

At the interface of top-down and bottom-up: how do local governments and citizen initiatives collaborate successfully in the realization of a heat grid in Groningen?



Figure 0 - heat tubes in the neighborhood of Selwerd (Warmtestad, 2020)

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Colophon

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Abstract

This research analyzes the collaboration between the local government and citizen initiatives in the realization of a collective heat grid in the north of Groningen. The collaboration is evaluated based on five success factors derived from the literature: alignment of visions, local embeddedness, mutual trust, communication and supportive governance arrangements. By means of semi-structured interviews with all actors involved, it is assessed to what extent these factors are present in the case study and how they contribute to the success of the project. The results indicate that the extent to which each factor is present in the process varies. Mutual trust and good communication seem to be most widespread among actors, while the alignment of visions and local embeddedness require some adjustments. The institutional settings will become more supportive as the process of making formal arrangements is finished. However, citizen initiatives are provided limited space by the government, who seems to prioritize the achievement of policy objectives

keywords: bottom-linked governance, energy cooperatives, energy democracy, heat grid, citizen initiatives

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1 Introduction

1.1 Background and societal relevance

The energy transition is high on the national political agenda in the Netherlands due to the earthquakes in Groningen and the worldwide climate crisis. Recently, geopolitical reasons have increased the urgency of phasing out natural gas. This situation could be used as a window of opportunity for citizen collectives to raise a debate about radically changing the system of heat provision (Proka et al., 2018). The national government believes meaningful citizen engagement is crucial in the transition to a gas-free built environment by 2050 (Beauchampet & Walsh, 2021). Much attention has been paid to citizen participation, mainly to obtain societal support (Notten, 2020). Local energy cooperatives can be of great value in the transition to sustainable heat as an intermediary between citizens and the government (Wagemans et al., 2019; Warbroek et al., 2018). Citizen initiatives can unite neighborhoods and communities and find solutions within the local area (Notten, 2020). A collaboration between municipalities and energy cooperatives can accelerate the energy transition, if the wishes of citizens are adequately represented (Wagemans et al., 2019). Local energy cooperatives might stimulate energy citizenship, as active involvement reduces the passivity of collective solutions (Beauchampet & Walsh, 2021). Energy cooperatives have proven to be successful in mobilizing the public, raising awareness and building support for the energy transition (Jonker et al., 2017; Wagemans et al., 2019; Warbroek et al., 2018; Blanchet, 2015). In contrast to governments, they often speak to citizens directly and involve them during the process itself. Therefore, they are granted a higher level of trust by citizens (Notten, 2020; Wagemans et al., 2019).

According to Warbroek & Hoppe (2017), subnational governments can play a prominent role in promoting active citizen involvement, by adapting the institutional settings. Creating more space for citizen initiatives can contribute to an ‘energy democracy’ and a ‘just energy transition’ (Oteman et al., 2014; Warbroek et al., 2018; Wagemans et al., 2019). Energy cooperatives can benefit from municipal support, not only with regards to material resources (financing, knowledge) and networking, but recognition by the government can also add legitimacy, resulting in a higher level of trust by citizens (Meister et al., 2020).

Situation in the Netherlands

In the Netherlands, the energy market is currently dominated by a few commercial, pro-fossil fuel market parties and the government (Warbroek et al., 2018; Notten, 2020; Oteman et al., 2014). However, the potential of community initiatives in the field of renewable energy is increasingly recognized, partly due rising environmental awareness in policy (Oteman et al., 2014). Still, it remains hard for citizen initiatives to provide an alternative in a centralized, fossil fuel-based market and compete with the dominant grid operators (Warbroek et al., 2018; Blanchet, 2015). Even though the government supports citizen initiatives in general, a citizen-led heat grid and sufficient funding is hard to obtain (Notten, 2020). Energy cooperatives also increasingly recognize that being fully independent is currently not realistic. Inter alia, they lack the required manpower, technical expertise and funding. Therefore, establishing partnerships, for example with governments, is crucial (Proka et al., 2018). Current experiences show that the chance of success is high when the governments supports an initiative and provides space to

experiment. In a long-term collaboration, concrete results can be achieved. The relation between governments and citizen initiatives is challenging, as both parties are unsure what to expect from each other, both on a local and national level. Even though they share the same broad vision, it is hard to build a stable and continuous collaboration. A new interplay between governments and citizen initiatives is needed to enable a fruitful collaboration (Wagemans et al., 2019; Notten, 2020).

1.2 Academic relevance

Most research on energy cooperatives focuses on their strategic position in the field of sustainable energy and internal processes (e.g. Yildiz et al., 2014; Proka et al., 2018), while the interaction with local governments is much less studied. A so-called “bottom-linked” approach is praised by various authors (e.g. Eizaguirre et al., 2019; Eizaguirre & Pradel, 2012; Moulaert et al., 2019; Baker & Mehmood, 2015) as a balance between a top-down command-and-control approach and bottom-up, community-led practices. Many governments tend to perceive citizen groups as an important ‘vehicle’ to achieve environmental policy objectives (Proka et al., 2018; Notten, 2020; Meister et al., 2020; Warbroek & Hoppe, 2017), but this implies that citizens wish to be used by governments and secondly, are capable of provoking change, amongst other things (Middlemiss & Parrish, 2009). More research should be directed towards optimizing the collaboration between local governments and citizen initiatives in order to accelerate the energy transition.

In the academic literature, the concept of bottom-linked governance is currently mainly applied in the context of urban renewal (e.g. example Pradel-Miquel, 2021; Eizaguirre et al., 2019; Eizaguirre & Pradel, 2012), and no direct links have been made with the energy transition, especially with regards to a collective heat grid as a case study. Wagemans et al. (2019) have identified several success factors regarding the governance role of energy cooperatives and the interaction with the government in the province of Limburg, but more case studies should be added to confirm these aspects and gain a broader understanding of their practical value.

With regards to the case study, Van der Windt et al. (2021) have studied the interaction with the government in the initial project in Paddepoel, but since then, many new developments have taken place in the collaboration between the local energy cooperative and the government. Furthermore, the project has extended to two other neighborhoods that have not been included in a case study yet.

1.3 Research problem (case study)

In 2018, a group of homeowners in Paddepoel, organized as foundation ‘Paddepoel Energiek’ wanted a collective and sustainable heating solution for and by citizens. As part of the project team 050Buurtwarmte (together with local energy cooperative Grunneger Power), they explored the possibility of a cooperative local heat grid and presented their report to the municipality in November 2019. In response, they were asked to scale up to three neighborhoods in the northwestern part of the city (Selwerd, Paddepoel and Vinkhuizen), which are designated to be gas-free before 2030, as part of the national government transition program. The municipality decided a collective heat grid would be the best solution, and instructed the public heat company Warmtestad to install a heat grid. However, the municipal heat grid is mainly planned for large

apartment complexes and housing corporations thus far, while independent homeowners also desired sustainable heat, but alternative solutions such as heat pumps turned out to be unaffordable for many homeowners. Therefore, Grunneger Power has researched how to connect these individual homeowners to the heat grid (the *buurtwarmte* project). They have become the official partner of the government, while the original initiative group Paddepoel Energiek only plays a marginal role after scaling-up.

In February 2022, Grunneger Power has published their advice to the municipality. It stated that a clear division of roles is crucial for continuing the collaboration with the government. As the intention is to establish a long term partnership, it is important to identify the factors that contribute to a successful collaboration in an early stage and derive lessons for the future.

Table 1 provides an overview of all actors and their main roles in the *buurtwarmte* project. Figure 1 shows their relationships and interdependencies. The size of each circle broadly reflects the extent of control each actor has over the project and other actors. The letters refer to the main assets each actor has. A double arrow refers to a mutual relationship, a single arrow shows a one-sided relationship. In some cases, both types occur. For example, the municipality and Grunneger Power are working mutually on issues such as subsidy application, the municipality has a strong steering role towards policy objectives.

As can be derived from the figure, the relationship between the government and citizens is only one-sided, and therefore several intermediaries exist to ensure citizen communication and involvement (Grunneger Power, Paddepoel Energiek and Sunny Selwerd). Sunny Selwerd is established by the government, but they have close contact with citizens. Paddepoel Energiek does not have a direct connection to the government, as they are not actively involved in the project anymore. Instead, they try to represent citizens' concerns by giving feedback to Grunneger Power. Warmtestad has some direct contact with citizens, but mostly to provide information and convince them to switch to urban heat. In contrast to Grunneger Power, they are not immediately concerned with incorporating citizen ideas.

Name of actor	Type	Main role
Grunneger Power	Local energy cooperative	Mobilization, involvement and support of citizens
Paddepoel Energiek	Neighborhood group, initiator of the 050buurtwarmte project	Not directly involved; providing general advice on sustainability
Municipality of Groningen	Local government	Responsible policy actor and owner of the heat network
Warmtestad	Public heat company	Construction of the heat grid, transport and delivery of energy
Sunny Selwerd	Neighborhood renewal program of the government	Ensuring citizen participation, alignment of projects and communication

Table 1 - an overview of actors and their main roles

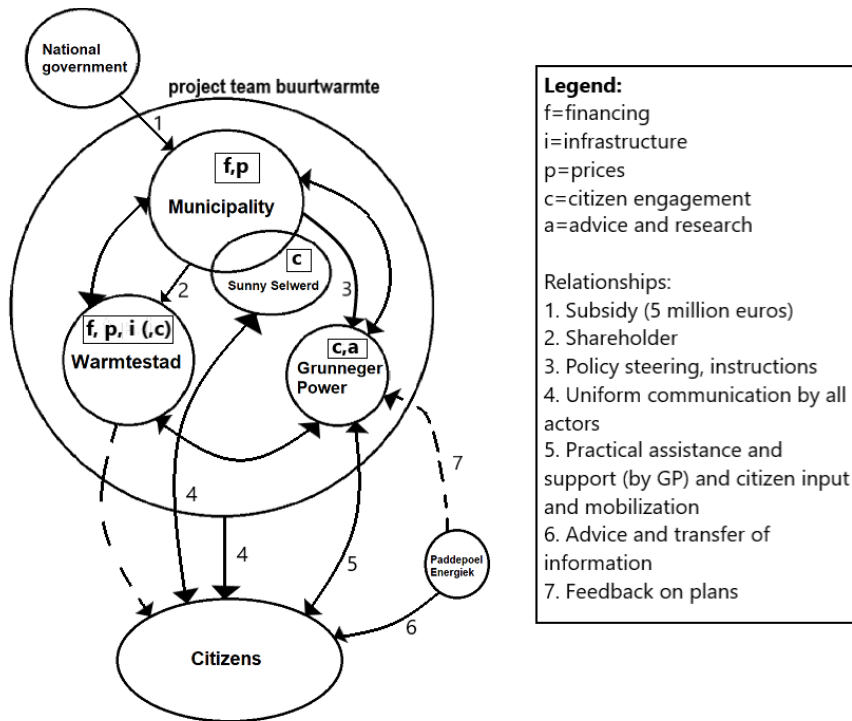


Figure 1 - a conceptual model of the position of actors

1.4 Research aim and questions

This research aims to evaluate the collaboration between the local government and citizens initiatives in the realization of a collective heat grid based on success factors derived from the literature.

Following from the research aim, the main research question constitutes: *"To what extent are factors that contribute to a successful collaboration between the local government and citizen initiatives present in the realization of a collective heat grid in the city of Groningen?"*

The main research question will be addressed with help of the following sub questions, each constituting a possible success factor. It is expected that these five factors will contribute to explaining the possible success of the case in Groningen.

1. To what are the plans, visions and goals of citizen initiatives and the government aligned?
2. To what extent are the wishes of the local community represented in the process?
3. To what extent do actors trust each other and have faith in the collaborative process?
4. What is the quality of the communication between the government and citizen representatives?
5. How does the current institutional framework support or restrict the capacity of citizen initiatives?

1.5 Reading guide

This thesis consists of six chapters. Chapter two outlines the theoretical framework, in which core concepts such as energy democracy and governance approaches are addressed, and a list of success factors is distilled from the literature. Chapter three describes the methodological considerations. In the fourth chapter, the main results are presented. Chapter five provides an answer to the main research question by summarizing the results and discussing them in the context of the broader theoretical framework. The sixth and final chapter discusses the main findings in an attempt to draw lessons for the future. In addition, suggestions for future research are made based on a reflection of the strengths and limitations of the research.

2 Theoretical framework

2.1 Relevance of citizen involvement in the energy transition

Citizens are capable and desire to be involved in the energy transition (Beauchampet & Walsh, 2021). Strong public participation contributes to an increased sense of ownership, belief in collaborative projects and thereby acceptance of measures (Wagemans et al., 2019). As a result, societal resistance, including the dreaded “NIMBY-effect”, is less likely to unfold (Lang & Roessl, 2013; Wagemans et al., 2019). A voluntary and participatory approach, based on citizens’ intrinsic motivation, has shown to be more effective than a commanding approach, due to the higher degree of perceived legitimacy, especially if the benefits are kept within the local community (Wagemans et al., 2019; Meister et al., 2020). Governments risk societal resistance as they tend to prioritize efficiency and professionalization over citizen engagement and locally added values, whereas local ownership and meaningful citizen engagement contributes to a higher level of trust, societal support and ultimately more success in sustainable heat projects (Notten, 2020). Furthermore, as acceptance by the local population increases, political tensions related to the energy transition could be reduced (Blanchet, 2015).

2.2 Energy cooperatives, energy democracy and modes of governing

According to the International Co-operative Alliance (ICA), *energy cooperatives* are democratic and autonomous organizations with voluntary and open membership. They are led by citizens sharing the same needs and values (Wagemans et al., 2019). Social and community benefits, such as fairness and environmental justice, are valued over economic returns (Yildiz et al., 2015). Their core principles are associated with openness, transparency and accountability (Meister et al., 2020).

Energy cooperatives often act as an intermediary between the government and citizens, representing public concerns and assisting citizens in governmental procedures (Warbroek et al., 2018; Warbroek et al., 2019). They mobilize citizens in sustainable energy projects and develop concrete plans, whether or not they are in charge of the energy provision themselves (Wagemans et al., 2019).

Energy cooperatives are important for establishing an *energy democracy*. In general, opening up the energy system for citizen initiatives can foster an energy democracy, meaning “an enhanced sense of democratic and community control of energy generation, distribution, and the energy system itself” (Warbroek et al., 2018, p.5). An energy democracy ranges from a representation by the government to an area-based democracy by energy cooperatives, owning and controlling all elements of the heat chain. Joint decision-making with citizens of an area-based democracy is a crucial element and gives energy cooperatives legitimacy (Notten, 2020). An area-based energy democracy can be characterized as bottom-up, whereas a representative democracy represents to a top-down approach. In the latter one, citizens are treated as consumers who are not included in the process of developing, whereas a bottom-up process would invite residents to give feedback during the process, or to (co)design a plan themselves. Some governments tend to think top-down in order to carefully outline their course of action, while the energy transition is a highly complex and urgent issue (Notten, 2020).

Warbroek & Hoppe (2017) characterize this spectrum between *top-down and bottom-up* as a “balancing process of enabling and authoritative modes of governing” (p.25). The role of the government in community energy projects ranges from very active to more passive (Van der Windt et al., 2021). Recently, as a response to the privatization and outsourcing of public services since the 1980s (Hall, 2012), the movement of *remunicipalisation* has resulted in a leading role by local governments, arousing debates about new forms of ownership (public or cooperative) of public utilities, including energy infrastructure (Becker et al., 2017). Both governments and energy cooperatives are exploring their role in relation to each other, but it is challenging to make stable, long-term arrangements (Notten, 2020). The energy market has become a complex playing field, with citizens as ‘prosumers’ or co-producers of energy instead of passive consumers (Wagemans et al., 2019; Becker et al., 2017). However, citizen initiatives are often dependent on market parties or public actors, e.g. with regards to knowledge, financing or access to physical infrastructure. High investments in infrastructure are often infeasible for citizens. The energy grid is currently highly centralized and dominated by private parties, which is opposed to a high degree of autonomy of citizens. Also, municipalities can be highly dependent on market parties for financial resources (Warbroek et al., 2018; Notten, 2020).

Tensions exist between the larger role of municipalities and the independence of citizen initiatives. Municipalities often have high ambitions that require a large-scale approach and a leading role for the government, while most bottom-up initiatives aim for small-scale projects (Wagemans et al., 2019). “Municipalities think on a municipal level, while heat cooperatives think on neighbourhood level.” (Notten, 2020, p.26, translated by author). Conflict can arise when community initiatives are forced to scale up. Often, external funding and support is needed, which puts their democratic and autonomous principles at risk (Drujff & Kaika, 2021). Similarly, Drujff & Kaika illustrate how the pressure to upscale bottom-up initiatives can lead to loss of innovative potential. Governmental actors often try to fit grassroots initiatives within the existing institutional framework, rather than trying to learn from them and adapt the institutional settings accordingly. It is concluded that scaling up grassroots initiatives requires an inherently different approach than a top-down planned pilot project.

2.3 Success factors

Several success factors were distilled from the literature with regards to low carbon energy initiatives and energy cooperatives. In this study, these will be applied to the collaboration between the government and citizen initiatives. Some authors identified barriers, which were translated into success factors for this research.

The factors found are:

- Alignment of visions across government levels and stakeholders
 - This leads to political stability, providing institutional space for community involvement in renewable energy projects (Oteman et al., 2014)
- Energy cooperatives being locally embedded, representing the voice of the community (Wagemans et al., 2019; Meister et al., 2020)
 - Active community members are often scarcely available
- Mutual trust between public officials and citizen representatives (Hoppe et al., 2015)
 - This can be achieved by a.o. honesty, transparency and openness (Wagemans et al., 2019; Proka et al., 2018)

- Regular and direct contact between government officials and community representatives (Wagemans et al., 2019)
- Supportive governance arrangements (both national and local) (Warbroek et al., 2019)
 - Governments tend to prefer centralized, top-down solutions (Proka et al., 2018)
 - Existing funding schemes need to match the plans and aspirations of citizen initiatives (Warbroek et al., 2019)
 - Inflexible regulations can restrict the role of energy cooperatives in a dynamic energy system (Wagemans et al., 2019).
 - Formal arrangements regarding local ownership of heat sources do not exist, in contrast to renewable electricity, hindering a strong position for citizen initiatives (Notten, 2020). The regulatory framework in the Netherlands (the heat act) is still uncertain due to discussions on the ownership of heat grids (Kieviet, 2022).

3 Methodology

3.1 Methods and process of data collection

Semi-structured interviews are the method chosen because of the qualitative nature of the research question. This research aims to capture the factors that contribute to a successful collaboration between local governments and citizen initiatives in the realization of a heat grid. This is only possible by rich descriptions of experienced participants. A general interview guide was developed as a basis (appendix 1), but sufficient space was provided for participants to give their own input (Clifford et al., 2016). The interview guide served as a tool to identify different aspects of the research questions in the answers of the participants and ask follow-up questions. As outlined in the interview guide, each participant was first asked to tell their experience in general, followed by more specific questions. As a result, the order of questions differs per interview. Also, not all questions mentioned in the interview are explicitly addressed: some were answered indirectly by the participant already, or made irrelevant by a previous statement. On the one hand, this resulted in a more accurate reflection of reality, as the participants were free to elaborate on what they considered most important. On the other hand, it was more difficult to structure the interview transcripts, analyze and compare them. Some participants told many details on the project itself, while less about the collaborative process.

One representative per actor (introduction, table 1) has been interviewed. For the interview with Sunny Selwerd, an independent spokesperson working on citizen communication was consulted. During the interviews, multiple participants referred to their colleagues or other actors, who were assumed to be better equipped to answer one or more questions. However, due to time constraints or a lack of responses, no follow-up interviews were planned with those persons. All interviews were held in person, except with Grunneger Power, which was held via Zoom in order to ensure covid safety but avoid delays in the data collection process. This has not influenced the quality of the collected data, as the conversation ran as smoothly as the interviews that took place offline. The duration of the interviews ranges from thirty minutes to one hour approximately.

3.2 Methods of data analysis

In order to make sense of the collected data, the technique of coding was applied. Each code relates to one of the five success factors discussed in the theoretical framework. This corresponds to descriptive coding, with solely nouns as codes (Leavy, 2017). Data that did not relate to one of the success factors was stored in a separate memo and used to enrich the main storyline in the discussion. The introduction of the case study in section 1.3 is largely based on the information provided in the interviews.

All coding was done by hand, instead of computer-assisted software. It was not necessary to use software to keep overview, as the codes used are relatively simple. The results will not have been impacted by this method.

Table 2 shows the coding scheme used.

Code (success factor)	Criteria	Theoretical basis
Alignment of visions	To what extent do the visions and ideas of the actors match?	<u>Oteman et al.</u> (2014)
Local embeddedness	To what extent does the energy cooperative represent the wishes of the local community?	<u>Wagemans et al.</u> (2019) <u>Meister et al.</u> (2020)
Mutual trust	To what extent do representatives have trust in each other, and faith in a successful collaborative process?	<u>Hoppe et al.</u> (2015) <u>Wagemans et al.</u> (2019) <u>Proka et al.</u> (2018)
Communication	What is the quality of the communication between all actors (regular, direct) ?	<u>Wagemans et al.</u> (2019)
Supportive governance arrangements	To what extent does the current institutional framework support citizen initiatives?	<u>Warbroek et al.</u> (2019) <u>Wagemans et al.</u> (2019) <u>Notten</u> (2020) <u>Proka et al.</u> (2018)

Table 2 - coding scheme

3.3 Ethical considerations

Before the interview started, all participants were asked permission for the audiorecording and transcribing the interview and the processing of the data, including quotes, for the purpose of this research. This has been done orally. All transcripts are anonymous, only indicating the first letter of the name of the participant and the interviewer (T). Citations are only linked to the organization itself and not the name or function of the participant to ensure their privacy. All recordings are stored on an encrypted personal hard drive and are only accessible to the researcher. The interview transcripts will be shared with the supervisor and second assessor, to enhance the transparency and therefore reliability of the research.

4 Results

All quotes used in this section are originally Dutch. They are translated by the author as literally as possible.

4.1 Alignment of visions

In general, all actors share the governmental objective of energy neutrality in 2035. However, there are different perspectives on how to achieve this goal. In this section, the main differences in visions and goals are highlighted. Table 3 summarizes the main objectives of each actor. In this subsection, the most two striking differences are discussed: the scale and the ownership of the heat grid.

Actor	Main objectives
Grunneger Power	Affordability, citizen control
Paddepoel Energiek	Citizen involvement, small-scale
Municipality	Scalability, reliability, professionalization, energy security
Warmtestad	Large scale, cost-effectiveness
Sunny Selwerd	Citizen participation in neighborhood renewal

Table 3 - main objectives of actors

Scale

Both governmental actors (the municipality and Warmtestad) prefer a large-scale approach. In line with the heat transition vision, 22.000 housing units need to be gas-free by 2030, of which 3300 are located in Selwerd, Paddepoel and Vinkhuizen. This is a precondition to receive national subsidies. The government assigns itself a leading role in this enormous assignment within a limited timeframe. However, they also state that they do not want to take over control of a citizen initiative, but guide them forward in a professional way by providing support.

In contrast, Paddepoel Energiek is in favor of a more decentralized, small-scale approach. After the municipal decision to scale-up, Paddepoel Energiek only plays a marginal role, whereas Grunneger Power has become the official partner of the government and made a new plan, which was financed by the municipality. Despite their former collaboration with Paddepoel Energiek, a small-scale approach is less important to Grunneger Power. Even though Paddepoel Energiek recognizes the relatively high costs of a small-scale project, the increased scale had a significant impact on the involvement of residents. Instead of real participation, it is now only citizen engagement. There used to be some degree of control, but now they are only asked to give feedback every now and then, and not many residents are willing to participate in this way. Even though Paddepoel Energiek acknowledges scaling up energy transition is needed, they preferred a small-scale project, as it provides more options for community involvement. In their plan of the original project, they wrote: *“Changes can be realized best when people feel involved. People*

feel involved when they are in charge of taking initiative and are free to shape the changes themselves.” (Buurtwarmte Paddepoel, 2019, p.9).

Ownership

The government is in favor of a publicly-owned heat grid, as this imposes the lowest risk. Delivery of heat by energy cooperatives is not excluded, but it is currently considered unrealistic, partly with regards to future legislation (see section 4.5, supportive governance arrangements).

The vision of Grunneger Power has changed over time. Where they used strived for a fully citizen-owned heat grid, they currently recognize the need to scale up and collaborate with other actors due to the scope and complexity of the issue. Instead, statements were made such as “*we cannot do everything ourselves as a citizen cooperative*” and “*good solutions are being made in the collaboration between the government and residents via energy cooperatives and with help of the market*” (quotes Grunneger Power). Affordable and sustainable energy is considered most important, but they are in favor of more citizen control and less dependency on the government and market parties, as this will increase the support, sense of ownership of users and control of residents (Grunneger Power, 2022).

The vision of Grunneger Power has therefore become inherently different compared to Paddepoel Energiek, who is still striving for a small-scale, citizen-led heat grid, with their own source and infrastructure. Despite these differences, Paddepoel Energiek still supports the current plans, although they remain skeptical about the degree of cooperativeness. However, they are willing to provide information to citizens when asked to, as they are still in close contact with residents.

4.2 Local embeddedness

Both the government and the energy cooperative stress the importance of active community members, however they are scarce in each neighborhood. These people are needed to mobilize other residents and address citizen concerns in the plan-making process. According to Grunneger Power, the better residents are organized, the higher the chance of success, as it increases societal support and therefore feasibility, also with regards to costs reduction.

However, it is doubted to what extent the actual wishes of the local community are adequately included in the process. Currently, they are only represented by Grunneger Power, but not every citizen supports their vision or the energy transition in general. A communication expert and a resident of Selwerd as well noticed that there is a mismatch between the government and Grunneger Power on the one hand, and residents on the other hand, despite the efforts of Grunneger Power to involve residents and incorporate their feedback. According to Grunneger Power, residents can benefit themselves financially due to the high gas prices, but a significant number mistrust Warmtestad as a monopolist.

According to Warmtestad, the representative function of Grunneger Power does not work because they have no clients who are a member of Grunneger Power. The municipality also thinks Grunneger Power should become more independent, and residents should not be solely

represented by Grunneger Power. *“Just like not everyone feels represented by the municipality, nor does everyone by Grunneger Power.”* (quote municipality)

4.3 Mutual trust

Mutual trust and respect is considered highly important. Each representative stated that they have great faith in the other actors and are confident about a successful implementation. They agree on most, mainly practical, issues. Some uncertainties exist, but as the municipal official said: *“if we need each other prevails, the rest will solve itself”*.

However, the intentions of Grunneger Power remain subject to doubt. Warmtestad and the municipality are unsure whether they still aim for to exploit a heat grid exploited themselves. According to them, this is not realistic, as it is a very expensive and complex job. Even though the municipality is highly in favor of an independent position for citizens in the process, cooperative ownership of all assets is considered too risky. Nonetheless, these issues do not obstruct the collaborative process. The collaboration has greatly improved due to discussions on formal arrangements (see section 4.5).

4.4 Communication

Generally, all participants are very positive about the communication with other actors. There is structural contact, mostly weekly, to discuss practical details on project level, which works very well. An exception is Paddepoel Energiek, who is not involved anymore and only indirectly communicates with the government, via the neighborhood council. Sunny Selwerd plays an important role in aligning the communication between all actors working on the heat grid and general neighborhood renewal activities. Besides, they are communicate with other neighborhood representatives to learn from their best practices. Their critique on the municipality is that the communication on the urgency of the energy transition was not always clear. This became an obstacle for Warmtestad and Grunneger Power later in the process. Improvements have been made, but not everyone is aware yet.

The negotiations on making formal arrangements between Grunneger Power, the municipality and Warmtestad required many consultation sessions and external support as well. Although it may have been rough, the length is considered reasonable as the process is almost finished after a year.

4.5 Supportive governance arrangements

First and foremost, a new institutional framework is required to ensure the position of each actor in relation to the others, especially with regards to the energy cooperative. Clear arrangements on the division of roles are considered a prerequisite for continuing the collaboration. These are part of the negotiations on formal arrangements, but all actors are confident that this process will be finished soon.

Political support is considered crucial by all actors for a successful project. If the municipality would lack high ambitions and the willingness to invest in sustainability, the plans developed by citizens would not have been adopted.

An obstacle to Grunneger Power is the subsidy application procedure of the national government. In order to receive subsidy for an individual connection to the heat grid, citizens need to pay in advance, which not everyone can afford, and each household needs to apply individually, requiring much capacity from Grunneger Power. The municipality has raised this problem at the national government.

The new regulatory framework in the Netherlands (heat act/warmtewet) remains uncertain. There are discussions about the type of ownership (public, private or cooperative) and whether the network will be open or closed. It may not even be possible that the heat grid is owned by multiple actors, which raises difficulties for governments in anticipating this new legislation.

5 Conclusion

The extent to which each success factor is present in the case study varies. Roughly, the visions, plans and goals are aligned, although some tensions exist with regards to the scale and ownership of the heat grid. This mostly applies to the original initiative group, while the local energy cooperative supports the governmental decision to scale-up. This resulted in a leading role for the government and a more centralized approach, partly due to interference by the national government, whereas the initiators strived for a decentralized approach with citizen control. Instead, citizens were treated more as consumers, rather than active players in the process (Notten, 2020). The government has a strong focus on citizen involvement to ensure societal support and generate success stories (Lang & Roessl, 2013; Wagemans et al., 2019), but provides limited space for citizen initiatives to experiment and be in charge of energy provision themselves (Druijff & Kaika, 2021). In the case study, the local energy cooperative remains quite dependent on the government, especially with regards to financing and access to physical infrastructure (Notten, 2020; Warbroek et al., 2018).

In general, the wishes of citizens are represented by Grunneger Power as an intermediary (Warbroek et al., 2018; Warbroek et al., 2019; Wagemans et al., 2019). Their input on practical issues is highly valued, contributing to a sense of involvement, although this type of engagement does not provide enough space for ‘real’ participation according to critics. However not every community members agrees with the course of action in general, which is not open for discussion. Neither the energy cooperative nor the government is able to represent every opinion. In general, the more citizens are included, the more trust Grunneger Power is granted by their partners.

Mutual trust and respect is greatly present among actors and all representatives have faith in a successful process and result. However, the intentions of Grunneger Power with regards to cooperative ownership, which is considered unrealistic, are subject to doubt. This will hopefully be resolved when the formal agreements are finished.

Communication was regarded quite positive by all participants. There is a structural and direct consultation to discuss practical issues. Only Paddepoel Energiek does not communicate directly with the government.

Supportive governance arrangements mainly include a clear delineation of roles and official long-term agreements, which are likely to be finished soon. There are some bureaucratic procedures and uncertainty caused by new legislation in the Netherlands, but these obstacles do not seem to be insuperable.

In conclusion, the aspects of mutual trust and communication seem to be most present in the case study, while the alignment of visions and local embeddedness require some adjustments. The institutional settings will become more supportive as the formal arrangements are finished.

6 Discussion

6.1 Lessons learned

This research contributed to developing criteria to evaluate the success of collaborative projects between the local government and citizen initiatives. These have been applied to the realization of a collective heat distribution grid, which has not often been central in academic research before.

The case study provides some lessons to improve the collaborative process in the future. First and foremost, the importance of a shared vision and a clear delineation of roles has been stressed. This was very unclear, and as result, the process of making formal arrangements lasted quite long. Unclearity about intentions might have caused distrust among actors. Ideally, everything would be figured out in advance, but that is not realistic, as the type of project and collaboration was new to all actors and the energy transition requires urgency.

Most actors are already aware of the importance of societal support with regards to the feasibility of the project and make serious efforts to include citizens in the process. However, in order to increase the sense of control and ownership, citizen initiatives could be provided more experimental space, especially in the community of Paddepoel. Furthermore, more efforts are needed to raise awareness on the urgency of the energy transition.

Mutual trust and respect, both on a personal and professional level, is already highly present among actors. However, in a long-term collaboration, it was emphasized that commitment is needed, not only in times of success but also in disappointments.

6.2 Limitations and suggestions for further research

A limitation of this study is that citizens themselves were not consulted in order to evaluate the degree of local embeddedness in the project: to what extent do they feel represented by the local energy cooperative, the government or other institutions? It was noted that a significant part may not feel represented, but it is unclear on what scale. Measuring societal support this way would help the government and the energy cooperative to improve the inclusion of citizens in the process. Instead of a predefined participatory process, citizen themselves could indicate their preferred option, contributing to a higher sense of involvement. Future studies could consult citizens themselves with regards to participation processes.

Another weakness of this study is that not all possible participants were interviewed. The municipal official has only been involved in the project for one year, and as a result did not have all inside knowledge on the history with Paddepoel Energiek, whereas some older colleagues do. Also, the representative of Sunny Selwerd was not able to answer all questions on citizen participation, as he specialized a citizen communication.

Furthermore, future research could benefit from stronger steering of interviews in order to derive more direct and clear answers, while simultaneously providing enough space for participants to bring up subjects. However, some of them mostly focused on the project in general, and less on the collaborative process.

Several aspects mentioned in this study could be researched more in-depth, for example the exploitation of sustainable sources for the heat grid by the energy cooperative. Currently, there are too many uncertainties on this topic with regards to its feasibility and new legislation. Also, it is yet unknown how the division of roles will turn out in the future. Agreements are made on paper, but they need to work in practice as well. This can only be evaluated in a few years' time. A successful outcome cannot be guaranteed, although this is deemed very likely by all participants. Furthermore, the effect of membership rates of the energy cooperative on their relationship with the government needs to be studied more in-depth. The government suggested that higher membership rates could strengthen the position of the energy cooperative, but it is unclear how that impacts the collaborative process.

Lastly, the interview questions were not directly based on the success factors defined by the theoretical framework. Many general questions were asked as well, resulting in some success factors only being indirectly derived from the interview transcripts. Future research could address these concerns from the beginning onwards, by developing a more standardized and objective method of identifying and categorizing success factors. Also, new factors could be added to the framework by inductive research.

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Appendixes

Appendix 1: Interview guide

Introduction:

- Own background
- Explaining research project, objectives etc.
- Asking consent for audiorecording the interview, processing data, explaining privacy considerations

General questions:

- General introduction of the project (how did it start, by whom etc.)
- What is your own role in the project, how long have you been involved?
- General experience with the collaboration with other actors

Specific questions per actor (in the order that the interviews are held):

To Grunneger Power (8-4-2022):

- What is their link with Paddepoel Energiek, history of the 050buurtwarmteproject? How has the current plan originated?
 - To what extent experience trust from the municipality?
- What was the response of the municipality to their most recent advisory report? Do they feel taken seriously, do they have faith that steps will taken towards implementation of this advice?
- Do they have faith that the process of formal arrangements will be finished soon and be successful? (mentioned as a prerequisite in the report)
- What is the role of the municipality? Only facilitating, or are they actively involved content-wise?
 - Do they feel in control of the project or is it in fact the government?
- To what extent do they need on municipal resources (financing, expertise) ?
 - To what extent is the government dependent on their capacities?
- Is the project their own initiative, or has it originated from governmental policy and they are the implementers?
- To what extent do their goals/visions differ from the government?
- How often do they communicate with municipal officials?
- Have they experienced any bureaucratic obstacles? Did the municipality have a flexible attitude?
- To what extent are they influenced by politics, for example with regards to parties promoting local ownership of sustainable energy etc.? Do they think that will impact the project/the collaboration?
- To what extent do they have faith in a successful implementation of the project and a fruitful cooperation with the government?
- What are the most important success factors for a collaborative project with the government?
 - How can the municipality improve their efforts to facilitate citizen initiatives?

- What lessons can be learned from the 2 pilot projects with regards to the collaborative process?
 - To what extent can those be applied to other neighborhoods as well, or do those require a different approach?
 - Comparison Selwerd/Paddepoel/Vinkhuizen, how does the willingness/enthusiasm of residents differ
 - Should the collaboration with the government be more intensive or do they want to become more independent?
- What is their role in the neighborhood renewal of Selwerd, or is that only the municipality?

To Paddepoel Energiek (14-4-2022):

- History of the buurtwarmte050project
 - Has the communication of the municipality improved since the sudden decision to scale-up?
 - How actively are they currently involved?
- To what extent do their goals/visions differ from the government?
- To what extent do they need governmental resources (financing/other support) or are they quite independent?
- Is the municipality dependent on them to reach citizens with information and convince them in order to reach policy objectives?
 - To what extent do they feel they are a “service hatch” for the government?
- How often do they communicate with municipal officials?
- To what extent do they think they will be more involved again in the future and have faith in a successful implementation of the current project?
- Have they experienced any bureaucratic obstacles? Did the municipality have a flexible attitude?
- To what extent are they influenced by political discussion on local ownership, or any change in political color of the municipality? Does that impact the collaboration?
- How can the municipality improve their efforts to facilitate citizen initiatives such as Paddepoel Energiek?
- What factors determine a successful collaboration between the government and citizen initiatives, and what is the role of each actor?

To Sunny Selwerd (25-4-2022):

- How do they perceive their own role in the project, as a governmental program?
 - Intermediary between government and citizens?
- How do they perceive the role of the municipality (active or passive/background role) ?
- What interest do play a role in the buurtwarmte project, and how they do try to align those?
- What do they think about the collaboration between Grunneger Power, the municipality and Warmtestad, their communication etc.?
 - Do they support them in the making of formal arrangements?
 - Do they have regular contact with all parties?

- To what extent does their vision match that of the government, and the wishes and ideas of residents?
- What do they do to enhance citizen participation?
 - How do they try to contact residents that are hardly reachable?
- To what extent are they supported by the municipal resources?
 - How can the municipality improve their efforts?
- Have they/residents experienced any bureaucratic obstacles? Did the municipality have a flexible attitude?
- To what extent do experience trust from the municipality in themselves and residents?
- To what extent do they have faith in a successful implementation of project and a continued involvement of residents in the project?
- How are they influenced by the political color of the municipality, with regards to stimulating citizen participation/local ownership?
- What specific lessons can be learnt from the 2 pilot projects in Selwerd to be applied in the rest of neighborhood and other neighborhoods where the heat grid is planned?
- What are the most important success factors for the collaboration between the municipality, Warmtestad, Sunny Selwerd, Grunneger Power and residents?

To Warmtestad (29-4-2022):

- How do they perceive their own role in the project? Who is leading?
 - Should the relationship be equal or not?
- To what extent do they operate independently, or are they heavily steered by the municipality?
- To what extent do their goals/visions/plans differ from citizen initiatives?
 - To what extent do they think the advice of Grunneger Power is feasible and do they actively support their ideas?
- Do they recognize the importance of citizen involvement, societal support etc.?
 - What is their role vs. that of Grunneger Power?
- To what extent do they have direct contact with citizens themselves, or is that only via Grunneger Power?
 - How do they they try to involve as many people as possible, and how do they use their feedback?
- Do they make the design of the route themselves or in collaboration with Grunneger Power, citizens and the municipality?
- As a public company, to what extent are they influenced by politics?
- To what extent do they have faith in a successful implementation of the project and a fruitful cooperation with Grunneger Power and other neighborhood collectives?
- What are the most important factors for the success of a collaborative project with citizen initiatives and energy cooperatives?
- What lessons can be learned from the 2 pilot projects with regards to the collaborative process?
 - To what extent can those be applied to other neighborhoods as well, or do those require a different approach?

To the Municipality (3-5-2022):

- History of buurtwarmte050/Paddepoel Energiek, to what extent will they be involved again in the implementation of the project?
- How do they perceive their own role in the project? Should the government be leading, as described in the heat transition vision, or citizens?
 - To what extent is the municipality directly involved in the project (besides policy), or mostly via Warmtestad?
 - What influence do they have on the prices set by Warmtestad?
 - Is the division of roles already clearly delineated?
- What qualities of citizen initiatives does the municipality need, and vice versa?
 - Who is financing the project?
- How do they try to reach residents that might not be in favor of the heat grid or that are hard to contact?
- To what extent do they use the input from Grunneger Power and/or citizens (direct or indirect) ?
- What is the influence of political discussions within the municipality on the project and the collaboration?
- To what extent does legislation provide them flexibility and space to support citizen initiatives?
- To what extent do their goals/visions/plans differ from citizen initiatives?
 - Broad objectives vs. concrete plans
 - If yes, how do they try to bring their ideas together?
 - In the heat transition vision, cooperativeness is mentioned. To what extent is that still an ambition?
- How do they look at the recent advice from Grunneger Power, do they think it is feasible, agreed with the steps proposed and are already actively working on implementation?
- What options do they offer to facilitate citizen initiatives in general (except for financing)?
- How do they perceive the communication with citizen representatives? How often do they have direct/in person contact?
- To what extent do they have faith in a successful implementation and fruitful cooperation with Grunneger Power and other neighborhood collectives?
- What are the most important factors for the success of a collaborative project with citizen initiatives and energy cooperatives?
 - What creates for a good, equal relationship?
- What lessons can be learnt from the 2 pilot projects in Selwerd?
 - To what extent can those be applied to other neighborhoods as well, or do those require a different approach?

Appendix 2: Interview transcripts

The interview transcripts are attached in a separate zipped folder, consisting of five Word documents.