of the UCEA process should be chosen carefully, as this decision depends on the level of development and readiness ('maturity') of the local initiative and community in relation to local energy transition. Moreover, taking into account the other two actors and trying to connect and potentially include them within suitable moments of the emergent pathway, can be of great importance. Flexibility is recommended when implementing these tools, as they may need to be modified to fit the needs of the initiative or other stakeholders, with some tools being more suitable for certain groups in particular phases or activities.

The evaluation of UCEA finds that while it is adaptable to different contexts, there are inherent restrictions when working with local citizen initiatives or cooperatives. The aforementioned maturity level of the initiative, lack of resources (time, manpower) and their own planning may restrict the types of tools that can be applied. Additionally, initiatives may not follow the same timeline as municipalities or researchers, and their pace should be respected when organizing activities or events.

Moreover, due to the long-term nature of the energy transition process and the variations in maturity of initiatives, it may not be possible to fully follow all five phases of the UCEA, and it is recommended to set up specific pathways instead. The UCEA should be used as a framework to support and guide the actors through the process, without enforcing a certain pace or deadlines, as there is a risk of initiatives abandoning the approach due to this. Additional tools and methods can be added as needed, but their value and impact on other actors and stakeholders should be considered as well as the added value they have over existing tools and how their input/output connects to the other tools in the UCEA.

The importance of a solid communication strategy

The purpose and goals of participatory events should be clearly communicated to both the organizers and attendees, and an explicit framework outlining the process should be used and followed during events. Additionally, the events should be held consistently and on a regular basis, as the outcomes of one event can be used as input for future events. It is also important to consider the number and types of participants, as they can have a significant impact on what in/output is generated. When communicating with the local community, it is important to tailor the strategy to take into account local perspectives on the energy transition. The social research studies conducted in the preliminary phase have shown that events are oftentimes geared towards specific groups, such as homeowners, while unintentionally excluding others, such as tenants, students and landlords. In addition, when using a certain tool or method, it is important to clearly explain the intentions and reasoning behind these decisions to the local community and municipality and to involve them in the process.

Discussion

The findings show in the energy transition is not limited to the usage of (co)design tools and methods with stakeholders, but can play different roles on different levels. First, the expansion of the scope to include broader societal issues than solely the energy transition, should also be reflected in the overall approach, necessitating the inclusion of holistic (co)design

methods, such as the aforementioned integrated landscape approach. Consequently, suggested interventions based on these analyses will most likely have a broader (physical) impact on the neighbourhood as well. The inclusion of the municipality as an actor in the UCEA is therefore essential, as these interventions can have an impact on public space.

Second, in addition to co-designing with residents one specific events, such as neighbourhood gatherings or events, the energy transition process as a whole should be a joint effort from its inception, which is evidenced by the fact that the maturity of the initiatives will determine the scope, feasibility and impact of the proposed (design) interventions. Moreover, since input and output of certain tools, in some cases, can be dependent on one another, a careful consideration is needed to determine *which* tool to use *when* and which actions to undertake next. By coordinating the sequence of tools within a pathway in an effective way, a local initiative could, for example, also inspire the two others actors to contribute and encourage them to initiate action themselves.

Third, there is also a role for design in the communication activities surrounding the energy transition process in a neighbourhood, as how the interventions are communicated can potentially influence the awareness, perception, expectations, and ultimately, the degree of support and participation of local residents. The social research studies conducted have shown that communication is often aimed at particular audiences, such as homeowners with a relatively high income, while inadvertently excluding other groups, such as social tenants, students and migrants. A comprehensive communication strategy, for example, through *transmedia storytelling*, which entails systematically conveying a narrative through multiple channels, with each medium providing its own unique contribution (Jenkins, 2008), could be a suitable means to address this issue.

Conclusion

This preliminary evaluation of the UCEA has demonstrated that design can play a much broader role in the energy transition than traditionally envisioned. Furthermore, the inclusion of the three main actors enables fine-tuning of the process, which can have a positive effect on the effectiveness of the tools used as well as the eventual outcome. Although these initial results are promising, more research needs to be conducted to explore other pathways and test the strength of the of the approach itself by investigating the pathways' sequences as well as the tools associated with them. The complete framework as well as its development is described in the project deliverable *D3.11 New citizens' engagement strategies in Groningen* and can be found on the MAKING-CITY website (makingcity.eu).

Acknowledgments

This research was funded by the European H2020 Research and Innovation programme under the Grant Agreement n°824418.

References

- Ambale, A., Musango, J. K., Buyana, K., Ogot, M., Anditi, C., Mwau, B., Kovacic, Z., Smit, S., Lwasa, S., Nsangi, G., Sseviiri, H., & Brent, A. C. (2019). Mediating household energy transitions through co-design in urban Kenya, Uganda and South Africa. *Energy Research & Social Science*, 55, 208–217.
- Ampatzidou, C., & Gugereil, K. (2019). Participatory game prototyping—balancing domain content and playability in a serious game design for the energy transition. *CoDesign*, 15(4), 345–360. <https://doi.org/10.1080/15710882.2018.1504084>
- Arentsen, M., & Bellekom, S. (2014). Power to the people: Local energy initiatives as seedbeds of innovation? *Energy, Sustainability and Society*, 4 (2).
- De Boer, J., & Zuidema, C. (2015). Towards an integrated energy landscape. *Proceedings of the Institution of Civil Engineers - Urban Design and Planning*, 168(5). <https://doi.org/10.1680/udap.14.00041>
- De Koning, N., Kooger, R., Hermans, L., & Tigchelaar, C. (2020). *Natural gas-free homes: Drivers and barriers for residents* (TNO 2020 P11521). TNO. <https://energy.nl/media/downloads/Natural-gas-free-homes-drivers-and-barriers-for-residents.pdf>
- Dóci, G., & Vasileiadou, E. (2015). "Let's do it ourselves"—Individual motivations for investing in renewables at community level. *Renewable and Sustainable Energy Reviews*, 49, 41–50.
- Eerland, D., De Koning, N., Kort, J., & Paradies, G. (2020). *Samen lokaal in beweging*. <http://publications.tno.nl/publication/34636460/jYwPM2/TNO-2020-P10323.pdf>
- Grunneger Power. (2023). *Ondersteuning voor een wijkenergieplan*. <https://www.grunnegerpower.nl/projecten/cooperatieve-aanpak/>
- Hargreaves, T., Hielscher, S., Seyfang, G., & Smith, A. (2013). Grassroots innovations in community energy: The role of intermediaries in niche development. *Global Environmental Change*, 23, 868–880.
- Hasanov, M., & Zuidema, C. (2018). The transformative power of self-organization: Towards a conceptual framework for understanding local energy initiatives in The Netherlands. *Energy Research & Social Science*, 37, 85–93.
- Hisschemoller, M. (2012). Local energy initiatives cannot make a difference, unless *Journal of Integrative Environmental Sciences*, 9(3), 123–129. <https://doi.org/10.1080/1943815X.2012.716193>
- Jenkins, H. (2008). *Convergence Culture: Where Old and New Media Collide*. NYU Press.
- Kalkbrenner, B. J., & Roosen, J. (2016). Citizens' willingness to participate in local renewable energy projects: The role of community and trust in Germany. *Energy Research and Social Science*, 13, 60–70. <https://doi.org/10.1016/j.erss.2015.12.006>
- Kort, J., Klösters, M., & De Koning, N. (2022). *Becoming sustainable together with residents—Participation and communication manual for housing corporations*.
- Lennon, B., Dunphy, N., Gaffney, C., Revez, A., Mullally, G., & O'Connor, P. (2020). Citizen or consumer? Reconsidering energy citizenship. *Journal of Environmental Policy & Planning*, 22(2), 184–197. <https://doi.org/10.1080/1523908X.2019.1680277>
- MAKING-CITY. (2023). *The PED concept*. <http://makingcity.eu/the-project/>
- Municipality of Groningen. (2019). *Stap voor stap naar aardgasvrije wijken en dorpen: Strategie en aanpak*. <https://gemeente.groningen.nl/file/stap-voor-stap-naar-aardgasvrije-wijken-en-dorpen-strategie-en-aanpak>
- Ouariachi, T. (2021). Facilitating Multi-Stakeholder Dialogue and Collaboration in the Energy Transition of Municipalities through Serious Gaming. *Energies*, 14(3374). <https://doi.org/10.3390/en14123374>
- Picchi, P., Van Lierop, M., Geneletti, D., & Stremke, S. (2019). Advancing the relationship between renewable energy and ecosystem services for landscape planning and design: A literature review. *Ecosystem Services*, 35 (241–259), 241–259. <https://doi.org/10.1016/j.ecoser.2018.12.010>
- Ryszawska, B., Rozwadowska, M., Ulatowska, R., Pierzchała, M., & Szymański, P. (2021). The Power of Co-Creation in the Energy Transition—DART Model in Citizen Energy Communities Projects. *Energies*, 14 (5266).
- Shortall, R., Mengolini, A., & Gangale, F. (2022). Citizen Engagement in EU Collective Action Energy Projects. *Sustainability*, 14 (5949). <https://doi.org/10.3390/su14105949>
- Sillak, S., Borch, K., & Sperling, K. (2021). Assessing co-creation in strategic planning for urban energy transitions. *Energy Research & Social Science*, 74.
- Smart Energy Cities. (2023). *Het model*. <https://www.smartenergycities.nl/model/>
- Soares da Silva, D., & Horlings, L. G. (2020). The role of local energy initiatives in co-producing sustainable places. *Sustainability Science*, 15, 363–377.
- Tjahja, C. (2022). *Setting the stage: The value of contextual social research when designing with local sustainability initiatives* (D. Lockton, S. Lenzi, P. Hekkert, A. Oak, J. Sádaba, & P. Lloyd, Eds.). Design Research Society. <https://doi.org/10.21606/drs.2022.290>
- Van Nijkerk, J., Groen, D., De Ridder, W., & Kramer, M. (2023). *Toolkit Ondernemers betrekken bij de energietransitie*. <https://www.platform31.nl/publicaties/toolkit-ondernemers-betrekken-bij-de-energietransitie>