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EXPLORING THE CURRENT STATE OF CITIZEN PARTICIPATION IN SMART ENERGY CITY GRONINGEN

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Abstract

Smart city planning is an important and frequently recurring concept in contemporary city planning. Cities aim at sustainable development using smart innovations while monitoring the city. Hereby, it is essential to let citizens actively participate. Citizen participation is complex and mostly unsuccessful, even in leading smart cities. Groningen too puts itself on the map as smart city: Smart Energy City Groningen. This research explores the current state of participation, as there is little to be found about citizen participation in Groningen other than in municipal policy documents. It does this by reviewing policy documents, conducting a survey amongst citizens of Groningen and interviewing Grunneger Power, partner in the smart energy transition of Groningen. The results suggest measures to stimulate citizen participation in Groningen. This research points out that citizens do not feel well-represented and their knowledge, and thus the communication from the municipality, is not optimal. A lot can be gained from citizen participation, as citizens indicate to be willing to share their ideas and to participate in smart city projects. To improve the current situation, Smart Energy City Groningen should focus on the development into a creative smart city in which participation is more accessible. While there is room for improvement on local strategies, a part of the problem seems to come from a lack in international regulations, caused by the smart ambitions of Groningen which are ahead of the national situation.

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1.   Introduction

In modern city planning there is an uprising concept that is seen as the ideal response to the planning complexity that cities cope with: smart city planning (Simonofski et al., 2018). Smart cities optimize city functions while improving the quality of life for its citizens using smart technology and data analysis (IoT Agenda, 2016). Smart city planning uses innovative technology to analyse for example energy usage, which this paper will focus on, to make a city sustainable for the future: a process that largely starts inside residences. Therefore, a well organised cooperation with citizens is at least favourable.

Research gap
A significant element of smart city projects where governments seem to add high value to, is the aim of participation with and transparency towards all relevant stakeholders, companies and citizens. This is also mentioned by Gemeente Groningen (2008 & 2015). According to them, participation and transparency are the most important conditions to stimulate and realise an energy transition.

However, Michels & De Graaf (2010) find Dutch municipalities that come short to this aim. The role of citizens is inadequate while the positive effects of citizen participation, like increasing public engagement and a higher degree of legitimacy of decisions (Michels & De Graaf, 2010), are significant. Angelidou (2017) shows that this is an internationally recurring problem and finds the aspect of citizen participation as one of the main shortcomings to smart city planning, while citizen co-creation is critical when implementing smart city projects.

This is in line with findings by Vanolo (2016). He concludes that citizens are in no way passive subjects in smart cities but have rights to speech and access and have responsibilities and obligations. In different smart city developments, the citizen role is often confusing, and citizens can be overpowered by smart innovations if they were not developed into 'smart citizens' from the beginning (Vanolo, 2016).
Research on the actual way of implementing citizen participation, however, predominantly ends with the conclusion that participation is important, but does not have a simple solution to achieve. Ianniello et al. (2019) state that citizen participation is fundamentally inter-disciplinary and needs a clearer understanding on multiple levels, which leaves us with a gap in research to approach this problem.

Examples of citizen participation in the Netherlands
A concrete example of the phenomenon of neglected citizen involvement is Amsterdam, a leading smart city in Western Europe (Baron, 2010). Amsterdam initiatives aim to invest in a healthy environment for grass-roots initiatives and neighbourhood communities. However, grass-roots initiatives and citizens were put offside during projects and were organised by local authorities and private operators instead (Mancebo, 2020). In other projects, neighbourhood communities were only informed about a project after it was designed by architects and researchers. Citizens then had to take part in so called 'living labs'. In other words, "these initiatives (…) were not coordinated with one another, and the involvement of local residents was finally limited" (Mancebo, 2020, 141). Projects shaped like this put citizens in a *bystander* rather than a *developer* position and will eventually make them sceptical and lose the trust-relationship with their municipality (Mancebo, 2020).

Current literature does not tell us much about the current citizen participation in Groningen. However, what can be found on citizen participation in smart systems is not in favour of the municipality. Recent studies by Carton & Ache (2017) note that citizens in the municipality of Groningen were underrepresented by their municipality in a situation involving the NAM (Dutch Petroleum Company). Gas extractions were causing damage to residences, but the NAM was not given responsibility for this thus inhabitants were not compensated. Residents took initiatives into own hands by developing a smart mapping system, monitoring the earthquakes in relation to the damages (Carton & Ache, 2017). This

smart technology initiative for a safer future was, however, to convince the municipality of the problem rather than finding a solution for it together.

This recent study clearly points out that relations in the municipality of Groningen are far from perfect, but there is little to find out about current developments in Groningen (for instance on smart city projects) on scientific platforms. That is why the focus on citizen participation and listening to citizens in these projects will be important in this research. It is also why this research topic is extremely relevant for contemporary societies: a dedicated practice towards transparency and collaboration is very important (Ianniello et al, 2019). According to Ianniello et al. (2019), half committed actions will not result in desirable citizen participation. Still, there is a lack of research on how to tackle this complex challenge place specifically.

The municipality of Groningen has promising strategies as it comes to the development of smart city projects, labelling themselves as Smart Energy City Groningen [SECG]. The municipality also points out that citizen participation (next to stakeholder and business participation) is an essential component in achieving a successful development of smart city projects (Gemeente Groningen, 2009).

Aim of the research
The aim of this research is to explore the current state of citizen participation in Smart Energy City Groningen projects, and to suggest possible measures to stimulate citizen participation. Previous literature has shown that there is still a lot to gain on the area of participation governing. Therefore, it is important to find out what the municipality has already learned and what there is still to be improved. In other words: what does the governing organ claim to do on this question, and how do the citizens experience these actions? All of this in order to achieve successful and participatory projects to sustain the city with its inhabitants for the future.

The central research question arises as follows:
> *What measures to stimulate citizen participation can be applied to Smart Energy City Groningen?*

Secondary research questions to answer and support the central question will be:
1. What are the current governance ambitions and strategies in Smart City Groningen?
2. What is the current attitude of citizens towards Smart Energy City projects?
3. How can the current citizen participation and experience be described?
4. In what ways can policy governance help to participate in the (early) development of projects?

In this paper, section 2 discusses the theoretical framework, the conceptual model and the hypothesis respectively. Following, section 3 explains and reflects on the used methods in the process. The results will be presented in section 4: starting with a policy overview, followed by interview results and finishing with survey results. An overview of the research will be given in concluding section 5, together with a reflection on the paper. Section 6 and 7 will present the bibliography and appendices respectively.

2. Theoretical Framework

Relevant theories and concepts to use in this research topic take different and useful perspectives on measures to analyze current participation situations and focusses. A combination of the following theories and concepts can be used to analyze Groningen in the same way.

2.1. Theories to analyze smart city functioning

Important is to determine smart city typologies in terms of strategy. A clear way to do so is shown by Neirotti et al. (2014), who make a distinction between hard application domains and soft application domains. The former concerning buildings, water management and infrastructures, while the latter concerns social innovation and inclusion, policies that foster entrepreneurship and communication between governance bodies and citizens (Neirotti et al., 2014). This to make clear what the city its smart strategy prioritizes: are citizens co-creators or only users?

Furthermore, Komninos et al. (2018) describe planning for smart cities via three Innovation Circuits (ICs), which "(…) define smart city planning and describe the operation of smart cities (…)" (Komninos et al. 2018, 6). The three ICs cover the creation of the urban digital space, decision-making, governance of public and private investments and efficient citizen behaviour that guides the use of urban space based on intelligent systems respectively. This concept is certainly useful, as it helps describe the topic of this research: the cooperation and relation between smart systems, governments and citizens.

Where Neirotti et al. (2014) put the emphasis on hard and soft domains, Cortés-Cediel et al. (2019) take a different approach by make a distinction between 'creative' and 'non-creative' smart cities. In both types of cities, a promotion of 'open participation models' is found. Open participation models value face to face discussion between government and citizens, resulting in high collaboration levels. However, the creative smart cities add more focus on participative solutions that are technological, using tools like social media, digital maps and devices and living labs. A Mann-Whitney U test conducted by Cortés-Cediel et al. (2019) showed significant results (p value $< .05$) that creative smart cities are easier and more accessible for citizens to participate in, and the focus on being 'creatively smart' "helps these cities to solve urban challenges with more citizenry-centric solutions, increasing their citizens' quality of life" (Cortés-Cediel et al., 2019, 19).

In creative smart cities participation values are monitored, for example with participatory sensing (Burke et al., 2016). Citizens function as sensors, for example while taking part in traffic in order to monitor and manage traffic. However, with a concept like participatory sensing governments have to be careful to include the citizen as a co-developer rather than only being used to collect data. This is where Mancebo (2020) comes into play with an adaptive planning approach. This approach takes into consideration how citizens respond to and "resist change to co-produce knowledge and action" (Mancebo, 2020, 146). By monitoring these values amongst citizens, one is able to be adaptive and flexible in the approach to keep high efficiency and not to lose citizen focus while collaborating with them in collecting data.

Komninos et al. (2018) let us know that smart city planning is a very complex question without one simple solution. It is place based, interdisciplinary and requires clear and well-considered policy strategies. Close collaboration between actors with high transparency is needed for it in order to be successful. However, in Groningen it is not yet clear how these factors are included, especially with the focus on citizen participation. Therefore, we have to further explore what is missing and what has to change in current day policy strategies in order to be better prepared for future situations.

2.2. Conceptual Model

The conceptual model displays the concepts which together (hence the positioning in square one) determine the two variables. These are not independent, thus influencing each other in square two. When they are determined, the variables will result in the product of the research process expressed in possible measures for SECG.
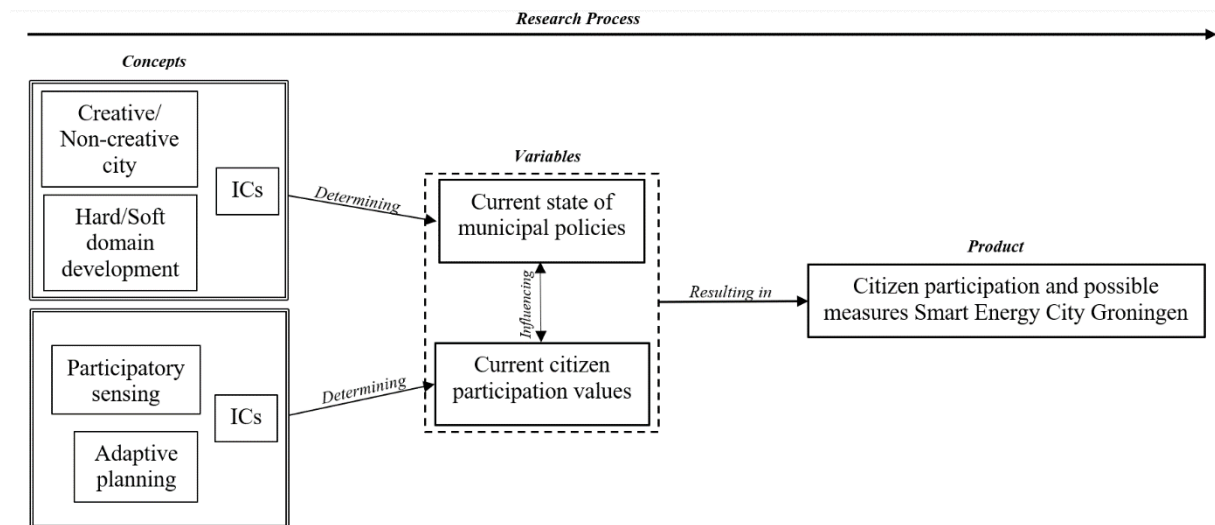

Figure 1: Conceptual model based on theoretical framework in line with the research process

2.3. Hypothesis

It has come forward that achieving citizen motivation to participate in smart city projects cannot be done without creating a mutual trust relationship as well as giving incentives advantaging citizens (Mancebo, 2020). This goes together with actively raising attention to the subject. We also know that there are multiple tools to showcase the current state of policies. However, there is no example that shows us the perfect planning strategy scenario.

Groningen does not seem to have the mutual trust and respect relationship that is desired in examples like the earthquakes caused by gas extractions (Carton & Ache, 2017). Furthermore, we know that there is no lack in ambition of the municipality of Groningen, namely, to be the most sustainable city in the Netherlands (Gemeente Groningen, 2009).

Therefore, I hypothesize a need for change in the way the municipality approaches citizens in order to obtain results. Therefore, this research is likely to find that citizens do not feel represented, while the government aims to improve the quality of life in a sustainable way. If the government makes clear policies to make space for listening to citizen initiatives after raising awareness of sustainability projects, this will positively impact the government-citizen relationship and will increase innovation and quality of life in Smart Energy City Groningen.

3.   Methodology

3.1. The approach

This research investigates existing policies on citizen participation in smart city projects and puts them into perspective by analyzing to what degree citizens feel involved in these projects, as well as the mutual relationship with the government thus their willingness to collaborate. To execute this research, a triangular approach of 1) studying secondary data [*appendix 1*], 2) conducting citizen surveys [*appendices 2 & 5*], and 3) interviewing an important partner in SECG [*appendices 3 & 4*] was used. These methods were chosen as they clearly showcase the existing strategies and their intentions, the actual way policies are carried out, as well as the vision and opinion of the citizens.

The survey data has been collected and analyzed following the Likert scale (Arnold et al. 1967), with possible responses ranging from 'very unsatisfied-very satisfied' or 'not involved at all – very involved', for instance. This method was chosen in order to attain descriptive data about the current state of citizen participation values, which were linked to the theoretical framework to give the results further meaning. The same was done for the multiple-choice and open question answers. These surveys took five minutes time for respondents (N=42). Next to policy document reviews and conducting surveys, a semi-structured interview with Grunneger Power was conducted via telephone conversation in order to gain an insight in the implementation side of this topic.

3.2. Reflecting on the selection process

Clarifying the selection process of respondents, this research has spread surveys over social media platforms dedicated to citizens of Groningen. Therefore, there has been no aim at collecting data in specific neighborhoods which has provided this investigation of data equally distributed over the city. Due to the limited collected responses per neighborhood – 42 cases spread over Groningen – it was not possible to determine a statistical number of representability per neighborhood. The execution of a more extensive research on this topic will help to provide this number and further statistical analysis in general.

This data is still useful for the city of Groningen as people from most neighborhoods have been reached (see table 1), presenting an overview for the city as a whole, of which the results can function as a starting framework for future research. Together with the fact that the collected data outcome is consistent with respect to existing literature outcomes and the hypothesis made, it can be said that this research can give relevant insights and details of the current state of citizen participation in Smart City Groningen.

		N	Marginal Percentage
Neighbourhood	Beijum	1	2.4%
	Binnenstad	8	19.0%
	De Wijert	3	7.1%
	Helpman	2	4.8%
	Hoornse Meer	1	2.4%
	Korrewegwijk	4	9.5%
	Kostverloren	1	2.4%
	Meerstad	2	4.8%
	Oosterpark	3	7.1%
	Oosterpoort	1	2.4%
	Oranjebuurt	3	7.1%
	Oranjewijk	1	2.4%
	Paddepoel	7	16.7%
	Rivierenbuurt	1	2.4%
	Schildersbuurt	1	2.4%
	Selwerd	2	4.8%
	Vinkhuizen	1	2.4%
Total		42	

Table 1: Respondents spread over Groningen – own data

3.3. Ethical considerations

The fact that this study is using perspectives from two different sides of the society (organization and citizens), it has to be approached carefully in terms of privacy to keep the opinions anonymous. The goal of this research is to learn from different perspectives, and it is of no importance who the opinion belongs to. The results will therefore be impersonally referred to, saved in a password-secured location and deleted after this paper is finished. It is also of big importance that these surveys will be handed out either online or via mailboxes instead of direct personal approaches. In times like these with COVID-19 doing its harm, avoiding personal contact will be prioritized.

4.   Results

In this section, results of this research are presented. Firstly, smart city policies will be discussed and given an insight into practice with the conducted interview. Then, current citizen participation values are shown. Both segments are given meaning to by linking the results to the theoretical framework in place.

4.1. Current state of municipal policies

4.1.1. Groningen energy neutral in 2025

To understand where the term Smart Energy City Groningen comes from, it is important to highlight the ambitious environmental plans that the municipality has had throughout the years. The shift from the usage of outdated and polluting fossil energy sources towards more innovative energy sources is not new for the Gemeente (municipality) Groningen. This shift is part of the ambition to develop into the most sustainable city of the Netherlands. The main goal is presented for 2025, the year that the city aimed to be energy (CO_2) neutral, a claim made in the policy vision for the city in 2008 (Gemeente Groningen, 2008).

The approach
Gemeente Groningen wants to achieve this with the *Groningse energieladder* (Groningen energy steps), explained in the *Routekaart Groningen energieneutraal 2025*[+]. This means the promotion of durable activities, the reduction of energy usage, the use and production of sustainable energy, efficiently using fossil fuels and compensating the use of the former by changing energy sources and infrastructures (Gemeente Groningen, 2008). The municipality fills in a facilitating and stimulating role rather than an executive roll, as putting knowledge into practise asks for a close cooperation with third parties which eventually need to realise the energy transition.

Communicating towards citizens
Linking the ambitions to citizen participation values, Gemeente Groningen addresses that communicating their vision to the local citizens will strengthen the realisation that everybody can contribute and participate. Citizens are the driving mechanism of the city and its development, and thus play an essential role in realising change. Collaborating with citizens will therefore increase the rate of success. By making connections and linking smart combinations, saving energy can be logically connected to everyday activities (Gemeente Groningen, 2008). Communicating and connecting are factors with which a larger surface of society can be reached. The aim is to use communication in order to make a connection between knowing, willingness and action. (Gemeente Groningen, 2008).

In order to transmit this message, the municipality has introduced a number of core principles to improve communication, stimulate participation and realise a change in energy behaviour respectively.

Communication principles like: first doing, then telling; functioning as role model and making stimulating measures like subsidises known will create an 'I also want that!' attitude, the so called 'band wagon-effect' (Gemeente Groningen, 2008). There will be a focus on participatory principles such as facilitating citizen initiatives in order to support and put citizen ideas into action, and monitoring the accessibility of projects to generate participation interest. The municipality formulated principles for achieving behavioural change: knowing the barriers that are blocking energy conscious behaviour for citizens and implementing behaviour changing stimulants as much as possible (e.g. reward cycling, linking waste taxes to the disposed amount).

Analysing the vision

In this vision, it becomes clear that there is a focus on both domain strategies, as explained by Neirotti et al. (2014). Measures like changing energy sources and infrastructures hereby relate to hard domain, and the focus on communication, participation and behavioural change to the soft domain. However, the hard domain seems to be rather exploratory and without really concrete measures. This is different for the soft domain development, where clear plans on how to approach the issue have already been put into frame. The impact of this difference can be seen as positive, as society first has to understand what needs to be done before it can be realised. When concrete plans can be carried out, soft domain measures are expected to already partially have done their impact on informing citizens and stakeholders and gaining participation.

However, important to note is that this report notes two rather contradictory approaches concerning communicating to and participating with citizens. Firstly, the ambition of the municipality is to actively listen to what citizens have to say and to consider their ideas and initiatives. Secondly, the municipality aims to communicate actions only *after* they have been in order to be a role model. By doing this, the municipality seemingly does not leave a lot of room to implement citizen ideas in their actions, leaving inhabitants of Groningen in a 'user role' rather than a co-developer role (Neirotti et al., 2014). This situation can function as a barrier between the ambitions and future actions. This highlights that smart city planning is a complex issue and requires clear and well-considered policy strategies.

4.1.2. The first Smart Energy City project

Citizen participation values were first given meaning to in 2011, with the first Smart Energy City project in Groningen. The project was launched in the Thomsonstraat as part of a European test-garden: PowerMatching City (Economie Groningen, 2013). The aim in this project was to link the question and demand of energy for existing dwellings in a smart way. This was done by connecting the dwellings to a smart energy grid and to each other, in which question and demand of energy are automatically synchronized. This means that the energy which is not directly used is being saved and shared with other participating test dwellings. Residents received a tablet with time-accurate information about their energy use – an example of participatory sensing (Burke et al., 2016) – to stimulate their awareness (Economie Groningen, 2013).

In 2012, this project was rewarded by the UN in the Sustainia100 as top 100 smart projects in the world. The municipality its task is to upscale this project from street to neighbourhood level (Gemeente Groningen, 2015). The fact that the Thomsonstraat project was a significant success points out how important the participation with citizens is to make bigger steps in the complexity of an energy transition. It clearly showcases a development on soft domain measures (Neirotti et al., 2014), and it shows that Groningen is starting to act like a smart city in terms of balance in innovation circuits (Komninos et al., 2019).

4.1.3. Reshaping the vision goals

In the years 2012-2014, there was a focus on strengthening the position of Groningen as Smart Energy City in cooperation with partners like Grunneger Power and GWS (Groningen Lives Smart). However, results from a survey conducted in by the municipality among 3.500 inhabitants of Groningen show that the communication of the Smart Energy City can be done better, as little people recognized names of involved partners (Gemeente Groningen, 2015). The current developments of the energy ambitions were insufficient, and more effort had to be made in order to realise the long-term goal (energy neutral in 2025).

That is why, in 2015, a report with a new long-term goal was published by the municipality. This new goal is to be CO_2 neutral by 2035, with a step for step roadmap and a short-term vision for 2023. The new goal will be realised with different developments (Gemeente Groningen, 2017). With these

developments, Gemeente Groningen wants to stay known in the development as Smart Energy City. It will focus on multiple smart measures in order to achieve this, like an emission-free city centre, energy generating plants and a 'Groningen energy neutral platform'.

4.1.4. Involvement of citizens

The role of Gemeente Groningen has not changed since the first report in 2008. Their role of facilitator and stimulator means they have put citizens in action, for example by using financial incentives, in order to be successful. To give citizens more information and an idea on the technical aspects of energy measures, an 'energy transition plan' can be drafted to get an overview of the possible measures to be taken per household. If residents are interested, there are projects with subsidises for smart energy measures. Furthermore, Gemeente Groningen wants to make permanent conversation with the citizens of the city, which started with the beforementioned survey among citizens. Staying informed about what mentality lives in the city during rapid developments, is a necessity to keep making the right decisions. The municipality also wants to focus on informing people about the energy saving concept, as most citizens lack knowledge about the benefits and profitability of smart energy saving (Gemeente Groningen, 2015). The municipality wants to do this together with Grunneger Power to communicate the message that Groningen Lives Smart.

What has changed since the report in 2008, is that technological developments seem to have overrun the communicating capacity. The high ambitions of citizen involvement had a disappointing result after surveying citizens (Gemeente Groningen, 2015). New, smart energy measures are now ready for use, but citizens are not taken along in the process enough to be ready to have the measures installed. Komninos et al. (2019) would describe it as an imbalance between the innovation circuits of technological development, investments and efficient citizen behaviour to tackle challenges.

4.2. Interview Grunneger Power: Translating policies into fieldwork and citizen participation values

Their mission
Grunneger Power is one of the bigger partners in realising the energy transition with Gemeente Groningen, but need to be innovative: "In the past we did multiple big projects involving solar panels, but in contemporary Smart Energy City this is not smart and innovative enough anymore." Grunneger Power is currently invested in a project mostly concerning residences as a lighthouse city of the European project 'Making City'. Grunneger Power:

"We as Grunneger power are generally looking for innovative solutions which are not very commonly applied. Examples of this are heat pumps that are particularly economical or silent. In combination with non-technical smart solutions – making the energy flows in households insightful and the coaching of citizens on energy saving – this will provide for a total solution in the energy transition."

Scale and selection process
The Making City project is currently in its third year, out of a planned total of five years. In these years, residences in positive energy districts (PEDs) – three in Paddepoel and a couple in the Euroborg area – were selected and are now being modified using smart solutions. Grunneger Power: "The ambition is to motivate citizens and to upscale this project to other parts of Groningen, the Netherlands and Europe." In the last two years, results will be analysed by Hanze Hogeschool and Rijksuniversiteit Groningen to publish the lessons learned.

The selection process of PEDs follows certain criteria, for example the representability of a dwelling compared to other homes, the positive energy potential, unicity and innovativeness, and the feasibility versus investment. Grunneger Power:

"The criteria assess if houses are representative for the city on different levels, like the amount of residents and energy usage, and are feasible for the limited funds, so the innovations can be upscaled after the project is successful."

Approaching citizens in practice
The first two years of the Making City project were dedicated to the recruitment of citizens willing to participate. This was done using the local newspaper, local WhatsApp groups and word of mouth communication. In Paddepoel, fifteen household showed interest. After two years of in-depth conversation, these were narrowed down to three final participants. Grunneger Power: "The dropped-out participants did not feel comfortable with the changes that had to be made to their home." The in-depth conversation is a long process in which is being determined what Grunneger Power can do for the participants in terms of smart innovations in their dwellings.

Important is that people want to make the right decision and do not want to regret their participation: "Therefore, it is crucial for Grunneger Power to stimulate and gain trust from the citizens. Subsidises, coaching hours for more technical information and gaining trust by being a spider in the web between parties are examples on how Grunneger Power wants to achieve this." Next to that, they employed residences in the neighbourhood in order to stand as close to the project as possible and make it more personal. In the end, however, it is the own choice for residents to offer participation. Before the project, they signed a contract which states they can drop out at *any* moment during the process. This implies adaptive planning (Mancebo, 2020), where participant reactions are being monitored and adjusted upon throughout the project. Grunneger Power: "We cannot force people to participate."

4.3. Current citizen participation values

4.3.1. Knowledge and willingness

The survey carried out in this research shows results in line with the survey conducted by the municipality in 2015. Only 4.8% of the respondents says to be familiar with the Smart Energy City concept, while 9.5% says to be familiar with SECG projects after being given an explanation (figure 2 & appendix 3). While the municipality said to work on the communication of this concept (Gemeente Groningen, 2017), there seemingly has not been reached much in the past five years according to the respondents.
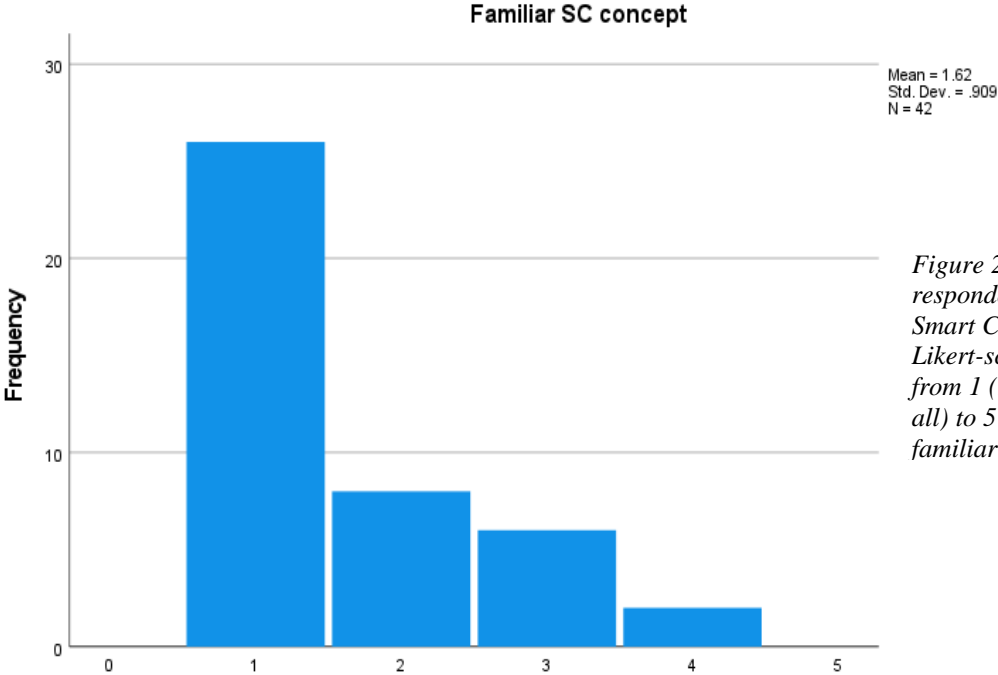

Figure 2: Familiarity respondents with Smart City concept on Likert-scale ranging from 1 (not familiar at all) to 5 (very familiar). – own data

However, the lack of knowledge is not caused by a lack of interest. Surveyed citizens show 35.7%, with a mode of three on Likert-scale (neutral), of respondents are willing or very willing to share their ideas on Smart Energy City with the municipality (figure 3). Next to sharing their ideas, 39% of surveyed citizens indicate to be willing or very willing to take part in Smart Energy City projects (figure 4). Put this into contrast with the three candidates in the Grunneger Power project in Paddepoel, a neighbourhood with over 10.000 inhabitants (AlleCijfers, 2020), and it can be said that there is a lot to gain on this topic.
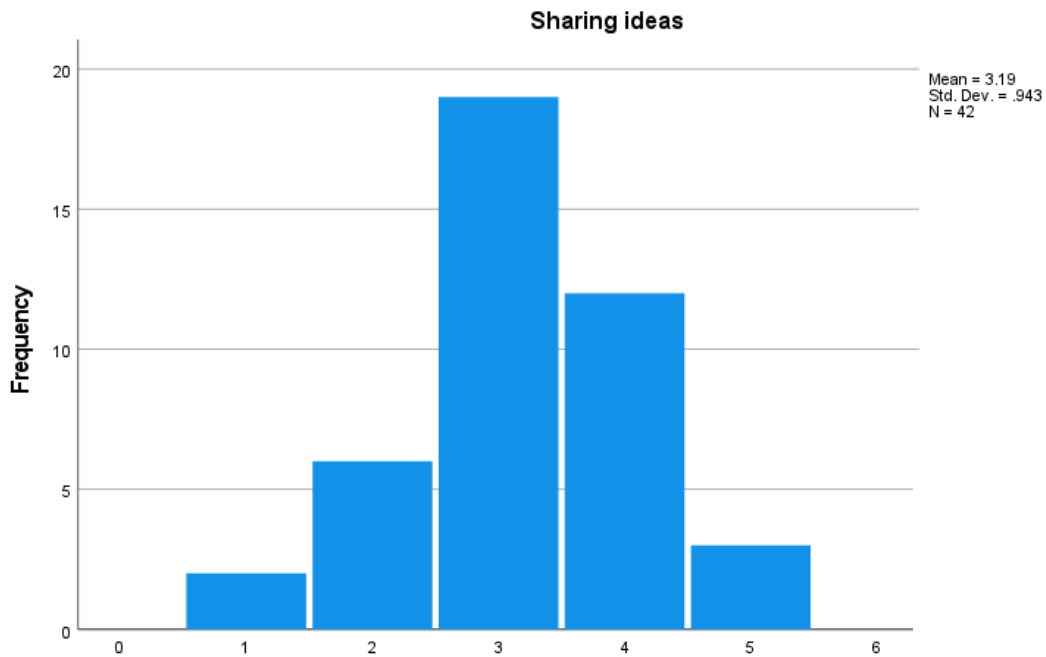

Figure 3: Willingness respondents to share ideas on Likert-scale ranging from 1 (not willing at all) to 5 (very willing). – own data
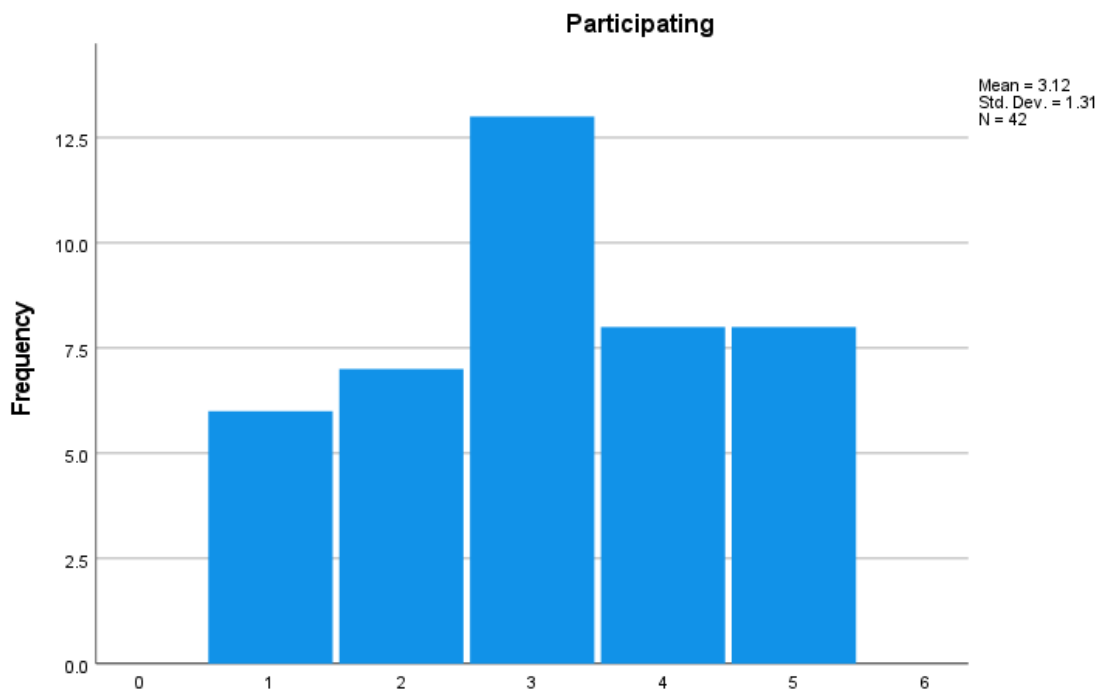

Figure 4: Willingness respondents to participate in projects on Likert-scale ranging from 1 (not willing at all) to 5 (very willing). – own data

4.3.2. Involvement and communication

Next to knowledge and willingness, the feeling of involvement and transparent communication are important factors for citizen participation (Komninos et al., 2019). From the conducted surveys, citizens indicate not to feel involved in the decision-making concerning their city. This is shown by the mode of two on Likert-scale (not involved), compared to a frequency of only two indicating five on Likert-scale (very involved) (see figure 5). Furthermore, respondents indicate to have a neutral attitude concerning communication from the municipality towards them. A frequency of fourteen (31%) indicates to experience bad or very bad communication, opposed to a frequency of seven (16.7%) indicating to have a good experience with communication (see figure 6 & appendix 3). This indicates room for improvement in communication from the municipality.
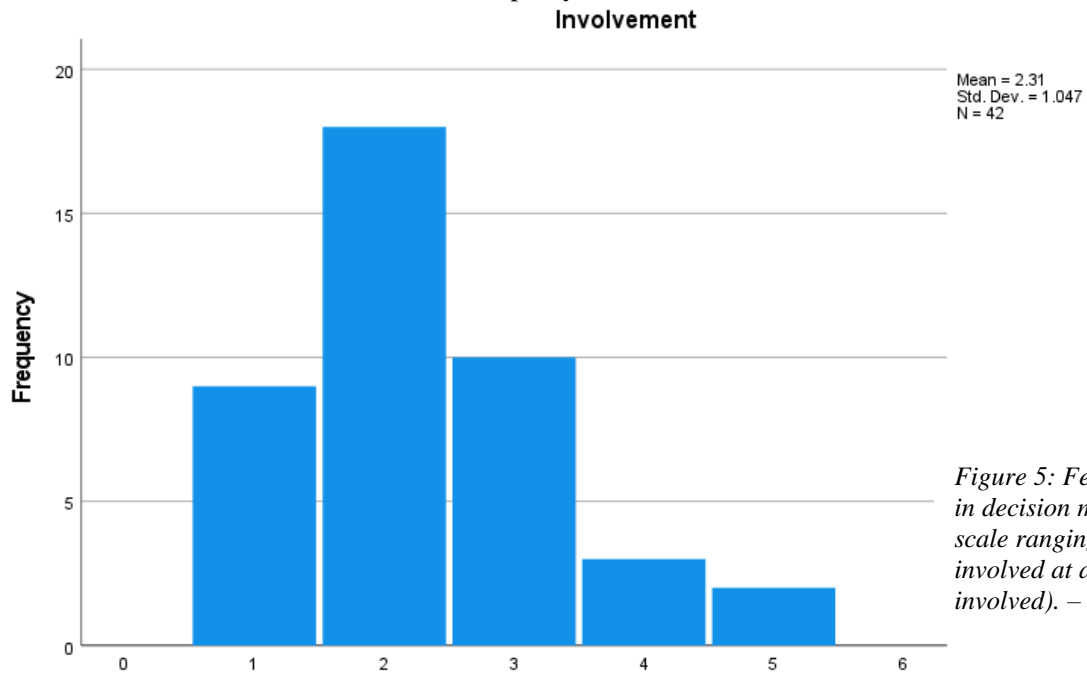

Figure 5: Feeling of involvement in decision making on Likert-scale ranging from 1 (not involved at all) to 5 (very involved). – own data
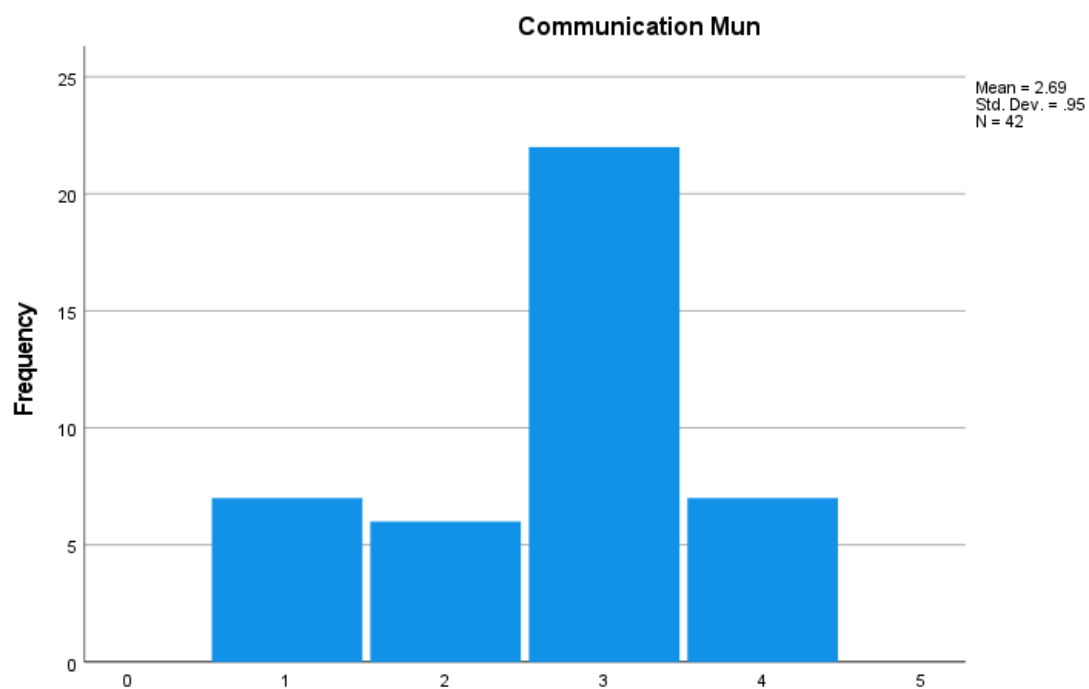

Figure 6: Rating communication of municipality on Likert-scale ranging from 1 (very bad communication) to 5 (very good communication). – own data

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Moreover, respondents imply, to improve their experience in feeling involved and communicated towards, the municipality has to focus on providing more information directly to residences, so participation will be more accessible. Also, digital information platforms would be of value to keep citizens up to date with (upcoming) projects. Furthermore, it is indicated that the international community of Groningen and student ideas should be included into plans more.

4.3.3. Citizen participation and possible measures Smart Energy City Groningen

Explaining current citizen participation values, like the gaps between knowledge, willingness, inclusion and communication, it has to be noted that the approach of Gemeente Groningen with Grunneger Power focusses on in-depth conversations with participants. This is a personal but also long process. Groningen can therefore be labelled as non-creative smart city according to Cortés-Cediel et al. (2019), which makes for high collaboration with participants but not for reaching enough citizens. To make participation accessible, the municipality should focus more on creative smart city planning with interactive digital platforms to reach more citizens. Once more people have been reached and informed, there is bigger opportunity for senseful communication and inclusion.

The fact that Groningen is ahead of the rest of the Netherlands in terms of energy transition (Gemeente Groningen, 2015) is simultaneously creating a barrier for the development ambitions. A thorough strategy is crucial, as there is only limited development possible when the national situation lacks behind. This makes it more important to include all stakeholders, but also more difficult. Stokman (2017) mentions that separate budgets and regulations for smart city projects are needed to make use of local potentials and to bring projects closer to citizens. Sometimes, participation has to be enforced rather than completely voluntary like for example Grunneger Power is doing, but regulations for this have yet to be developed (Gemeente Groningen, 2015).

Furthermore, projects like Making City are still in development. Results cannot yet be communicated to the public. This again suggests the imbalance between hard and soft domain developments (Neirotti et al., 2014). If the soft domain was more developed, the hard domain could have been implemented earlier. This would lead to earlier public results, making the ambitions for 2035 achievable. For now, the municipality is behind on schedule (Gemeente Groningen, 2015).

Moreover, in the conducted interview Grunneger Power lets us know there is limited time and funds dedicated to communication on this project. The communication that takes place is not coming from Grunneger Power or the municipality to stimulate participance. The project mainly creates content for the European Making City project, in which Groningen functions as test city, and results are reflected and spread on European level more than directly on city level in Groningen. This can partly explain why citizens of Groningen have little knowledge about Smart Energy City Groningen.

5. Conclusions

5.1. Concluding the research

The aim of this research was to explore the current state of citizen participation in SECG, to see what measures could be applied to stimulate participation. This was done by using policy documents from the municipality, carrying out surveys among citizens and interviewing a partner in SECG. The results derived from the methods were compared with and analysed through the theoretical framework. Consequently, current citizen participation values could be described and development suggestions in order to be successful as a smart city could be make.

It can be concluded that visions formulated by the municipality are ambitious and thoroughly structured. There is stated a concrete plan on being energy neutral by 2035 via the path of Smart Energy City development. In this plan, it becomes clear that the municipality approached the informing and participation of citizens seriously and recognizes its importance. However, survey results imply citizens are not well informed, do not feel included in decision making and are predominantly negative about the municipality its communication.

A shift away from the balance in hard and soft domain development became apparent during the strategy implementation. A focus on smart energy infrastructures has caused communication to lack behind, as knowledge among citizens was not at the desired level when hard domain solutions were ready to be implemented. Within smart implementations, citizens are not well informed and put into a user rather than a co-developer role, decreasing participation values.

Additionally, the imbalance between ICs can plausibly be solved by focussing on the development into a creative smart city. Hereby, there is focus on interactive digital platforms where citizens get informed and stimulated for participation. This is a significantly valuable development next to already existing in-depth conversations with intermediate adaptive planning. It will boost participatory sensing as well, to gather insightful smart data via citizen participation.

However, citizen participation together with ambitions to be energy neutral makes a perfect execution on local level not always possible. As local measures are dependent on national or even international developments, regulations and funds, beforementioned measures are possibly only partly effective. Desired citizen participation is therefore a slow and complex process that requires more attention.

5.2. Research recommendations

Citizen participation in smart cities has acknowledged importance but does not find specific solutions in literature. It is important to conduct more multi-disciplinary research on this topic. Research specifically on the policy side of smart cities can better comprehend the problem and is therefore recommended, as well as a combination with large scale citizen research on incentives to participate.

5.3. Reflecting on the research process

COVID-19 makes it inappropriate to directly approach people, and limited the amount of survey data that was collected. The results might be less accurate and less representative for the total picture than a research carried out in 'normal' times and on a bigger scale in general. In hindsight, survey questions would have been asked differently, developing the questions more *context* instead of *concept* specific to better lead the respondents through the survey. Furthermore, the interview with Grunneger Power was an unintended source during this research, thus the preparation was not optimal. Moreover, to research how Smart Energy City projects are put into practice, more parties would be interviewed to enrich this research. This, however, was not achievable within the timespan of this research project.

Nevertheless, it can still be said that this research is of value for filling in the literature gap on citizen participation in SECG. Moreover, the obtained insights on how to improve current participation conditions are worthwhile taking into consideration for the municipality. The insights are a useful starting point for future research that is suggested to be of much larger scale in order to find outcomes to generalise over the citizens of Groningen.

Throughout the process of writing this thesis, a lot of skills that are product from the Spatial Planning & Design programme were put into practice. Scientific writing skills from Methods of Academic Research and experience in the field of citizen participation acquired from Landscapes, together with a deeper understanding of the complexity of citizen inclusion from Governance Dynamics were mainly useful for this research. Multiple things could be improved and extended within this project, but there was especially learned a lot by the researcher.

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7. Appendices

Appendix 1: Reviewed policy documents Gemeente Groningen

Policy	*documents*
Year	**Title**
Gemeente Groningen, 2008	*Beleidskader duurzaamste stad Groningen*
Gemeente Groningen, 2009	*Jaarprogramma duurzaamste stad 2010*
Gemeente Groningen, 2015	*Groningen Geeft Energie*
Gemeente Groningen, 2015	*Routekaart Groningen CO2-Neutraal 2035*
Gemeente Groningen, 2017	*Masterplan Groningen Energieneutraal*

Appendix 2: Survey guide

Survey - Citizen inclusiveness in Smart Energy City projects Groningen

Introduction

Modern day city planning focusses on a sustainable development.
A popular concept cities like Groningen use, is Smart City development.
The goal is to measure the city's functioning with smart measurement tools in for example energy usage, the use of infrastructure and the efficiency of data networks to make Groningen sustainable for the future.
This can only be done with collaboration between all involved parties, and especially with citizens.
A common trend is the lack of citizen inclusiveness in Smart City projects, often resulting in the failure of the projects.
The goal of this survey is to investigate the status of citizen inclusiveness in Smart City Groningen, to display what is done right and what can be improved.
This is a survey meant for inhabitants of the municipality of Groningen only.

Consent

This is a Bachelor Thesis survey made by Ytsen Veenstra, student of Spatial Planning & Design at Rijksuniversiteit Groningen.
By completing this survey, you give permission for your answers to be used and processed in a thesis project. All your information will be treated confidentially. After this thesis project has finished, all data will be destroyed.

Demographics

Please indicate your age: Dropdown menu:

1. Under 12 years old
2. 12-17 years old
3. 18-24 years old
4. 25-34 years old
5. 35-44 years old
6. 45-54 years old
7. 55-64 years old
8. 65-74 years old
9. 75 years or older

Please indicate your highest finished education:

Dropdown menu:

1. No finished education
2. Secondary education diploma
3. Vocational education diploma
4. Bachelor's degree
5. Master's degree
6. Professional degree
7. Doctorate degree

Please indicate your status:

Multiple choice:

Student
Working
Jobless
Other

Please indicate your nationality:

Short text answer:

Please indicate the neighbourhood that you live in:

Short text answer:

Please indicate for how long you have:
been a citizen of Groningen

Dropdown menu:

1. 0-2 years
2. 2-5 years
3. 5-10 years
4. 10 years or longer

Smart City experiences

How familiar are you with the Smart Energy City concept?

Likert scale:

1 Not at all familiar
2 Not familiar
3 Not familiar, not unfamiliar
4 Familiar
5 Very familiar

Are you familiar with Smart Energy Concepts in Groningen?

Yes or No answer

Please indicate where these projects
are located (neighbourhoods/streets):

Short text answer

Please indicate what these projects are about:

Short text answer

Did any organisation reach out to you concerning a Smart City project?	Multiple choice: *Yes* *No* *I don't know*
Please indicate by which organisation you were approached:	Short text answer
How were you approached?	Multiple choice: *I was only informed about a project* *I was informed and my participation/opinion was asked*
How has your participation been asked?	Multiple choice: *My opinion/ideas was asked* *My opinion/ideas were asked and I was invited to a meeting* *I was asked to fill out a survey or a similar form* *Differently*
Did you participate in this project?	Yes or No answer
Why did you/why didn't you participate?	Short text answer
Were you informed about the results of the project?	Yes or No answer
How successful was the project?	Likert scale: *1. Not successful at all* *2. Not successful* *3. Not successful, not unsuccessful* *4. Successful* *5. Very successful*
What has the organization done with your input?	Likert scale: *1. Nothing at all* *2. Not a lot* *3. A little bit* *4. Quite something* *5. A lot*

How willing are you to share your opinion/ideas with the organization of Smart City projects?

Likert scale:

1. Not willing at all
2. Unwilling
3. Not willing, not unwilling
4. Willing
5. Very willing

How willing are you to participate in Smart City projects (for example in a living lab)?

Likert scale:

1. Not willing at all
2. Unwilling
3. Not willing, not unwilling
4. Willing
5. Very willing

How included do you feel in making decisions for your city?

Likert scale:

1. Not included at all
2. Not included
3. Not included, not unincluded
4. Included
5. Very included

How would you describe the communication between you and your municipality?

Liker scale:

1. Very bad communication
2. Bad communication
3. Not good, not bad communication
4. Good communication
5. Very good communication

What is your opinion about the municipality's functioning?

Likert scale:

1 Very negative
2. Negative
3. Not positive, not negative
4. Positive
5. Very positive

What could be changed to improve your experience in a smart city project and its communication?

Short text answer

What else do you want to share on this topic that this survey didn't ask?

Short text answer

What can be done to improve this survey?

Short text answer

Appendix 3: Interview guide

For this interview, I designed topic specific questions. In reality, the interview was semi-structured as there was given room to the interviewee to go off topic. This appendix contains the raw version of the interview.

Interview with Grunneger Power

Conducted on 16th of November 2020 – from 2 PM to 2.30 PM

Introduction

- Thanks for interviewee his time
- Introduction about me and the topic, why this interview is relevant to me
- Ask for allowance to record the conversation
- Ask for allowance to use the interview for my research
- If ready, suggest to start the interview

Questions

Main questions	*Sub-questions*
About Grunneger Power projects:	
Where are projects currently taking place?	*What do these projects look like?*
Are there more projects planned in Groningen?	*What do these projects look like?*
How are project areas (demo-houses, demo-areas) being selected?	
About involvement and communication from/towards citizens:	
How are citizens of project areas being informed?	*How much in advance are they informed?*
How is the informing of citizens being approached in general?	*Are only citizens in project areas being informed, or e.g. all citizens of Groningen*
How are citizens responding to these projects in general?	
What is being done about the stimulation of participation of citizens?	
How is Grunneger Power approaching the communication of (intermediate) results?	
What is being done about the knowledge development of these projects among the inhabitants?	

What do you think could be possible reasons
for the unawareness and lack of knowledge about
these projects among citizens?

Finishing

5. Thank interviewee again for his time
6. Is there anything undiscussed that the interviewee would like to add?
7. Is the interviewee interested in the end product of the thesis?
8. *Thanks again to the interviewee*

Appendix 4: Interview transcript

Organisation: Grunneger Power
Date: 16th of November 2020 – from 2 PM to 2.30 PM

Important to note: during this interview a google docs document was being shared via which GP showed me, among other things, the selection process of demo homes. The interview answers are shown as the original Dutch version, to ensure the points made are being maintained.

[INTRODUCTION]

Questions about Grunneger Power projects:

YV: Where are projects currently taking place?
GP: In Europa zijn twee 'Lighthouse Cities', waar geprobeerd wordt districten met innovatieve maatregelen, energiepositief te maken. Er zijn twee gebieden aangewezen, en er wordt gesproken over PEDs, positive energy districts. Eentje in het noorden, en eentje in het zuiden van de stad. Die in het noorden is een stuk van Paddepoel en een gedeelte van Zernike. In Paddepoel gaat het om woonhuizen en appartementen flats. Daarvan komt een uit de jaren '60, dus die is slecht geïsoleerd. Twee ervan zijn nieuwbouwhuizen die van zichzelf al aardig zijn geïsoleerd . Een deel van Zernike zit er ook bij als kantoor en met universiteitsgebouwen. In het zuiden is het een gebied in de buurt van de Euroborg. Dit zijn ook appartementen, maar er zijn ook een sporthal en een zonnepark bij betrokken.

YV: What do these projects look like?
GP: Vanuit Grunneger Power zijn wij voornamelijk bezig met de woonhuizen, maar over het algemeen is het zo dat we op zoek zijn naar innovatieve oplossingen die nu nog niet heel veel toegepast worden. De standaard zonnepanelen die iedereen kan bestellen zijn niet innovatief genoeg hiervoor. Je moet hierbij bijvoorbeeld denken aan een nieuw type warmtepomp die extra zuinig is of een warmtepomp die heel stil is. Dat zijn innovaties waar we naar op zoek zijn, zodat we die in het project kunnen toepassen en kunnen testen en ook kunnen kijken of deze doen wat ze beloofd hebben.

YV: Are there only technical solutions or is there also another approach?
GP: Dit is in combinatie met een aantal slimme niet technische oplossingen zoals het inzichtelijk maken van energiestromen in huishoudens, coaching aan mensen van: hoe kun je nou nog meer besparen, zodat dat een totaaloplossing vormt.

YV: Do the projects have to do with the heat network in Groningen?
GP: Dit heeft deels te maken met het warmtenet in Paddepoel. Er ligt al een warmteleiding van Warmtestad, daarop zijn een aantal van de flats aangesloten. Omdat die flats een aansluiting in een ketelhuis hebben, en daarmee wordt het hele gebouw bediend. Een van de flats van Nijestee zit ook in het Making City project, die wordt ook aangesloten op Warmtestad, zodat deze ook gemonitord kan worden. Warmestad zelf is ook partner in het project. Wat wij aan het doen zijn met de

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demowoningen: daarvan hebben wij zelf een drietal losse huizen gekozen om te verduurzamen. Daarvan staan er twee in het zuiden van Paddepoel, dat zijn iets nieuwere huizen van na 2000. Deze zijn al goed geïsoleerd. Ze worden beide van een andere innovatieve waterpomp voorzien, zodat we die kunnen vergelijken. Voor het iets oudere huis in het noorden van Paddepoel willen we eigenlijk twee warmtepompen installeren, waarbij een warmtepomp een temperatuurregime creëert waar al een warmtenet ligt. Dus er komt van buitenaf een warmwaterstroom het huis in.
In het huis wordt die nog geüpgraded met een andere warmtepomp zodat het huis verwarmd kan worden.

YV: Is that enough to properly heat the houses?
GP: Oudere huizen hebben een iets hogere temperatuur nodig. De standaard radiatoren die in oudere huizen zitten hebben zo'n 60-70 graden warmte nodig om een huis te kunne verwarmen. Als je daar 40-50 graden water doorheen doet wordt het huis niet warm en verliezen mensen hun comfort. Voor deze woning kijken we van stel: je legt een warmtenet aan met een lage temperatuur (20-30 graden komt het huis in), dan is dat natuurlijk veel te koud om je huis te verwarmen. Dan wordt dit water in het huis zelf nog een boost gegeven tot een temperatuur waarbij het wel een huis verwarmd (60-70 graden). Dit heeft als voordeel dat je de isolatie van deze huizen niet aan de voorkant hoeft aan te passen. Deze huizen worden nu ook al verwarmd met 60-70 graden water en je kan de huidige radiatoren laten hangen. Want stel je zou een huis helemaal gaan isoleren, en met een lagere temperatuur verwarmen, betekent dat meestal dat je ook nog de radiatoren moet aanpassen en dan wordt het al met al een redelijk dure grap. In het project zit redelijk wat geld en subsidie die we kunnen gebruiken om het een keer te testen en te beoordelen of dit ook op grotere schaal toegepast kan worden, zodat het dan ook goedkoper wordt. Je kunt zelf ook wel bedenken dat in een huis ter waarde van 3 ton verbouwingen van 1 ton niet rendabel zijn

YV: Are there more projects planned in Groningen?
GP: Het project Making City zoals ook op de website omschreven staat is een project dat 5 jaar loop. Het is 2 jaar geleden in december begonnen, dus is nu 2 jaar oud. In december gaat het zijn derde jaar in. In dit project worden de eerste 3 jaar woningen verbouwd, aangepast en worden er plannen gemaakt.

YV: How are the projects financed?
GP: In de jaren daarna gaan we het monitoren en omschrijven en doen de RuG en Hanze onderzoek naar wat we hieruit kunnen leren en wat voor plan we kunnen maken voor de steden die hier ook mee aan de slag willen. De gemeente, RuG, Hanze, wij (Grunneger Power), Nijestee, en Warmtestad hebben een budget om dit uit te voeren, maar ook de uurlonen worden ervan betaald. Dus dat is een project wat 5 jaar loopt dus het gaat wel echt om miljoenen euro's. Dit is dus wel een van de grotere projecten die er zijn met Europees geld. Wat er verder in de gemeente gebeurt dat zou ik niet zo één, twee, drie kunnen zeggen.

YV: And what happens after the projects?
GP: Wat een ambitie is: we hebben natuurlijk een heel plan geschreven wat we allemaal gaan doen, waar in de eerste 3 jaar staat dat alles in de huizen aangepast gaat worden en zorgen dat we dit kunnen meten en de bewoners mee kunnen krijgen, daarna deze dingen rapporteren, Maar de gemeente Groningen heeft zelf al een idee om de 'lessons learned' hieruit ook te kunnen gebruiken op andere plekken in de stad, om hier ook mensen mee te kunnen krijgen in de verduurzamingstransitie. De gemeente Groningen heeft de ambitie om in 2035 CO_2 neutraal te zijn. Dat is een best ambitieus plan. Dit betekent dat je in 15 jaar ⅓ moet gaan besparen, ⅓ zelf moet gaan opwekken en ⅓ buiten de provincie gaan opwekken. Daarin zit ook een rol voor onder andere Grunneger Power.

De gemeente wil zorgen dat zoveel mogelijk mensen van het aardgas afgaan, zodat iedereen een nieuwe vorm van warmte krijgt. 80-90 procent van de stad moet of op een warmtenet, daar wordt aan gewerkt om te bekijken hoe dat het beste kan, maar sommige beter geïsoleerde huizen zullen op de een of andere manier aan een warmtepomp moeten. Die warmtepompen, daar gaan negatieve verhalen van in de rondte, want ze zijn erg duur, niet goed ingeregeld, kunnen kapot gaan, of kunnen geen warmte

leveren. Wat de gemeente Groningen ook samen met ons in dit project wil, is dat we niet alleen voor het project rapporteren, maar hier zelf ook van leren zodat wij uiteindelijk ook kunnen zeggen: als je een warmtepomp overweegt, let dan op de volgende punten. Of dat we een soort stappenplan kunnen maken en we, als je in een nieuwbouwwijk kijkt waarbij er een straat is met 20 huizen die allemaal hetzelfde zijn, een vloerverwarming hebben, allemaal ongeveer hetzelfde oppervlakte, zeggen van: voor deze huizen zouden deze warmtepompen het beste zijn. Zullen we eens kijken of iedereen in de straat mee wil doen? Dat koop je meer tegelijk, met een installateur, zodat het aantrekkelijker wordt dan dat je dit zelf moet gaan uitzoeken.

YV: How did you do this in for example Paddepoel?
GP: Bij de bewoners in Paddepoel die wij begeleiden hebben wij anderhalf jaar geleden een oproep gedaan in de lokale krant van Paddepoel van: wie wil er meedoen? Ruim 15 mensen hadden zich hiervoor aangemeld. Alleen dat is dus anderhalf jaar geleden en in die tijd hebben we met de bewoners gepraat en gekeken wat we kunnen betekenen. Waar hebben jullie behoefte aan en kan er in dit huis (technische adviseurs)? Dit is een heel traject van anderhalf jaar tot waar we nu staan, waar vlak voor kerst de eerste warmtepompen worden geinstalleerd bij mensen. Maar dit is een lang traject/project. Draait ook om hoe technisch onderlegd iedereen is. Mensen willen wel weten of ze een goede keuze maken, ze willen niet over een jaar spijt krijgen omdat het minder werkt en er inmiddels betere alternatieven zijn. Want uiteindelijk maken ze zelf echt de keuze of ze meedoen in zo'n project. Wij hebben ook een deelnemerscontract gesloten aan het begin, waar expliciet instaat dat elk moment dat zij zich er niet meer fijn bij voelen, zij uit het project mogen stappen. Wij kunnen geen mensen dwingen om erin te blijven.

YV: How are project areas (demo-houses, demo-areas) being selected?
GP:

Representatief	Is de woning representatief voor de wijk Paddepoel? Komt het archetype vaker voor en kan de berekening over het huis voor het PED ook op andere huizen worden toegepast?
Fysieke ruimte	Heeft de woning genoeg fysieke ruimte voor duurzaamheidsmaatregelen? Kunnen deze 'makkelijk' geplaatst worden? Zijn er al andere maatregelen aanwezig, welke innovatieve maatregelen in de weg kunnen zitten?
Potentie energiepositief	Kunnen de huizen vóór november 2021 energiepositief gemaakt worden? Is het energieverbruik niet te hoog? Past het in de tijdsplanning? Energiepositief betekent maximaal zonnepanelen toepassen. is dit binnen de tijd mogelijk?
Uniciteit	Hoe 'uniek' is de woning ten opzichte van de andere deelnemers? Het liefste hebben de deelnemende huizen een drietal verschillende gezinssamenstellingen, hoog-midden-laag verbruik etc.
Haalbaarheid vs. Investering	Een grote delta qua energieverbruik toont de doelstelling van het project het beste aan. De haalbaarheid is hier echter ook een factor in (investering van 50k is niet realistisch). De verhouding hiertussen kan per woning ingeschat worden.
Making City innovativiteit	Making City draait om het innovatief verduurzamen van woningen. Een woning, welke met bestaande technieken al te verduurzamen is, scoort lager op dit criterium, dan waarbij de uitdaging hoger is.
Sluit aan bij doelen project	Huis/bewoners zijn bereid mee te gaan met de scenario's voor het project.

Questions about involvement and communication from/towards citizens:

YV: How are citizens of project areas being informed?
GP: Dit doen wij via de lokale krant, de website van GP, nieuwsbrief van GP, social media, lokale (straat)apps en mond-tot-mond.

YV: How far in advance are citizens being informed?
GP: Dit is een heel traject van anderhalf jaar tot waar we nu staan, waar vlak voor kerst de eerste warmtepompen worden geïnstalleerd bij mensen. Maar dit is een lang traject. Het draait ook om hoe technisch onderlegd iedereen is. Mensen willen wel weten of ze een goede keuze maken, ze willen niet over een jaar spijt krijgen, omdat het minder werkt en er inmiddels betere alternatieven zijn. Dus we willen heel veel bewoners meenemen en praten over welke opties er zijn en ook het vertrouwen daarin wekken, want nogmaals uiteindelijk maken ze zelf echt de keuze of ze meedoen in zo'n project. Wij kunnen geen mensen dwingen om erin te blijven.

YV: Are only citizens in project areas being informed, or e.g. all citizens of Groningen?
GP: De communicatieboodschap is voor binnen het projectgebied anders dan er buiten. Binnen het gebied worden bewoners aangespoord om ook betrokken te worden, buiten het projectgebied is het om bewoners van de gemeente Groningen (en misschien ook daarbuiten) te inspireren.

YV: How are citizens responding to these projects in general?
GP: Op innovatieve projecten is het over het algemeen: ik wil wel meedoen voor wat korting, maar het moet wel werken. Ik wil niet in de kou komen te zitten. Anderhalf jaar geleden wisten we nog niet welke huizen precies geschikt zouden zijn, en daarna niet of we van elk type huis een aanmelding zouden krijgen. En als mensen willen meedoen, weten we niet waarom precies. Willen ze zelf ook CO_2 neutraal worden, of willen ze juist meedoen omdat ze zien dan er subsidie mogelijkheid is en dus korting krijgen? Het was eerst heel erg informeren naar: je kunt verduurzamen, je krijgt korting erbij, maar eigenlijk willen we samen met jou als bewoner een plan maken over hoe je een huis kunt verduurzamen. Voordat wij bij deze drie huizen kwamen, gingen we nog met zes huizen verder, dus er zijn drie 'afgevallen'. Maar daar hebben we ook een plan voor gemaakt met de bewoners, om te kijken wat je hier in dit huishouden kunt doen aan verduurzaming. Die rapporten hebben we afgegeven aan de 'afgevallen' huizen, ze kunnen dus wel kijken wat de stappen zijn die genomen kunnen worden.

YV: What is being done about the stimulation of participation of citizens?
GP: Financiee, dus subsidies, begeleidingsuren, vertrouwen wekken en de spil zijn tussen de verschillende partijen die de verduurzaming op huishoudelijk niveau mogelijk maken zijn hiervoor onze belangrijkste stimulus. Ook hebben wij in de projectwijken een aantal inwoners die voor ons werken, om zo dicht mogelijk bij het project te staan. Die hebben ook hun eigen netwerken dus straatapps et cetera gebruikt om zo mensen te benaderen.

YV: How is Grunneger Power approaching the communication of (intermediate) results?
GP: Projectdoelstellingen zijn anders dan doelstellingen voor de bewoners zelf. Het hoofddoel voor Grunneger Power is dat de bewoners zich comfortabel voelen bij wat er in hun directe omgeving verandert. Met de bewoners bespreken we de, voor hun, interessante resultaten. Per demohuis verschilt dit, dit ligt aan de technische, economische, sociale interesses van de bewoners.

YV: What is being done about the knowledge development of these projects among the inhabitants?
GP: Het Making City project is een project dat vijf jaar duurt en nu twee jaar heeft geduurd. Op dit moment worden de eerste innovaties geïnstalleerd, de laatste twee jaar zullen de projectresultaten gedeeld worden binnen en buiten de stad.

YV: What do you think could be possible reasons for the unawareness and lack of knowledge about these projects among citizens?
GP: Er is slechts een beperkt aantal uren en middelen beschikbaar omtrent de communicatie van dit project. Het grootste gedeelte van dit beperkte budget gaat voornamelijk over communicatie vanuit het project. Dus niet vanuit de gemeente of Grunneger Power 'like look at this, participate!'. Dit budget is echt bedoeld als 'we gaan vanuit de Europese Unie content maken en dat verspreiden, dus dat komt echt op een heel hoog niveau over. Daarbij is de doelgroep niet de inwoners van Groningen, maar Europeanen of iets in die richting. Verder is ons doel altijd dat iedereen mee moet kunnen doen in de hele transitie. Niet dat als je een koophuis hebt en geld op de bank en een geschikt dak voor zonnepanelen. En daarmee hebben wij ervoor gekozen om niet drie makkelijke huizen te kiezen, maar

we kiezen wel een iets moeilijkere route door eerst in de wijkkrant te gaan staan, vervolgens in appgroepen proberen te vragen wie er allemaal mee wil doen en om welke reden?

YV: Isn't doing the easy houses first a faster process?
GP: Als we makkelijke huizen hadden gekozen, hadden we die allang verbouwd en volgehangen met slimme meters. Maar wij zijn ervan overtuigd dat je daarmee niet de grootste problemen oplost. Als je juist de moeilijkste gevallen pakt, leer je er veel meer van en is dat ook beter voor de ontwikkeling van kennis voor ons. Wat ook goed is om te weten, is dat er voor ons wel uren beschikbaar zijn in jaar vier en vijf om de 'lessons learned' te bekijken. Hoe kunnen we de rest van Paddepoel hierin meekrijgen? Kun je hier bijvoorbeeld collectieve inkoopacties voor doen of een soort duurzame huizenroute? Er gebeurt al best veel om mensen te betrekken, maar dat willen we bij dit project meer gaan doen. Making City is een startpunt, het kan een los project 'spinoff' worden of gewoon een heel ander project. Kijk, op een gegeven moment is het geld natuurlijk ook op. En dan moeten we gaan kijken of de gemeente dit nog wil doorzetten of niet. De gemeente is ook de grootste belanghebber hierbij: dat iedereen gaat verduurzamen.

[FINISHING]

Appendix 5: overview descriptive statistics SPSS from surveys

Statistics

		Familiar SC concept	Familiar SC Gro	Sharing ideas	Participating	Involvement	Communication Mun
N	Valid	42	42	42	42	42	42
	Missing	0	0	0	0	0	0
Mean		1.62	.10	3.19	3.12	2.31	2.69
Median		1.00	.00	3.00	3.00	2.00	3.00
Mode		1	0	3	3	2	3
Std. Deviation		.909	.297	.943	1.310	1.047	.950
Skewness		1.262	2.861	-.218	-.093	.802	-.581
Std. Error of Skewness		.365	.365	.365	.365	.365	.365
Minimum		1	0	1	1	1	1
Maximum		4	1	5	5	5	4
Sum		68	4	134	131	97	113
Percentiles	25	1.00	.00	3.00	2.00	2.00	2.00
	50	1.00	.00	3.00	3.00	2.00	3.00
	75	2.00	.00	4.00	4.00	3.00	3.00

Descriptive statistics all variables

Familiar SC concept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not familiar at all	26	61.9	61.9	61.9
	Not familiar	8	19.0	19.0	81.0
	Not familar, not unfamiliar	6	14.3	14.3	95.2
	Familiar	2	4.8	4.8	100.0
	Total	42	100.0	100.0	

Frequency and percentages Likert scale answers to Familiarity Smart City concept

Sharing ideas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not willing at all	2	4.8	4.8	4.8
	Not willing	6	14.3	14.3	19.0
	Neutral	19	45.2	45.2	64.3
	Willing	12	28.6	28.6	92.9
	Very willing	3	7.1	7.1	100.0
	Total	42	100.0	100.0	

Frequency and percentages Likert scale answers to willingness sharing ideas about Smart City projects

Participating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not willing at all	6	14.3	14.3	14.3
	Not willing	7	16.7	16.7	31.0
	Neutral	13	31.0	31.0	61.9
	Willing	8	19.0	19.0	81.0
	Very willing	8	19.0	19.0	100.0
	Total	42	100.0	100.0	

Frequency and percentages Likert scale answers to willingness to participate in Smart City projects

Involvement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all involved	9	21.4	21.4	21.4
	Not involved	18	42.9	42.9	64.3
	Neutral	10	23.8	23.8	88.1
	Involved	3	7.1	7.1	95.2
	Very involved	2	4.8	4.8	100.0
	Total	42	100.0	100.0	

Frequency and percentages Likert scale answers to feeling of involvement in decision making

Communication Mun

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very bad communication	7	16.7	16.7	16.7
	Bad communication	6	14.3	14.3	31.0
	Neutral	22	52.4	52.4	83.3
	Good communication	7	16.7	16.7	100.0
	Total	42	100.0	100.0	

Frequency and percentages Likert scale answers to rating of municipal communication towards citizens