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THE INFLUENCE OF CITIZEN PARTICIPATION IN THE DECISION-MAKING PROCESSES OF REGIONAL ENERGY TRANSITIONS

An embedded case-study of municipalities in the energy region Holland Rijnland in the Netherlands

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DENNIS HULSBOSCH

TU Delft

Universiteit Leiden
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THE INFLUENCE OF CITIZEN PARTICIATION IN THE DECISION-MAKING PROCESSES OF REGIONAL ENERGY TRANSITIONS

AN EMBEDDED CASE-STUDY OF MUNICIPALITIES IN THE ENERGY REGION HOLLAND RIJNLAND IN THE NETHERLANDS

By

D.J.A. Hulsbosch

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Supervisors: Dr. Thomas Hoppe
Dr.ir. Bert Enserink
Dr. Anatol Itten

EXECUTIVE SUMMARY

The Paris Agreement was ratified in 2016 to reach a climate-neutral world in 2050. The Netherlands must comply with the Paris Agreement and form climate policies. The Climate Agreement is an agreement on a national level to limit global warming in the Netherlands. A key aspect is changing from fossil fuels to renewable energy. The Climate Agreement should be achieved by the efforts of thirty energy regions in the Netherlands. Citizen participation is determined as a critical element in the Climate Agreement. Citizens should contribute and be involved with concrete and attractive opportunities by the government. Citizens should be able to think along and participate in policy planning and implementation phases. However, a good relationship between citizens and governments is not self-evident. The following research question is leading: *"In which ways is citizen participation present, organized and influencing the initiation, design and implementation phases of the energy transition in the energy region Holland Rijnland?"*

Firstly, the societal relevance. Support for new renewable energy projects is needed. These projects will be placed in the immediate environment of citizens. Resistance could ultimately hamper a successful energy transition. Research regarding the implementation of citizen participation in energy transition decision-making processes is valuable—moreover, the scientific relevance. Firstly, research on active citizenship at local and regional levels in the Netherlands is relatively small. Likewise, studies often fail to consider governance. This research can be of value by considering these aspects. The research is a qualitative, explorative, and embedded case study about the energy region Holland Rijnland. Four municipalities are the main embedded cases: Katwijk, Leiden, Lisse and Zoeterwoude. Moreover, two validation cases are added: Nieuwkoop and Alphen aan den Rijn. Furthermore, the theoretical framework from Sillak et al. (2021) regarding co-creation during energy transition is used. It provides insight into the activities, goals, and outcomes of involving citizens in the decision-making processes of energy transitions. The framework was used to code the gathered data. The data was collected by desk research on policy documents and reports and by conducting semi-structured interviews.

Firstly, citizen participation plays a vital role in all municipalities. Co-creation and co-production played a minor role, with activities in a few municipalities. The regional approach is valuable for sharing knowledge, skills, ideas, and plans. A focus on sharing the best practices could improve the effectiveness and efficiency of participation activities. This could be encouraged by the RES Holland Rijnland organization, but the municipalities should also take responsibility. The municipalities are the leading partners with the autonomy to decide on the direction of visions, goals, and policies. The sum can be greater than the individual municipal efforts alone, which is not possible if all the municipalities keep their participation activities to themselves. Moreover, resources are lacking, creating obstacles for municipalities to increase their involvement with citizens. Likewise, insufficient resources and tools in municipalities increase the need for regional collaboration. In theory, resources can be bundled and potentially be used for regional plans that benefit all municipalities in the region. Likewise, active citizens have the potential to use their expertise and intrinsic motivation to contribute, which can increase support and social acceptance among citizens. This can be seen in more successful cases such as Zoeterwoude, where a more direct and cooperative relationship with citizens

is already established by making plans for co-ownership in large-scale renewable energy production (LSREP) and jointly discussing new strategies, policies, and implementation plans.

Secondly, governance aspects. Regional governance is interesting because bottom-up and top-down policies influence policymaking. Conflicts arise, for example, regarding LSREP. Citizens see fit at existing infrastructure such as highways and other roads. Although, that possibility is problematic for the province of South Holland because it does not fit within their spatial policies. That decision leads because the province is a higher formal governmental body. LSREP become difficult to establish because few locations are left with citizen support.

Municipalities do not have a clear overview of the participation processes of fellow municipalities. Discussions between municipalities about social acceptability and support transitions are hampered because comparisons are hard to make. Moreover, a good relationship between municipality and citizens can help municipalities make decisions that are more in line with the input of local citizens. The opinions and feedback of citizens are incorporated into local visions, creating trust between citizens and the municipalities. The social acceptance and support of citizens can rise because the municipality can better justify its decisions to regional partners and their citizens. Municipalities such as Zoeterwoude and Nieuwkoop show that direct collaborations with citizens are possible and have the potential to make regional energy policies more supported by local citizens. This study adds a governance aspect lacking in Sillak et al. (2021). The main focus of the theoretical framework is on co-creation by analyzing participation activities and, goals & outcomes. However, the theory does not incorporate governance aspects. Without the support and involvement of citizens, the decisions made on a regional level cannot become a reality. The decisions will then most likely face resistance from citizens. Thus, governance and citizen participation are linked to one another and essential to consider.

Lastly, recommendations for policymakers. Firstly, the relationship between energy cooperatives and municipalities is essential in establishing good contact with citizens. There are successful examples. Firstly, in Zoeterwoude, there has been good contact for years with the energy cooperative. A good relationship with the energy cooperative can be a good way of establishing more direct relationships with local citizens. It can open the door for direct contact with less involved citizens via active citizens. Secondly, attracting the 'usual suspects' citizens in the first stages of citizen participation is not necessarily bad. Via the 'usual suspects', less involved citizens can be involved eventually. Thirdly, standard guidelines for participation activities in the future could help on both a local and regional level. This is encouraged by organizations such as the NP RES, the 'Participatiecoalitie,' and the energy region Holland Rijnland organization. However, there is no regional consensus on how to conduct participation. Even broad arrangements could enhance the accountability of municipalities and improve the quality of regional discussions among regional partners and authorities.

Furthermore, the limitations of this research were: 1) a small selection of municipalities in the energy region Holland Rijnland was analyzed; 2) the interview process could be expanded with more stakeholders; 3) the explorative and qualitative nature of this research makes the collected data from interviewees subjective to potential bias from the interviewees. Lastly, a suggestion for future research is to consider more detailed information regarding support and social acceptability. Likewise, focus on upcoming implementation phases of the regional energy transition and feature more distinct forms of participation to get a more detailed analysis of citizen participation.

PREFACE

This master thesis marks the end of an era for me at TU Delft and Leiden University. I started at Leiden University with BSc in Public Administration and I chose to learn more about sustainability with the MSc in Industrial Ecology at Leiden University and TU Delft. I want to take this opportunity to express my gratitude to the people who have supported and helped me during the formation of my thesis and my study period as a whole.

First of all, I want to thank my supervisors from TU Delft, Thomas Hoppe, Bert Enserink, and Anatol Itten. They have guided and helped me throughout this whole process. When I started preparing for my thesis, I was already welcome into the thesis circle with fellow thesis writing students, and I received the guidance I needed to get started. Thomas was, from the start, a great help in finding relevant literature, giving good feedback on my chapters, and providing me with quick answers when I wrote him one of my many emails. Secondly, Bert helped immensely by giving me feedback and critical questions that forced me to think about my thesis's readability and apply a critical mindset to my work. Lastly, I want to thank Anatol. He was always helpful with critical feedback and provided me with the essential tips, tricks, and literature to enhance the quality of my writing. On the whole, all three were supportive and critical of my work. That helped me a great deal to keep me on track throughout this process of ups and downs.

Additionally, I want to thank my parents and sister for their unconditional confidence in me. They always believed in my choices during my study time and were a great support throughout the years. Moreover, I want to thank my girlfriend for her support and company throughout this process. Lastly, I want to thank my friends who provided me with the necessary distractions and company. Overall, my study time is one to look back to with fond memories.

I am looking forward to the new challenges and learning opportunities that will surely come my way!

Dennis Hulsbosch
April 1, 2022

CONTENTS

1 | INTRODUCTION

Temperatures are rising, global greenhouse gas emissions are increasing, impacting our world and society (The Guardian, 2021). The Paris Agreement was ratified in 2016 to reach a climate-neutral world in 2050. One of the countries that ratified the Paris Agreement in the Netherlands (United Nations, 2021). The Netherlands must create plans to become carbon neutral and comply with the Paris Agreement. The Climate Agreement is an agreement of the national government in the Netherlands to limit global warming. By 2030 the Netherlands should emit almost half (49%) fewer greenhouse gases than in 1990. This should be done by transitioning from fossil fuels, like coal and oil, to renewable energy options that emit less greenhouse gas emissions. At this moment, biomass, hydropower, wind power, and solar power are seen as ways to make the energy transition happen in the upcoming decades, according to the Climate Agreement. Climate change is a global, pressing problem, and policies will be needed to address these issues. This will mean that adaptation and mitigation are necessary (United Nations, 1998; IPCC, 2007). Smil (2018) describes energy transition as "the change in the composition (structure) of primary energy supply, the gradual shift from a specific pattern of energy provision to a new state of an energy system." The energy transition changes the whole energy system. Institutions, structures, and practices will need to change (Smil, 2008). Conventional energy systems should be replaced with renewable energy systems focusing on renewable energy forms such as wind, solar, hydropower, biomass, and geothermal techniques (Akella et al., 2009).

Furthermore, citizens, companies, and governmental actors will have to work together to make this energy transition successful (Rijksoverheid, 2019). The energy transition will impact the direct environments of citizens because of the upcoming wind and solar energy projects. This makes the energy transition a societal change and a technical one. The Climate Agreement should be achieved by the collective efforts of thirty energy regions in the Netherlands. Governmental actors should work with societal partners, network operators, companies, and citizens to make regional choices concerning energy generation, heating sources, and corresponding infrastructure (NP RES, 2019). According to various academic sources, citizen participation is critical in establishing new renewable energy projects that citizens socially accept (Akerboom, 2018; Firestone et al., 2018; Hartley & Wood, 2005; Stern & Dietz, 2008). The wishes and concerns of citizens should be taken into account. This also means that benefits and downsides occurring during the energy transition will have to be evenly divided among society according to the Climate Agreement (2019). Citizens should be able to think along and participate with governments to determine the details of projects to make the energy transition happen. To make the energy transition happen successfully and keep up with the goals set in the Climate Agreement, new renewable energy projects should be founded and established in the coming years (Klimaatakkoord, 2019)

Moreover, citizen participation is one of the key terms in the Dutch Climate Agreement (Klimaatakkoord, 2019). The wishes and desires of citizens should be considered on a national, regional, and local government level. Citizens should contribute and be involved with concrete and attractive opportunities made by the government. Public and private stakeholders should be involved. Furthermore, a large group of citizens who is currently hesitant about the energy transition should be

involved to avoid resistance in the implementation phases of the energy transition (Klimaatakkoord, 2019). On a regional level, municipalities, water boards, and the provinces need to inform and involve citizens on time and realize ways in which citizens can effectively think about forming the energy transition. The thirty energy regions in the Netherlands have the task to create, lead and provide access to information and other forms of citizen support (Klimaatakkoord, 2019). All energy regions develop two-yearly strategies with plans for on-land renewable energy production, of which the first was published in mid-2021 called the RES 1.0 (regional energy strategy). There is support from the National Program Regional Energy Strategies (NP RES) to form the RES.

Still, the energy regions have mostly the freedom to develop their RES, which suits the preferences of their specific region (Gerritsen et al., 2022). Achieving support in the public realm for the main goals of the RES is of crucial importance in the energy transition (NP RES, 2022). All energy regions attempt to involve local citizens, companies, and other relevant stakeholders in the RES decision-making. Some energy region includes societal actors in steering groups, while others choose not to do so. This shows that the RES framework goals can be interpreted in varying manners, despite the guiding support from NP RES (Gerritsen et al., 2022). A good relationship between citizens and governments to implement citizen participation successfully is not self-evident. Every energy region takes its approach to involving citizens in their decision-making. All in all, active citizen involvement and participation are essential on all governmental levels in the energy transition. Therefore, it is interesting to study to what extent and in which way energy regions can involve citizens in their decision-making and in which ways governments can live up to their own participation goals.

1.1 Societal Relevance

The social relevance of this study is focused on the resistance that occurs if citizens are not allowed to participate in the decision-making process during the energy transition. Heavy protests can result from years of working with top-down approaches (NOS, 2020). Citizens think they can deliver input, but local governments have already laid out the plans. These protests escalated, which resulted in protesters starting fires and dumping asbestos on land where windmills were planned to be built (NOS, 2020). According to PBL Netherlands Environmental Assessment Agency, citizens were involved with one-third of the plans within energy regions (NOS, 2020a). Promises were made to citizens but were not kept. The heavy protests show the possible results of built-up frustrations (NOS, 2021b). Likewise, renewable energy production projects for wind and solar energy often lead to resistance when citizens feel left out. They do not feel heard because they are only involved late in decision-making.

Then, the plans are almost finished, and citizens' not much substantial involvement of citizens is possible anymore (Laconi, 2021). Similar experiences were found in participation processes in the municipality of Amsterdam. A feeling among involved citizens that decisions were already made and citizens' feedback was not taken into serious consideration by policymaking governments (de Wilde, 2021). Moreover, the 'Participatiecoalitie' (five social organizations of, for, and by residents: HIER, the Nature and Environmental Federations, Energie Samen, LSA residents, and Stichting Buurtkracht) states that citizens are insufficiently involved in the regional energy plan. According to them, "the role of citizens in establishing the RES has lagged considerably behind" (NOS, 2021a). A few usual suspects who are eager and enthusiastic about the energy transition participate, but that means many citizens are left out and are not well informed (NOS, 2021a). Likewise, according to an old director of energy

company Eneco Laetitia Ouillet, current citizen participation is not very fruitful because the general citizens do not feel the current participation activities are for them. They think recent participation is for the usual suspects with louder voices and mainly focuses on the energy transition's opposing sides (van Santen, 2021). To create societal support for new renewable energy projects, which are mostly wind and solar parks in the neighborhoods of citizens, broad citizen participation will be needed. The stated challenges could ultimately hamper a successful energy transition, so more research regarding the implementation of citizen participation in energy transition decision-making processes is helpful.

1.2 Scientific Relevance and Industrial Ecology Relevance

The MSc Industrial Ecology (IE) focuses on sustainability problems in which social, engineering, and environmental sciences are integrated. The energy transition is a sustainability topic that fits naturally within IE because it is an ecological issue with technical and social aspects. The requirements for the energy transition are partly technical but will also need rightly formed policies to make the societal aspects of the energy transition happen. The research will be conducted from a social point of view, more specifically, public administration in an environmental science research topic. Moreover, social science is becoming a more critical aspect of environmental science research, and this research can contribute in that regard (Xu et al., 2016).

1.3 Knowledge Gap

Research regardings the influence of citizen participation in decision-making processes in the energy transition have been researched, for example, in Denmark, the Netherlands, and Switzerland (Sillak et al., 2021; Stadelmann-Steffen & Dermont, 2021; Wolsink & Breukers, 2010). Likewise, how citizens are involved in different levels of decision-making processes has been researched in literature. These studies focused on the factors that influence citizen participation (Stadelmann-Steffen & Dermont, 2021; Wolsink, 2006; Wolsink, 2007). Citizen participation is a broad concept under which several citizen participation concepts are divided, such as co-creation and co-production (Dudau et al., 2019). There is a lack of research on the relationship between citizen participation through co-creation and co-production and their associated outcomes (Dudau et al., 2019; Sovacool, 2014; Voorberg et al., 2015). Likewise, Akerboom (2018) states that besides practical participation in the energy transition, public participation in governmental decision-making is also important (Wolsink, 2000). However, not much research has been conducted so far. There is a need to research how public participation can be designed to foster societal acceptance and practical participation during the energy transition (Akerboom, 2018). Moreover, research on active citizenship, co-creation, and co-production on local and regional levels in the Netherlands exists, but the number of cases is relatively small (Hoppe & Miedema, 2020). Likewise, Warbroek (2019) states that studies often fail to consider the perspective of governance and politics when studying local energy initiatives in the energy transition. Furthermore, Itten et al. (2021) state that in participatory methods, methodology regarding co-creation is growing. However, little scholarly attention focuses on the effects of co-creation in local communities. Moreover, Hoppe et al. (2016) state that academic research into local climate policy mainly focuses on larger cities, while small and medium towns should also be considered. This research can contribute by focusing on small and medium cities in energy regions instead of larger cities.

1.4 Research Objectives

The forms of active citizen participation during the energy transition are different in every energy region and local government. This means that naturally, different levels of citizen participation take place. This research aims to study which forms of active citizen participation are currently present, how it influences the presence and involvement of co-creation and co-production processes, and which factors enable or hamper active citizens' involvement.

The main research objectives for this research are:

- Understand in which ways citizen participation, co-creation, and co-production take place in local governments during regional energy transitions;
- Understand the presence of active citizenship and possible influences on co-creation and co-production during regional energy transitions;
- Understand the drivers and barriers present for co-creation and co-production initiatives;

1.5 Research Questions

Taking the challenges and research objectives from previous paragraphs into consideration, the following main research question can be formed:

"In which ways is citizen participation present, organized and influencing the initiation, design and implementation phases of the energy transition in the energy region Holland Rijnland?"

To answer the main research question, the following sub-questions are formulated:

1. What are citizen participation, co-creation, and co-production in the context of regional energy transitions?
2. Why are citizen participation, co-creation, and co-production of importance in the context of regional energy transitions?
3. How do municipalities compare in terms of citizen participation, co-creation, and co-production?
4. In which ways do governance structures influence local and regional decision-making processes?

1.6 Research Outline

This chapter was focused on introducing the regional energy transition as part of the Dutch Climate Agreement and an introduction to how citizen participation is part of the energy transition. Chapter 2 reviews active citizenship, participation, co-creation, and co-production literature. Chapter 3 presents the theoretical framework used with the literature review to conduct the research in the cases. Chapter 4 outlines the methodology used in this research. Chapters 5,6,7,8,9, and 10 will feature the analysis of the individual circumstances. Chapter 11 focuses on the results and comparison of the cases. Lastly, chapter 12 features the conclusion and discussion, including overall findings, answers to the research questions, limitations of this research, academic discussion, suggestions for future research, and policymakers' recommendations.

2 | LITERATURE REVIEW

Summary

The literature review encompasses the governance dimension of the regional energy transition. They are starting with an explanation for a regional approach coming from failed central top-down approaches. Then, the development of the regional energy transition is stated in more detail, focusing on 2016 and onwards, when the first signs of regional climate policies started. The first pilots with regional energy regions started focusing on collaboration between involved actors, such as citizens. This turned out to be a complex and challenging process of decision-making. In 2018, it was stated in the Climate Agreement that the thirty energy regions combined need to deliver 35 TWh of power in the form of wind and solar. This led to new energy regions to sitting between top-down and bottom-up approaches. In the regions, local governments, water boards, provinces, social partners, and citizens work together on the regional choices to work towards the 35TWh goal. Moreover, one of the key goals is the active involvement of citizens, according to NP RES. Furthermore, governance issues in the regional energy transition such as 1) trade-off between top-down and bottom-up governance; 2) transparency in costs and benefits; 3) governing capacity; 4) efficiency problems of regional energy systems; and 5) fair participation of the community are discussed.

This chapter reviews the literature regarding the current regional and local energy transitions. The literature study will entail in-depth knowledge about the current status of regional and local energy transitions. Firstly, there will be details on the development of the regional energy transition in the last few years. This will entail the Climate Agreement and new pilots in energy regions. Secondly, governance issues that come up in the regional energy transitions will be further explained to give more insights into the regional energy transition governance systems.

2.1 Governance of Regional Energy Transitions

The energy transition needs to happen at a national level to reach the climate goals set in the Climate Agreement. However, to make this happen, the tasks are divided among thirty energy regions in the Netherlands. This means that combined energy regions need to deliver a minimum of 35 TWh of renewable energy in solar and wind power (Hoppe, 2021; Klimaatakkoord, 2019). This section will provide more details about what can be learned from the governance during the regional energy transition in the Netherlands.

The energy regions are new occurrences that have no objective legal basis and are part of decentralized governance. Formally seen, the energy regions do not exist according to the law (Elzinga & Lunsing, 2020). Moreover, regional administration during the energy transition is unique because it deals with both bottom-up and top-down policies, which are confronted with each other. Thus far, not much research has been conducted on a regional level. Most studies focus on a provincial level or local

level only. Although, studies are focusing on regions during the energy transitions, such as Hoppe & Miedema (2020), Kempenaar et al. (2020), and Loorbach & Rotmans (2010).

Moreover, the regional energy transition can be seen as a reaction to the failed central, top-down policies introduced in the 1990s and onwards to develop wind energy parks (Wolsink, 1996; Wolsink, 2007). Many heard complaints then were the lack of giving local communities and municipalities a role in installing wind energy parks. This led to low levels of social acceptance and public resistance when people found out that deals were made behind their back to place wind turbines without directly affecting citizens' consent (Akerboom, 2018; Wolsink, 1996; Wolsink, 2007). This form of governance was not successful, which meant new forms of governance were needed to address the issues. It is interesting to get more insights into the energy regions, how they are structured, how actors interact, and which governance issues arise.

2.1.1 Development of the Regional Energy Transition

It is relevant to present the developments made in the regional energy transition in the last years. Besides the regional energy governance, regional governance is occurring in different policy fields in the Netherlands, such as healthcare, transport & mobility, and the environment. For the Dutch energy sector, it started with the national government decentralizing and giving provinces the chance to form their energy policies in 2001. This also meant that new community-based energy initiatives could be formed (Hoppe, Kooijman-van Dijk, & Arentsen, 2011; Warbroek & Hoppe, 2017). These decentralized governmental bodies, such as the provinces and water boards, have decent amounts of autonomy and can be helpful to tackle issues that require cooperation between the region and municipalities. The energy transition and other climate mitigation policies were not yet present, but a start was made. In contrast to the provinces and water boards, the region does not have autonomy and is not a formal part of the Dutch government (Bovens et al., 2017). The following levels of governments are present, going from the highest to the lowest level: 1) the European Union; 2) the central national government; 3) the provincial government, and 4) local municipalities. Until 2016, climate policies mainly were part of the national government, and the provincial and local governments performed implementation. Consequently, climate policy was not significantly present on a regional level until after 2016 (Hoppe & Coenen, 20211; Hoppe, 2021).

2.1.1.1 Climate Agreement and Pilots

In 2016 and onwards, the first signs of regional climate mitigation policies were formed. Following the 'Energy Agreement' in 2013, the VNG (Association of Netherlands Municipalities) and the provinces took the lead to organize a pilot project regarding the energy transition. Things did not work out well in previous decentralizations, such as in the healthcare sector. So, the VNG and provinces took the lead this time. This resulted in an arrangement between the VNG, the national government, the Union of water boards (UvW), and Provinces of the Netherlands (IPO) to start with the development of regional energy transition pilots (Schuurs & Schwencke, 2017). Seven energy regions were set up to explore how the energy transition could be developed with the focus on factors such as actor collaborations (regional and local), what is already done, what are the economic impacts, what knowledge and skills are required, what the costs and benefits are and how can it be distributed fair and just in the upcoming regional energy transition (RET). The pilot energy regions were encouraged to share experiences and

discover the goals, visions, and,strategies for the short and long term, such as becoming carbon neutral by 2050 (Schuurs & Schwencke, 2017). These pilots showed that policymaking in energy regions is difficult and complex, mainly because the energy regions are not formal entities in the decision-making processes. Municipalities, provinces, and water boards are needed for policymaking in the end. The regional energy strategy (RES) can be the foundation for making a vision and plan to form the energy transition. Still, the municipalities have to make the final decisions according to the outcomes of these pilot RET (Hoppe, 2021).

2.1.1.2 Regional Energy Strategies

As stated before, the Climate Agreement was negotiated by the Dutch national government in 2018. Every energy region has to reach the 35 TWh wind and solar energy goal. This also means the Regional Energy Strategies (RES) are set up, which gives the energy regions more concrete forms than before. There were new negotiations between centralized and decentralized governments to make this happen. The decentralized governments wanted a say in the energy transition and felt disadvantaged compared to the centralized government. This led to RES pilots and the formation of thirty energy regions. However, this does not align with existing regional structures and already known decentralized administrative networks (Hoppe, 2021). According to the Climate Agreement, the RES should aim to achieve the following: organize spatial factors of the energy transition with citizen involvement, support inter-actor relationships for the long-term, and a product (for example, a report) that states the energy goals, deadlines and strategies to achieve the energy visions and dreams (NP RES, 2019). Regional governance has come out of necessity, considering that direct participation of local communities can help bring solutions in practice supported by local communities (van der Steen et al., 2020). The RES can be seen as a way to sit between the top-down central approach and bottom-up regional initiatives, which can be seen as an innovative and new form of governance (Hoppe & Miedema, 2020). There are degrees of autonomy to achieve the energy goals in a specific RES and contribute to the goals set in the Climate Agreement, especially regarding developing big solar and wind projects. The main objectives of the RES are reaching 35 TWh of energy production in 2030 and the development of a Regional Heat Structure (RSW).

The energy regions develop their RES to speak with all involved actors about the energy transition and how this will fit spatially in all the energy regions and in which the process is social-political legitimate. The RES should be socially accepted and developed by social partners, the business community, and residents (Matthijsen et al., 2021). To develop the RESs individually, the National RES Program was designed to support all thirty energy regions. In that way, the energy regions can share knowledge, experiences, and support and learn from each other. The NP RES is positioned to help accelerate the RESs formation and make its implementation easier (Hoppe, 2021).

In the energy regions, provincial, local governments, Water Boards, social partners, network operators, business communities, and residents work together to make choices regional wide regarding the development of onshore wind and solar projects, enabling the sustainable heating transition and having the storage and infrastructure needed for the generated energy. This should all be quantitative, meaning numbers of electricity generation and how CO_2 emitting is reduced. Therefore, the following factor should be taken into consideration: 1) quantity of heat and electricity production; 2) land use; 3) administrative and social support; and 4) energy system efficiency by upgrading electricity grids to

deal with higher amounts of generated energy (NP RES, 2019). The RES is developed until 2030, and public stakeholders named before should be considered in the whole process to be ready and prepared. A draft RES policy document was handed into the NP RES by the energy regions in 2020. The definitive RES had to be handed in by 1 July 2021 to see if all the energy regions could reach the energy goal of 35 TWh. The RES should become part of policies in municipalities and provinces in the midst of 2021. After that, updates will occur every two years with new developments on possible renewable energy projects and locations. In all these RESs, citizens and stakeholders should be involved (NP RES, 2019).

Moreover, the Environmental Assessment Agency (PBL) monitors the RES in the form of formulation and implementation. In February 2021, it seemed that 52.5 TWh could be reached and thus exceeding the 35 TWh goals set before. It is good to note that half of these projects are coming short term, and the other half are in the initial phase and is considered ambitious and are not yet concrete, like the short-term projects (Matthijsen et al., 2021). In addition, issues like required investments in the electricity grid networks and having enough available experts to implement the renewable energy projects have not been implemented in the RESs yet. Also, solar power is heavily favored over wind power for socio-political arguments. This results in higher social acceptability and higher societal costs that are a billion euros higher (van Santen, 2020).

Additionally, NP RES, citizen participation, and social support are essential in the RESs. The following goals of involvement can be stated: 1) social acceptance of RES; 2) informed decision-making by using available knowledge and skills from citizens, companies, and social organizations; 3) societal support for decisions that influence the RES; 4) community ownership, in a way that makes citizens, companies and societal organization feel (co)owners of the RES and part of the RES (NP RES, 2019). This also means that benefits should remain close to the local stakeholders involved. Moreover, a collaborative citizen initiative launched in 2019 called the 'Participation Coalition' consists of HIER opgewekt, Energie Samen, Natuur en Milieufederaties Buurkracht, and LSA Residents representing local communities to generate energy. The aim is to focus on participation in the energy transition, and look at spatial issues in the regions and neighborhoods so that the RESs become more socially accepted by citizens. This includes 50% local ownership of new renewable energy projects, involvement of citizens during policy formations, including lower-income citizens, and ensuring their interests (Participatiecoalitie, 2020).

Furthermore, the Participation Coalition performed a survey and found significant support for at least 50% of local ownership in solar and wind power projects. These plans are also in the RESs, so good news. However, there are no concrete plans to make this a reality. Moreover, the RES should open up to more residents and societal partners, also ones that are maybe less organized, if the RES wants to become the social project it is intended to be. In the formation of the first RES, public and private actors were involved, but these were just small numbers of citizens and bottom-up initiatives. More citizens should be involved. However, it seems complicated to have the capacity, knowledge, and skills in energy regions to facilitate the necessary measures to let local communities participate (Participatiecoalitie, 2020).

2.2 Governance Issues of the Regional Energy Transition

This section will highlight the most pressing governance issues in the regional energy regions among the thirty energy regions in total. The six most profound issues are the following: trade-off between

top-down and bottom-up; transparency in costs and benefits; lack of governing capacity; systemic efficiency and optimization; and fair participation.

2.2.1 The trade-off between Top-down and Bottom-up Governance

In the Dutch energy transition, energy regions are developed, and the municipalities do the implementation. The national government sets the goals, while decentralized governmental bodies, like the provinces and municipalities, have to execute the policies. Even if municipalities find out that it should be done otherwise, these goals are set. Coercion to follow through can follow from a national level, and the needed wind and solar parks will be built anyway (Rengers & Houtekamer, 2020). In that situation, there is a danger of those citizens losing trust in the government. Participation is one of the critical goals named in the Climate Agreement, so coercion from the central level would endanger the trustworthiness of the government to citizens. Especially those who took place in participation activities, such as serious games, constellations, and participation meetings, visited websites (Bekebrede, van Bueren, & Wenzler, 2018; Kempenaar et al., 2020). However, it needs to be said that currently, the numbers look good, and the 35 TWh goal is met (PBL, 2021). If things change, the energy regions will first work together to find a solution, and then the central government will step in. Overall, the chances of central coercion are relatively low (Hoppe, 2021).

Likewise, RES processes mainly take place outside of the direct control of municipality councils, which can cause friction (van der Steen et al., 2020). These frictions come up because of the multiple layers of governance collaborating during the regional energy transition—for example, support. The municipality councils, provinces, and Water Boards have no direct influence on the outcomes of the RES processes. This means that support for the RES at the end is not given.

Moreover, regional and local interests can also conflict. The RESs will contain the most optimal and relevant plans from a regional perspective, but the municipalities will be required to execute those plans. It is not necessarily the case that regional and local views are aligned, which can create friction when municipalities want to make changes regarding feasibility, desirability, and if changes need to be made (Hoppe, 2021; Jesse et al., 2020). Moreover, municipalities could make choices from their perspective, which are not necessarily the best for the whole region (Boogers, 2019).

Furthermore, the energy transition can be viewed from a technocratic or social standpoint. The 'Participatiecoalitie' calls this transition mainly a social one, in which the technology is available to support the transition and not the other way around (Participatiecoalitie, 2020). This is also why the preference is solar parks because citizen values are more aligned with solar power than wind power. If only the technocratic values mattered, wind parks would be in the majority because of lower costs and higher yields in general (Hoppe, 2021; van Santen, 2020).

2.2.2 Transparency in Costs and Benefits

The costs of the energy transition will be present. These costs can, for example, be for installing renewable energy projects, compensation for noise, fewer crop yields for farmers due to shadows, and impacts on health and property prices. The issue is that there are few plans to figure out how much these costs will be in the end. In the case of North-East Brabant and the draft RES document, there was no estimation of prices, and thus there could be no assessment if these energy transition plans fall into the budget for the transition in the region. It now seems that the draft RES is overly optimistic about

the projects, while there is a lacking amount of transparency in the costs and benefits of the RET in energy regions (Hoppe, 2021; Jesse et al., 2020)

2.2.3 Governing Capacity

The energy transition is taking place in a decentralized manner. This means that municipalities will need the governing capacity to make it happen. However, the RES is relatively new and novel, and knowledge about these new ways of governing is lacking. Municipalities, in general, lack capacity, and budget cuts are taking place (van den Akker et al., 2019). Small and medium-sized municipalities lack enough staff to work on the transition, and it does not seem that this understaffing problem will be solved soon looking to the tight labor market (Participatiecoalitie, 2020). Moreover, this results in projects moving to outside organizations and partners doing research and work during the energy transition. These market parties do the job and can prevent governmental bodies from learning from these experiences and staying dependent on other (market) actors (Rengers & Houtekamer, 2020).

2.2.4 Efficiency Problems of Regional Energy Systems

At a system level, the RES is encountering issues. Besides looking at solar and wind energy, there needs to be a focus on the distribution and transmission of energy. The power grid is reaching limits, and extra national expansion of the high-voltage grids can take up to ten years (Balkenende, 2020). The same is true for the Province of Utrecht, in which, for the time being, no new big solar or wind project can be developed. The limits of their high-voltage grids are reached, and it will take years to expand the systems, according to the grid operator Tennet (NOS, 2021c).

Furthermore, the system also needs to be efficient and optimized. Not much focus has been on that in the RESs (Matthijsen *et al.*, 2021). Moreover, when looking at the system overall, several points of critique can be noted. Firstly, there is a realistic ambition, but that has not been translated into exact solar and wind parks locations. Secondly, combining solar and wind energy is only done in a few cases. Thirdly, there is little focus on energy saving. Lastly, the energy regions are not collaborating and coordinating well enough (Participatiecoalitie, 2020).

2.2.5 Fair Participation of Community

The governance inside the RET takes place at several levels and dimensions. Firstly, the levels and scales. In the RET, relevant national, provincial and local bodies are participating. However, it seems that decentralized governments are less coherent. Secondly, actors and networks. There are frequently public actors participating in the energy market, on the supply side, being over-represented compared to the demand side. Thirdly, the problem perceptions and goal objectives. It seems that national and regional actors have varying interests and see problems differently, for example, regarding the costs and benefits of such a transition. Fourthly, strategies and instruments. It still seems unclear how the state supports the energy regions, which results in a passive approach in the regions.

Moreover, trust is the leading force for work because there is no standard form of accountability between the regions—lastly, the responsibilities and resources. Resources seem to be mostly at other actors than the regional and local ones. Resources are found mainly by commercial project developers, big energy companies, and the national government. Additionally, it is not yet sure how municipalities

will work towards joint regional set goals regarding responsibilities. Participatory organizations and decentralized governments lack governance capacity during the energy transition (Hoppe, 2021).

Moreover, in the RES processes, it seems hard for unpaid volunteers from energy cooperatives to keep involved with paid employees from governmental bodies, and their willingness to cooperate is declining. Likewise, polarization could play a role if fast and effective decision-making is the priority. Experts and public officials decide to find solutions for these complex problems during the energy transition. If rapid decision-making is the focus, it will be challenging to manage the social conflicts that arise during the decision-making processes in the energy transition. Without focusing on public political debates about the energy transition and its societal impacts, resistance among citizens can be expected towards governments and entrepreneurs active with renewable energy projects. As an illustration, there were threats towards the government and entrepreneurs with a wind farm project in the region Drenthe. This shows that public debates are necessary if resistance against renewable energy projects is to be avoided (Boogers, 2019). However, there are also benefits because municipalities and project developers will need to engage with local energy cooperatives to reach their required goal of 50% local ownership. This means that there is a benefit for project developers because their projects will otherwise not get a valid permit to develop (Schwencke, 2021).

3 | THEORETICAL FRAMEWORK

Summary

The theoretical framework states the central concepts in this study: citizen participation, co-creation and co-production. Moreover, the use of the theoretical framework on the cases studies is discussed. Firstly, citizen participation with a focus on definitions and characteristics, actors involved and factors influencing citizen participation. Secondly, co-creation with a focus on definitions and characteristics, factors influencing co-creation, phases of co-creation, involved actors, activities that foster change and the goals and outcomes. Thirdly, co-production with a focus on definitions and characteristics. Moreover, an overview of the theoretical framework to assess co-creation in strategic planning for energy transitions based upon Sillak et al. (2021) is presented. Then, the use of the theoretical framework to the cases is stated. Focussing on the involvement of actors and their roles, the activities to foster change, goals and outcomes, and the added governance dimension to the framework.

A renewable energy transition needs to be established in the coming years to comply with the national Dutch Climate Agreement. Therefore, renewable energy projects need to be launched with coordination from all governmental levels, which means on a national, provincial, and local level with municipalities. This study focuses on a local and regional level because the opinions and collaboration with local citizens directly affected by the renewable energy projects are critical to this transition. This chapter includes a literature review that focuses on citizen participation, co-creation, and co-production. It provides information on the definitions, the importance, the role in decision-making, the actors involved, and the factors influencing citizen participation. Moreover, more detailed information is coming out of the literature about co-creation and co-production. Lastly, the terms citizen participation and public participation will be considered the same concept in this research.

3.1 Citizen Participation

3.1.1 Definitions & Characteristics of Citizen Participation

Citizen participation is a concept with different meanings. One definition that captures the definition of citizen participation is the following: *"a group of procedures designed to consult, involve and inform the public to allow those affected by a decision to have an input into that decision"* (Rowe & Frewer, 2000). Moreover, self-governance can be described as the *"capacity of communities to organize themselves, so they can actively participate in all (or at least the most important) decision processes relating to their own governance"* (Mcginnis, 2011). Likewise, listening to voices and feedback from the direct environment is essential. According to Folke et al. (2007), local governments are more capable than centralized ones to listen to feedback and learn from it. How local communities can cope with changes is at a high level, making them more resilient. Resilience is one of the factors that can be seen as necessary to combat climate change and create adequate policies (Adger, 2005). Resilience can be defined as how a system can self-

organize and keep essential structures, processes, and feedback intact when reoccurring disturbances and changes are present. Moreover, the concept of resilience is about adapting to uncertainty and surprises instead of attempting to control uncertain changes (Adger, 2005).

Likewise, societal transformations like the energy transition can be called wicked problems interconnected and lead to realizations among communities and governments for more self-management initiatives (Loorbach et al., 2017; Rotmans and Loorbach, 2009). Moreover, according to the Paris Climate Agreement, policies at a local level focusing on climate change will play a big part in the climate change policies required in the coming decades (UNFCCC, 2021). Likewise, collaborative planning at a local level is becoming more and more a part of environmental governance. Cities should be able to create their local networks and become more self-reliant (Hodson & Marvin, 2010; Zingraff-Hamed et al., 2020).

Furthermore, the importance of letting citizens participate actively is increasing. According to Stern et al. (2014), a successful transition should include more bottom-up governance approaches. In essence, citizens of the Netherlands live in a representative democratic system in which people vote, and the elected officials represent the voters and take action and create policies. More direct democracy involves citizen participation, in which citizens are directly parts of decision-making processes in contrast to representative democracies. Representative democracies are not democratic enough, according to various citizens, leaders, and NGOs (Head, 2007).

Moreover, citizen participation could enhance the legitimacy, transparency, and outcome of the decision-making processes of public services, for instance, using renewable energy projects (Akerboom, 2018; Firestone et al., 2018; Hartley & Wood, 2005; Stern & Dietz, 2008). For instance, citizens affected by renewable energy projects could be allowed to consult and raise their concerns about the new projects. Citizens want to express their opinions about the specifics of such a project. The main reasons for this influence on their local environment, societal impacts, and economic impacts. For instance, these projects can have a direct economic impact on citizens regarding their energy bills or the values of their houses (Leiren et al., 2020).

3.1.2 Actors Involved in Citizen Participation

The definitions and importance of citizen participation have been established in the previous paragraph. The actors involved in these processes are mentioned and elaborated on in more detail to better understand citizen participation. Municipalities, project initiators, and citizens are the main actors involved in public participation.

3.1.2.1 Governmental Actors

Governmental bodies in the Netherlands consist of the national government, provinces, and municipalities to decide on renewable energy projects to reach the Climate Agreement goals. Previously, policymaking decisions were mainly driven by the top-down federal government, but changes were made with the energy regions and the RES (regional energy strategy). Thirty energy regions in the Netherlands have the task of coordinating renewable energy projects and reaching the set targets. The energy transition and implementation in the Netherlands should ideally take place within energy regions, meaning a decentralized approach. Combining the efforts of energy regions should result in a total of 35 TWh of renewable energy forms in 2030 (NP RES, 2019). Strategies are

developed about possible locations for future renewable energy projects in the energy region. The first version of the RES, the RES 1.0, was presented in the summer of 2021 per energy region.

Moreover, this means that projects are open for consultation. That is to say, citizens and corporations interested in the projects can respond and react to the municipalities and provinces they live in (VNG, 2018). The National Programme RES (NP RES) is the overarching organization of the energy transition and monitors the thirty energy regions. The main goal of the energy regions is to work together with local governments, provinces, water boards, grid operators, entrepreneurs, and citizens (Rus & den Boer, 2020). Moreover, municipalities could benefit from regional-level collaborations. This could improve the quality, effectiveness, and performance of local policies. However, uncertainty is present because, at the higher governance levels, negotiations are taking place (Boogers et al., 2016; Hoppe & Miedema, 2020).

These uncertainties consist of tensions in the policymaking on a national level, in which high levels of uncertainty regarding the energy transition are present. Therefore, this leads to a more passive role of the energy regions. The energy regions feel uncertain about the key policy instruments they will have available in the energy transition. All in all, this results in an influencing role of the national government on the agenda of the energy regions and the actions they take (Hoppe & Miedema, 2020; Leeuw & Groenleer, 2018). The following timeline is planned for the energy transition in the Netherlands:

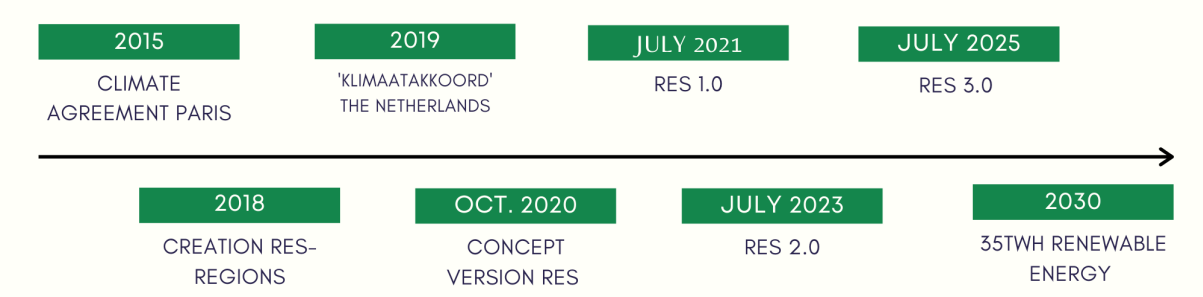

Figure 1: Timeline energy transition in the Netherlands (NP RES, 2021)

Currently, local citizens of municipalities already feel resistance to solar and wind plans proposed in the RES strategies (VNG, 2018). Additionally, the roles of different governmental actors are not always clear to all involved actors. This means that citizens, potential project founders, and other governmental levels involved are unclear who has which role in the process (Teisman et al., 2018).

3.1.2.2 Project Founders, Cooperatives, and Companies

The governmental actors establish the necessary strategies. However, in cooperatives or companies, the project founders will execute the plans and develop renewable energy projects, such as solar parks or wind farms (NWEA et al., 2020). It is found that the size of cooperatives matters to local citizens that are being influenced by these renewable energy projects. Larger energy companies are being trusted less by local citizens than smaller local energy cooperatives. Likewise, PBL (2019) states that the size of such cooperative matters, and more prominent founders are less trusted, and there can be concerns that these founders profit more than the local community.

3.1.2.3 Local Citizens

Local citizens are directly affected by creating new renewable energy projects in their environment. It is good to consider that not all local citizens are the same but unique. This may seem obvious, but it is good to stress that citizens are located at different distances from the renewable energy projects, have different social statuses, and have other available resources (Schwarz, 2020).

3.1.3 Factors Influencing Citizen Participation

The factors that influence the occurrence, presence, and way citizen participation occurs should be considered to understand citizen participation. Before the participation process, these factors can be divided into process characteristics and contextual factors. Moreover, societal and political aspects that affect citizen participation will be considered. How citizen participation should be implemented depends on the decision to be made and which kind of decision process occurs. Rowe & Frewer (2000) state that several factors play a role in decision-making, ranging from local residents to the type and moments of inclusion. As stated before, a differentiation can be made between process and contextual factors. On the one hand, contextual factors. These are factors that are set before public participation starts. On the other hand, process characteristics are about the process that occurs once the participation process is ongoing.

The process characteristics will be discussed first. Firstly, one of the process characteristics is trust. Kuzemko et al. (2016) state that trust is needed among actors. Without trust, power could become unevenly divided. Secondly, actors who participate should feel that they have a real influence on the outcomes. Actors want the proper information access and feel like others have taken them seriously and listened to them. They should be able to touch on topics they find meaningful, that the process is transparent, and that actors are on the same level playing field. Thirdly, this goes hand in hand with the findings that participating citizens should feel like the benefits and downsides are divided fairly among all parties involved (Agterbosch et al., 2009; Blom et al., 2002).

The contextual factors also play a role in the involvement of citizen participation. Firstly, the ambiguity of responsibilities among actors regarding renewable energy projects is essential and should be as low as possible. It should be clear to all actors involved who is responsible for which tasks in the decision-making process (Wolsink, 2007). Secondly, the participation format is of importance. In general, International Association for Public Participation (2018) describes five steps in the public participation process: 1) inform; 2) consult; 3) involve; 4) collaborate; 5) empower. The process starts with informing local citizens to give them the information they need to create their own opinions about the upcoming projects. Then, citizens can be consulted and involved during the whole process to make sure they are heard and taken seriously. By collaborating, citizens can feel empowered if the outcomes are also in their hands (International Association for Public Participation, 2018; Firestone, 2017).

Lastly, societal and political aspects can affect citizen participation processes. Societal elements can include a good relationship between public organizations and citizens. This can establish if a good amount of social capital is present among the local citizens in the community (Voorberg et al., 2015). Moreover, political aspects can also have effects on citizen participation. In general, at a local level, citizens at the local levels are seen as targets to see in which ways adoption can happen, and mainly communication that is one dimensional is happening, such as providing information. However, policies regarding renewable energy projects on a higher level mention that local citizens should also

be seen as the actors that could make these projects happen. This could create confusion and opposition when citizens expect new and interactive ways of communicating with governmental actors, but it does not occur in reality (Devine-Wright, 2011).

3.2 Co-creation

3.2.1 Definitions & Characteristics of Co-creation

Co-creation can be defined as how public services are created with the active involvement of the people affected by the services made. It can be seen as the production process regarding public services of new renewable energy projects as part of the energy transition. Likewise, co-creation can be defined as how governments and citizens work together to facilitate the energy transition. Citizens help co-design and produce public goods and services. That could make decisions more socially legitimate and effective at reaching and formulating policy goals (Itten et al., 2021).

Moreover, co-creation can help citizens engage in the energy transition and be a way for innovation in the public sector, such as innovative renewable energy projects (Voorberg et al., 2015). This could help increase the societal acceptance and public trust for new renewable energy projects and create a local society on the same page on achieving the Climate Agreement goals set in the Netherlands (Brummer, 2018; Mah, 2019; Stagl, 2004).

Furthermore, if citizens are already engaged within the design phase, that will mean that the local citizens also know how the new projects will affect their lives and which benefits and downsides they have (Davis & Andrew, 2017). Additionally, it should be noted that the difference between citizen participation and co-creation can be made by acknowledging that citizens should be part of all the planning stages within the development process of renewable energy projects that will affect them. In this manner, local citizens are better understood, different from current citizen participation practices. Not only are the usual suspects heard, but minor and not so privileged groups can be heard. That enriches the local community's participation and decision-making processes in renewable energy projects. The challenges and the benefits of co-creation processes should be evenly divided. This means these benefits should not only be reaped by a select audience that does not represent the whole community. Minorities should also be able to benefit from renewable energy projects. That could also lead to more solutions than in other currently existing participation dynamics (Sillak et al., 2021; Sovacool & Martiskainen, 2020).

Moreover, co-creation is a term that can have different definitions and interpretations, which can differ according to the scene and environment in which it is occurring. For instance, Torfing et al. (2019) describe co-creation as how public and private actors are in a feedback system with incremental steps in which the challenge actors involved face is being solved. It is a way in which relevant public and private stakeholders are co-creating renewable energy projects, and all parties are involved in the entire decision-making process. Ideally, co-creation efforts should be characterized by bringing stakeholders and citizens with diverse areas of perspectives together. The earlier this is done within the development of renewable energy projects, the better (Dryzek & Niemeyer, 2008).

Likewise, political commitment should make it possible for citizens in the local community to step up and take the lead. Governmental actors could take a step back, let go of some control and let local citizens define what is important to them, and build a relationship of trust (Beierle, 2010; Horsbøl, 2018). Otherwise, issues and conflicts can arise if the proper environment is not present. Local citizens should

be able to make these efforts and get the maximum out of the co-creation processes, meaning that impending and expected struggles can be overseen and handled (Kingdon, 2011; Susskind et al., 2018).

3.2.2 Factors Influencing Co-creation

Co-creation, in general, can have the appeal of having "broadness, normative attractiveness, the implication of consensus, and global marketability" (Pollitt & Hupe, 2011). However, this means that it should be executed properly. Otherwise, co-creation could lead to worse outcomes than the ones occurring if co-creation was not used at all those occurring if co-creation was not used. When co-creation is not performed well, this could result in accountability losses and people not feeling responsible. Moreover, democratic values could be lowered, inequality could grow, and the overall costs of the decision-making processes could also increase (Steen et al., 2018). This shows that it is essential to know what factors can influence the co-creation processes, how co-creation can be supported, and which factors lead to barriers in the co-creation processes.

Co-creation is ideally seen as a good way of connecting all stakeholders and citizens to think jointly about new renewable energy projects in their direct environment. However, the potential is not always the reality. Some complexities and factors should be addressed because tensions can always play a role (Späth & Rohracher, 2015). For instance, the co-creation process should involve all relevant stakeholders. Not just a select few that have the power and show up frequently. If not all relevant stakeholders are present, the outcomes could be incomplete and not representative. There is a danger that co-creation is only happening when the status quo for the more powerful actors and policymakers is not in any meaningful way criticized (Itten, 2018). Ideally, co-creation should be able to minimize the adverse social effects that could occur.

Moreover, there should be caution within the co-creation processes of only attracting the few usual suspects. These actors have more resources and already experience within these decision-making processes. In co-creation, as stated before, costs and benefits should be divided evenly. An elite that is not representative of the whole community could make inequalities bigger and not representative, meaning a bad outcome for the co-creation process (Verhoef et al., 2013). Furthermore, both citizens and governments seem to have issues coming up with co-creation efforts. Firstly, looking at the government side. The policy-makers seem to have problems with feeling and knowing which public concerns are rising, resulting in the issues just coming up on the agenda once it is a public concern out in the open (Blanchet, 2015; Colell & Pohlmann, 2019).

Moreover, governmental actors would like to keep control to avoid mistakes being made and feel that they have the let go of certain levels of control to make these co-creation efforts work. Likewise, having such a rigid structure could be used to get support or reach higher levels of policy adaptation (Renn, 2006; Stirling, 2008). Secondly, local citizens can be hesitant to join co-creation efforts if they have the feeling that their ideas do not fit in with the approaches of the governmental actors (Späth & Rohracher, 2015).

3.2.3 Phases of Co-creation

The co-creation process can take place during several phases of policy-making cycles. Some phases are situated at the start of new projects and towards the end of the policy cycles. In general, current co-creation dynamics are mainly focused on the end phases of the policy cycle. That can be named the co-

implementation and co-delivery phases. This means that earlier phases, like co-initiation and co-design, are less researched. However, it seems that these phases are crucial for the success rate of co-creation (Nabatchi et al., 2017). Several researchers have already stated that the inclusion of stakeholders during all phases, especially the early ones, is crucial for co-creation. Moreover, some state that the ultimate goal of co-creation is that actors from all corners of the local community join and contribute (Paskaleva et al., 2015; Torfing et al., 2019).

3.2.4 Actors

This paragraph will review the different types of actors involved in co-creation processes. Actors mostly mentioned as part of society come from the industry, government, and academia. Avelino and Wittmayer (2016) propose categorizing actors in formal or informal, private or public, and for-profit and non-profit categories because it is not always clear what actors are counted as part of civil society. Therefore, it is helpful to narrow down the concept of civil society. Otherwise, it could be too broad to use effectively.

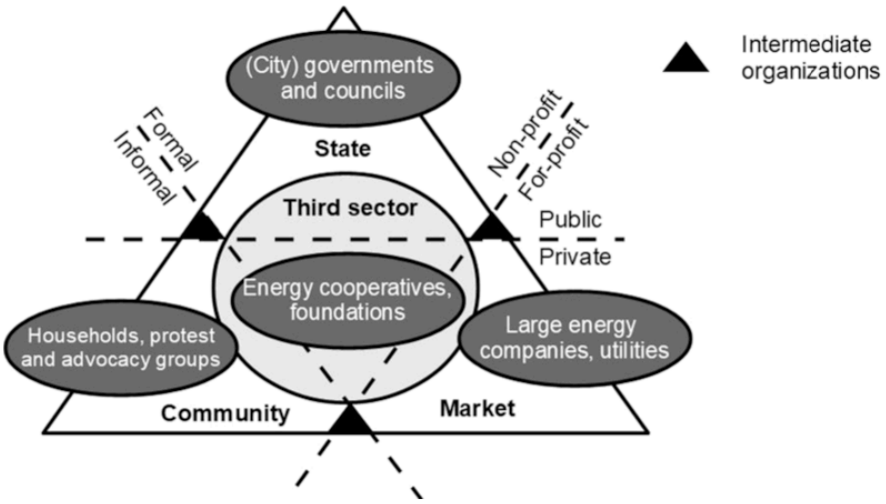

Figure 2: The classification of actor groups in co-creation at the organizational level by Sillak et al. (2021), initially found in (Evers & Laville, 2004).

Co-creation processes exist among a variety of actors. Figure 2, initially found in Evers & Laville (2004) and adopted by Avelino & Wittmayer (2016) and Sillak et al. (2021), shows a distinction between actors by defining the actors in the co-creation processes as formal/informal, public/private and for-profit/non-profit. This distinction can be helpful to determine which actor fits were within the co-creation process. This creates four basic actor categories of actor groups in co-creation:

Table 1: Classification of actor groups in co-creation at the organizational level by Sillak et al. (2021)

Actor group	Formal/Informal	Non-profit/Profit	Public/Private
State	Formal	Non-profit	Public
Market	Formal	For-profit	Private
Community	Informal	Non-profit	Private
Third sector	Formal	Non-profit	Private

Actor groups can have roles that are expected from them. For instance, governmental actors usually start with the projects, energy companies start lobbying, and others give feedback or get informed about the new projects (Sillak et al., 2021). Moreover, positions can change during co-creation processes. Some actors can be associated with specific roles and are thus forced to take on that role. However, some can also choose specific roles and take advantage of their resources. Furthermore, actor roles can be seen as boundaries between actors, like Figure 2 (Wittmayer et al., 2017).

Likewise, with different roles come different types of influence in the process. There can be a distinction between the power that keeps current structures in place and power that is more of a transformative and progressive nature. For the energy transition to be successful, the power for more advanced changes seems more needed and valuable than to bolster current structures. These transformative powers can support new forms, resources, and new initiatives. These changes can be both physical and social. Firstly, this could help to create new intelligent electricity grids systems. Secondly, this could foster new structures in which citizen participation is a more integral part of the decision-making process regarding the energy transition and the energy market in general (Avelino, 2017). Likewise, co-creation has the potential to play a role in transforming the current role structures into new ones. Transformative solutions could be proposed, which are not possible in existing citizen participation structures with current actor roles in which people just gather around the table. New activities are needed in these new citizen participation structures (Sillak et al., 2021).

3.2.5 Activities

Adding to the information stated in the previous paragraph, it is good to focus on activities that could help the needed transformations during co-creation processes. Firstly, the actors involved should be aligned on what the process entails. The envisioned goals and outcomes could be achieved by doing constructive meetings and networking with involved actors to keep the visions aligned (Paskaleva et al., 2015). Moreover, these shared visions and networks could help reconfigure current relations between actors (Mah, 2019). Secondly, social and experiential learning emphasizes which goals are worthy of achieving and how these goals should be achieved, respectively second-order learning and first-order learning. Thirdly, gathering resources, for example, financial tools, could help overcome current rigid institutional structures (Mah, 2019). Fourthly, the continuous evaluation of these processes, goals, and outcomes with the help of feedback and monitoring. Moreover, this can be done by mediation between actors to achieve continuous learning, strategic alignment, and capacity development (Hölscher et al., 2019; Paskaleva & Cooper, 2018).

3.2.6 Goals and Outcomes

The goals and outcomes of co-creation processes will be reviewed in this paragraph. Voorberg et al. (2015) state that the most common objective for co-creation processes is citizen satisfaction, citizen involvement, and effectiveness & efficiency.

Firstly, citizen satisfaction means that forms of social acceptability are the target goal. There has to be compromise on how the energy transition can be achieved on a societal level. However, this does not mean compromising is the right solution because these compromises can decrease social acceptability. That can cause delays and increase costs (Sillak et al., 2021). Secondly, the involvement of

citizens. More research is needed to determine if citizen involvement, and therefore co-creation, is a valuable way of enhancing public services (Paskaleva & Cooper, 2019). On the one hand, co-creation can be seen as strengthening public services. On the other hand, co-creation could be seen as merit, as the concept of democracy (Voorberg et al., 2015; Torfing et al., 2019).

Moreover, the outcomes and goals of citizen participation range between consensus, compromise, and integrative solutions. Furthermore, participant satisfaction with the process and outcomes, the degree of implementation, and improved contestants' relationships are important (Itten, 2017). They are, firstly, reaching an agreement. On the one hand, the agreement can be viewed as a concept in which objectives need to be reached on which actors agree and whether meditation and participation help achieve that higher and common goal (Kochan & Juck, 1987). On the other hand, an agreement in which no definitive agreement was reached can still result in positive benefits and create a shared understanding of the topics at stake among actors. That can be called a meta-agreement. (Itten, 2017). Meta-agreements do not aim to let actors give up their first-order beliefs and values and are less aimed at seeking agreement on specific conflicting issues. It is more general. This means that outcomes will be better than compromising on particular topics, while meta-agreements can be available even if actors disagree on what must be done (Itten, 2017). For instance, climate change discussions in Australia showed that the willingness towards compulsory financial contributions to greenhouse-gas emission reduction policies became more positive. Even among climate change deniers, agreements on policy recommendations were made (Dryzek and Lo, 2015).

Secondly, consensus can be described as an agreement, but without the conflicts of opinion and preferences in the process compared to agreements in general. Consensus comes from a process in which actors interact, and one or more of them changes their principles through the interaction about norms, preferences, and beliefs (Itten, 2017). Moreover, in public mediations, such as participation during the energy transition, reaching consensus can be challenging (Bellamy et al., 2012). That is why both solid and weak consensus are relevant terms as well, and most of the time, a consensus is reached when all involved actors "can live with" the outcomes of the process. Thirdly, integrated solutions focus on creating new values and goals among actors. That means existing goals will not be pursued. Therefore, the focus is on exchanging something that one party does have but does not value as high. While at the same time, the other actor does value the "something" high. For instance, two sisters want an orange when only one is available. One only wants the juice of the orange and the other one the zest. That creates an integrated solution (Itten, 2017). All in all, integrated solutions can foster better relationships and contribute to the welfare of the whole community (Thompson, 1990).

Fourthly, compromises are possible if integrated solutions or agreements are not possible. Consequently, that is the most beneficial option to avoid the costs and risks of ongoing conflicts (Van Parijs, 2012). Each actor should feel that an agreement is better than keeping the status quo or choosing other available alternatives (Mansbridge, 2009). Compromising includes partly giving up what an actor desires to reach this form of agreement because a compromise only partly satisfies the interests of all involved actors. (Carnevale & Arad, 1996). Fifthly, participant satisfaction outcome and process. This focuses on the perception of the involved actor that the mediation or participation took place fairly and honestly. Moreover, Dukes (2004) states that satisfaction with the process can also accurately predict outcomes.

Sixthly, the degree of implementation focuses on the output of public participation. The output should significantly impact the policymaking processes to foster self-efficacity among participants. Additionally, the commitment of influential stakeholders to agree is an essential factor as well (Rower & Frewe, 2000). Moreover, three points are necessary for implementing the agreement's contents in policies. First, consistent political willpower during the participation process. Second, the agreement is politically feasible. Third, is the presence of public acceptance to implement the agreement (Meuer & Troja, 2004). Lastly, the agreement is seen as a recommendation in many cases, whereas it could also have legally binding consequences. It has seventhly, improved relationships of the disputants because of participation. Emerson et al. (2009) state that this is most important for actors who will live close to each other in the future. This is highly relevant in the regional and local energy transition, where actors will face one another.

Moreover, developing mutual trust between actors can be a crucial component of conflict resolutions (Emerson et al., 2009). Furthermore, reconciliation is not always a standard result of mediation (Poitras & Le Tareau, 2009). However, that could be important for future collaborations between the involved actors.

Lastly, effectiveness and efficiency can be stated as intended goals and outcomes. The effectiveness includes establishing an active network, relationships between actors, and new proposals for problem solutions (Puerari et al., 2018; Trencher et al., 2014; Voorberg et al.,2015). Lastly, efficiency focuses on the outcomes being fast, not expensive, and the process that has been conducted in "the right manner" (Sillak et al., 2021).

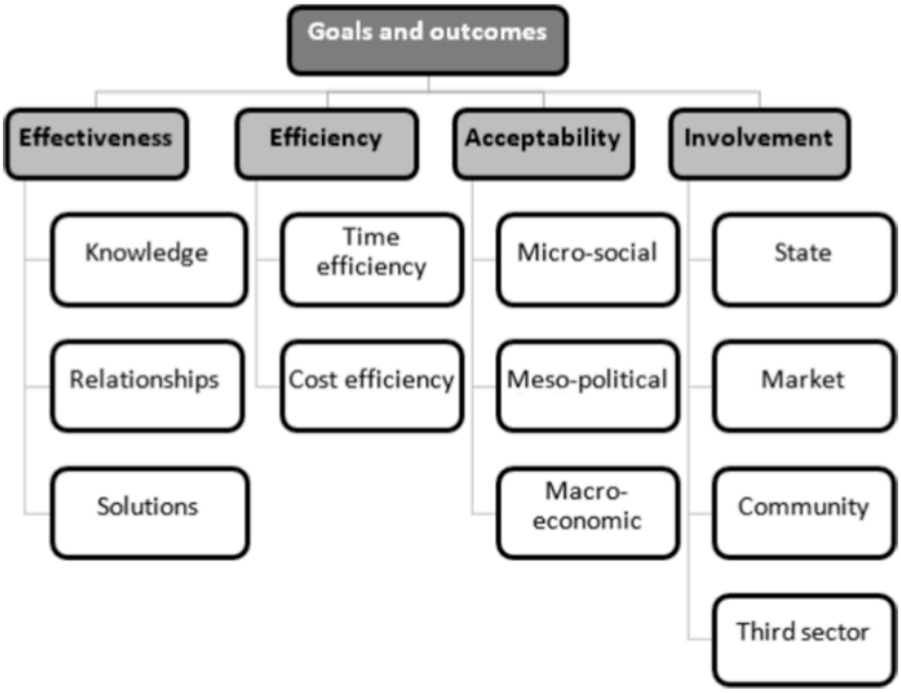

Figure 3: The classification of the goals and outcomes of co-creation (Sillak et al., 2021).

3.3 Co-production

3.3.1 Definitions & Characteristics of Co-production

The previous chapter established the main definitions, characteristics, and influencing factors. In addition to co-creation, it is essential to name and define co-production during the energy transition. Co-production can be described as working together between citizens and governments to produce public services or goods (Bason, 2010). Collaborations between citizens and governments can be established with co-creation, leading to co-production (Albrechts, 2013; Nesti, 2018). Likewise, a definition that is used frequently in the research field is the following definition: "a wide variety of *activities* that can occur in any *phase* of the public service cycle and in which state *actors* and lay actors work together to produce *benefits*" (Nabatchi et al., 2017). Co-production is necessary to create synergy between government and citizens regarding social change. Citizens should play an active role in producing public goods and services that directly affect them (Ostrom, 1996). Co-production could have the ability to increase efficiency, effectiveness (Whitaker, 1980; Marschall, 2004), and quality of public services (Nesti, 2019). Likewise, citizens shaping their own places ties in with a shift from professionals to individuals regarding power, responsibility, and resources (Albrechts, 2010). Additionally, co-production can help bring planning leadership to citizens instead of governments taking a top-down leadership role (Meijerink & Stiller, 2013).

3.4 Theoretical Framework

A theoretical framework is helpful to analyze to what extent and in which forms co-creation and co-production are taking place. In the case of co-creation, it isn't easy to measure co-creation efforts because the outcomes cannot be stated before the co-creation process has taken place. This means that co-creation inherently can cause effects that may not be expected beforehand. A golden standard to measure co-creation and its outcomes is not easily created because not all co-creation initiatives are the same. Likewise, there is no universal consensus on how to evaluate and analyze co-creation processes.

3.4.1 Overview of Theoretical Framework

The assessment of co-creation in the case studies will be analyzed using the theoretical framework mentioned in Sillak et al. (2021), previously explained in more detail in paragraph 4.2 about co-creation. The reason to use this framework is that it considers the fundamental democratic ideals essential to co-creation. The three main steps are:

1) Analyzing the involvement of actors and their roles in co-creation
2) Analyzing activities that foster transformative power in co-creation processes
3) Analyzing the goals and outcomes of co-creation

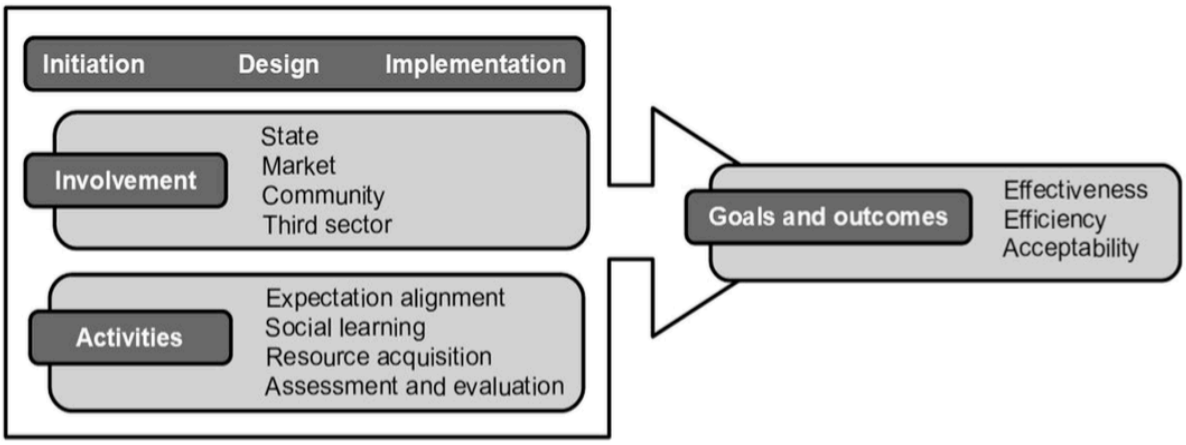

Figure 4: Framework for assessing co-creation in strategic planning for energy transitions (Sillak et al., 2021)

Firstly, analyzing the involvement of actors and their roles will be done by presenting the background and initiation phase of the case. Then, the design phase and implementation phase will be taken into consideration. Secondly, activities that foster transformative power will be analyzed by looking at the articulation and alignment of expectations, social learning, resource acquisition, and assessment and evaluation. Thirdly, the goals and outcomes will be analyzed by looking at the transition's effectiveness and efficiency and the local community's social acceptability (Sillak et al., 2021). Lastly, a section about the governance aspects of the energy transition.

3.4.2 Use of Theoretical Framework to cases

To make the theoretical framework applicable and easy to use in cases worldwide, Sillak et al. apply their theoretical framework. Sillak et al. use the example of ProjectZero in the municipality of Sønderborg in Denmark. This municipality is a town with around 28,000 inhabitants. It has a mix of urban and rural areas, mainly for the agricultural sector and other industries, such as electronics, manufacturing, and food processing. The university is also involved and has been struggling in the past few decades with issues such as an aging population and the risk of losing long-term socio-economic benefits. In 2007, this led to a local businessman establishing a think-tank to seek new opportunities to brand the area, gain new jobs and maintain the necessary economic growth after merging with other municipalities. Then, a report was made based on other examples of urban sustainability projects in the USA and China to create sustainable development and new green jobs. This led to ProjectZero, a public-private partnership between the municipality, local companies, and other foundations investing in green solutions for the future. This organization takes the lead to promote the vision, take action and make certain actors' commitments come to fruition. Now that the example being used in Sillak et al. is clear, the main steps mentioned in figure x will be briefly applied to the case of Sønderborg to illustrate how this framework will be applied to the cases in this research (Sillak et al., 2021).

3.4.2.1 Involvement of Actors and Roles

This first part focuses on the: 1) initiation phase; 2) design phase; and 3) implementation phase. Firstly, the initiation phase describes an introduction of the case mentioned above.

Secondly, the design phase. The primary goals are displayed in the design phase, such as reducing energy consumption by 40%, replacing fossil fuels with renewable energy via intelligent energy systems, and being carbon neutral in 2020. Likewise, roadmaps are discussed, and task groups are mentioned with local stakeholders and outside consultants. These task groups focus on emissions in the process, transport, and agriculture, to name a few. Moreover, six beacon projects were mentioned: wind turbines, green district heating, heat pumps outside district heating areas, biogas plants, energy renovation, and business programs.

Thirdly and lastly, in the implementation phase, the solutions created in the design phase are executed with all key stakeholders: the citizens, companies, farmers, shops, schools, housing associations, the municipality, and energy and utility companies (Sillak et al., 2021). For example, by helping citizens save energy and water by fixing their light bulbs, and finding solutions to retrofit their homes with renewable energy. Moreover, companies get technical support to make climate change strategies to achieve specific goals of carbon reductions. Likewise, encouraging the use of electric vehicles is of importance. Community-related projects have always been essential in this project but can be seen as two new roadmaps focusing on citizen engagement and stakeholder partnerships.

3.4.2.2 Activities

This second part about activities to foster change focuses on 1) articulation and alignment of expectations; 2) social learning; 3) resource acquisition; and 4) assessment and evaluation.

Firstly, articulation and alignment of expectations in the Sønderborg case. Project Zero is the leading actor in this situation, but the prominent roles were shifted towards the energy consultants and local companies in the design phase. This led to highly technical documentation and information, which only reached specific citizens. All in all, it was a success besides the remarks.

Secondly, social learning. In this case, the focus is on: 1) increasing awareness in the education system; 2) providing training through education for working in the energy industry, and 3) increasing the development and research necessary with collaborations with universities and companies. It goes beyond educational institutes, focusing on local governments, involved companies, and households to participate and learn by doing.

Thirdly, resource acquisition. ProjectZero received secure and regular funding via annual grants from three energy companies and the municipality. This, combined with long-term commitments, led to the success of ProjectZero. Moreover, the ambitious policies from a national level, general awareness of the energy transition, well-established academic, and industrial experience, and a unified vision for the whole area of Sønderborg.

Fourthly and lastly, assessment and evaluation. The emissions, energy production, and consumption are annually reported. There has been a 44% reduction since 2007, only looking at emissions from inside the area and not including travel by air, rail, and sea. Expansions of, for example, the airport could undermine current actions.

3.4.2.3 Goals and Outcomes

The third part is about: 1) effectiveness and efficiency of the transition, and 2) social acceptability of the transition in the form of goals and outcomes. Firstly, the effectiveness and efficiency of the transition can be indicated by the emissions and energy consumption that have decreased since the start of 'ProjectZero' in 2007 and has better results than similar municipalities. However, there seem to be limitations on being energy efficient because of the rising energy demands of local industries. Other contributing success factors are: 1) expansion of heating network and replacing fossil fuels with biomass, solar and geothermal production; 2) increasing energy efficiency in industry and households, and 3) threefold increase in electricity production from wind and solar sources. This also led to more jobs, mainly in the construction sector, to make energy-efficient buildings.

Secondly, the social acceptability of the transition. Social acceptance and social acceptability are two different concepts but are related to each other. Social acceptability is not an intrinsic and technical outcome but an extrinsic and evolving social construct. Social acceptability can lead to acceptance or the lack of acceptance in the energy transition. The social acceptance alone is not enough to describe the different phases of the energy transition (Fournis, 2017). Social acceptance is merely the fact that citizens tolerate and accept that projects are implemented in the energy transition, such as solar parks and wind parks. It is essential to determine this field of possibilities as social acceptability. It is a social construct that can change. The social construct is not always explicit or visible. This is the case because the energy transition is an extensive process in which not all processes take place out in the open and can take place behind the public scenes (Fournis, 2017). In this perspective, social acceptability is a social construct that focuses on how decisions are made and how concrete terms are constructed during the energy transition. Social acceptability can explain public responses to the energy transition (Cowell, 2011).

All in all, the efforts made by governments and involved stakeholders regarding social acceptability can say something about the possible chance that citizens will accept the energy transition. ProjectZero aimed to get local governments and large industries to support and commit to transition plans. So, acceptability on both meso-political and macro-economic levels has been essential and high. In other Danish municipalities, energy planning is more dependent on local politics and elections. Thanks to the ProjectZero vision, citizens and community engagement is high, although there are also stalled projects for wind due to resistance from other municipalities at close distance.

3.4.2.4 Governance

Lastly, the governance dimension will be considered an important dimension to add to the analysis of the case studies. The influence of the governance dimension on the energy transition was discussed in detail in the literature review and elaborate upon in chapter 2. The governance dimension is essential because it influences how citizen participation is formed in the energy transition. Since 2016, regional mitigation policies have been included in the Netherlands. It started with pilots, and the pilots showed that the regional energy transition decision-making could become complicated because the regions are not formal entities. However, the water boards, provinces, and municipalities are legal entities with the autonomy and authority to policymaking in the regional energy transition (Hoppe, 2021; Schuurs & Schwencke, 2017). The regional visions and plans are the foundation, but municipalities and other

formal governmental entities have to decide on the regional energy strategies (Hoppe, 2021). Therefore, the relationships and collaborative efforts will affect how critical goals for the energy transition are formed and implemented, such as actively involving citizens in the forming and implementing of policies.

Additionally, the RES can be seen as a way to sit between top-down central and bottom-up approaches. A necessity because direct participation with local citizens can help bring solutions and policies in practice that support local communities. The energy regions develop their RES and speak with all involved actors with whom the energy transition can fit in spatially. The policymaking process of forming and implementation can be made social and political legitimate (Hoppe, 2021). The energy regions should make a socially accepted RES and develop in collaboration with societal partners, business communities, and citizens (Matthijsen et al., 2021). The RES needs to become part of the local policies in municipalities and provinces with updates every two years. Once again, this is marked as a critical goal to conduct with the help of local citizens.

Moreover, the NP RES states that citizen participation and social support are essential in the RES formation processes. This consists of 1) social acceptance of RES; 2) informed decision-making by using available knowledge and skills from citizens, companies, and social organizations; 3) societal support for decisions that influence the RES; 4) community ownership in a way that makes citizens, companies and societal organization feel (co)owners of the RES and part of the RES (NP RES, 2019). However, making these goals a reality still seems complicated in practice. The plans are there, but the RES needs to be opened up to more citizens. Currently, primarily little numbers of citizens and bottom-up initiatives are involved. All-in-all, this shows that citizen participation and the active involvement of citizens on a governance level in decision-making processes is a hot topic. Therefore, the governance dimension will most likely influence the activities, goals, co-creation, and co-production outcomes during the regional energy transition.

4 | RESEARCH METHODS

Summary

The research methods describe a qualitative research approach for this study. An embedded case-study approach to understand the cases studies in a detailed real-world context. One of the advantages is obtaining in-depth knowledge about the cases, but one of the limitations is that generalization of the study can be difficult. The case selection is energy region Holland Rijnland. This is chosen, because it exists in smaller and medium municipalities, which is currently relatively novel in literature. The municipalities in the energy region Holland Rijnland are selected on basis of urban aspects and the size of municipalities. The case selection is: Leiden, Lisse, Katwijk and Zoeterwoude. Moreover, two validation cases are added: Alphen aan den Rijn en Nieuwkoop to give a complete overview of the energy region in total.

The data collection takes place in literature research, documents, online reports (grey literature), and interviews. Semi-structured interviews are conducted to obtain more information on the participation processes in the cases. The validation of the study will most likely be on a higher level, while the reliability is mostly a weaker aspect of this type of research. The data analysis is conducted by applying the theoretical framework to the case in combination with a codebook and analysis software 'ATLAS.ti.' Therefore, detailed information per individual case can be written in a structured and transparent way. A systematic comparison between the cases is possible with the help of crucial takeaways written in the main cases and the complete overview in the results chapter.

This chapter will consist of the research approach and methods used in this study. The research methods are divided into five sections. Section 6.1 will cover the research approach. Section 6.2 will cover the case study selection, both the energy region choice and the embedded case studies within the energy region. Section 6.3 will cover the data collection, focusing on the desk research and semi-structured interviews. Lastly, the validity and reliability of the used research methods will be reviewed.

4.1 Research Approach

A qualitative research approach will be used. Qualitative research focuses on methods that rely on text and images, analyzing information, and determining the integrity and validity of the collected data (Creswell, 2017, p. 254). Furthermore, an embedded case-study approach will be used. It is a way of researching in-depth to understand a particular set of cases in featured real-world contexts (Bromley, 1986). This means that the aim is to get a deep understanding of a real-world case. Understanding the in-depth conditions in which the case is set is essential to obtaining a complete overview and understanding of the case. Using a case-study approach is relevant when addressing questions with a descriptive and explanatory nature (Yin, 2009). The case study is the energy region Holland Rijnland as the main case with a selection of municipalities as embedded case studies. An embedded case-study

approach is fitting because it is essential to get a detailed overview of active citizenship in the energy region Holland Rijnland during the energy transition. The energy regions are real-world embedded cases in which more substantial in-depth knowledge is needed to answer the main research question and sub-questions.

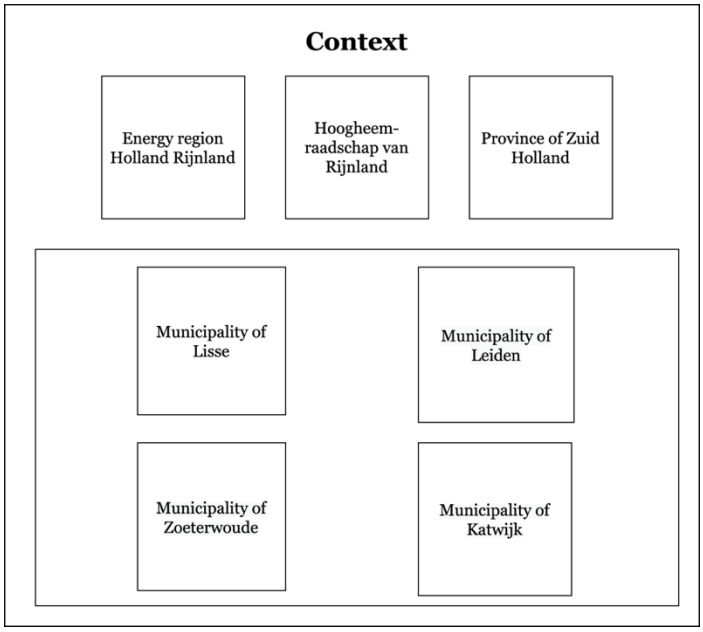

Figure 5: Embedded case-study context figure.

4.2 Advantages & Limitations of Case Study Research Approach

4.2.1 Advantages

A case-study approach offers a way of learning more in-depth knowledge about the case. Richer information and explanations can be the result. The case is studied in a real-world context, meaning that information can be gathered that could not be retrieved when doing a survey or experiment. The real-life and natural setting is important to understand the case in detail (Yin, 2009). Moreover, complex interrelationships can be better understood because of the more restricted focus of case studies. Likewise, existing theories in literature frameworks can be tested in real-life. Analyzed data can be helpful to generate a new way of thinking and develop more knowledge in academic fields (Hodkinson & Hodkinson, 2001). Additionally,

4.2.2 Limitations

A case-study approach's generalizability is limited. Hodkinson & Hodkinson (2001) state that generalizing in the conventional ways known is not possible. The research is dependent on the quality of insights and thinking of the researcher. Generalizing can be done in statistical and analytical methods; the analytical type of generalizations is applicable in a case study. Case studies do not have the intend to generalize statically. Case studies aim to formulate a logic used in future case studies. Hypothesis coming out of a single case study can be used to build new research, and new theoretical insights and knowledge can be produced (Yin, 2009). Furthermore, there is a chance of influence due to the researcher's bias. Researchers are choosing which data is essential to use. Researchers are making

judgments, which makes the study not wholly objective. Moreover, it can prove challenging to represent a complex case study in a simple way. Data can be much to analyze and study, resulting in a large study that can cost a lot of time and resources (Hodkinson & Hodkinson, 2001). Additionally, reliability is essential. This is the case because the goal of reliability is to minimize errors and biases in research. The same findings and conclusions should be found if a researcher reproduces the study. Previously, case studies were not documented fully, making it hard to assess the results' reliability. Therefore, it is essential to overcome the shortcomings with the proper documentation in the form of protocols and make the research operational step by step. In that way, other researchers can replicate the study conducted (Yin, 2009).

4.3 Case Selection

The energy region Holland Rijnland (marked in yellow in figure 6) is chosen for several reasons. Firstly, the region Holland Rijnland consists of municipalities ranging from smaller towns such as Lisse with 22,983 citizens to medium cities like Leiden with 124,077 citizens (CBS, 2021). Hoppe et al. (2016) state that academic research into local climate policy mainly focuses on larger cities, while small and medium cities should be taken into account. This research can contribute by focusing on small and medium cities.

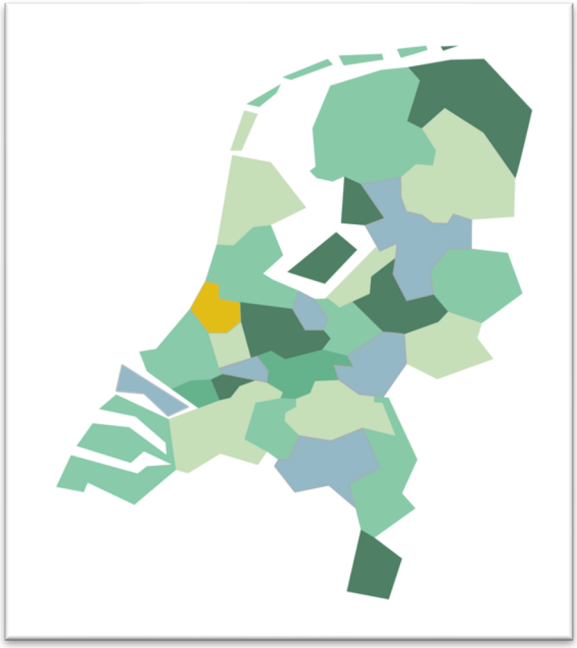

Figure 6: Map with yellow highlight of the energy region Holland Rijnland in the Netherlands (Energiestrategie, 2021)

Secondly, the social-economic character of the region is that the region is in the middle of the 'Randstad,' meaning the core of the Netherlands in which large parts of citizens live. Moreover, municipalities are in geographical proximity to each other. Challenges in cities can differ from those in towns areas, but the municipalities work together on a regional level (Holland Rijnland, 2019). This could result in exciting ways of active participation in the region Holland Rijnland. Lastly, in my bachelor thesis (Hulsbosch, 2018), several municipalities within this region were previously researched by looking at policy diffusion in a selection of municipalities in the province of South Holland during the energy transition. There is already knowledge and contacts to gather data on a local level.

Moreover, municipalities within the energy region Holland Rijnland will be selected to represent the region in this research. Firstly, part of this selection will be based on the municipality having more rural aspects or more urban elements. Secondly, the choice will be based on the size of the municipalities. The municipalities can be defined as small, middle-sized, or big in terms of the citizen population. The following table shows the municipalities in the energy region Holland Rijnland in both size and urban aspects:

Table 2: Municipalities within energy region Holland Rijnland (CBS, 2021).

Municipality	Municipality size (CBS, 2021)	Municipality size code (CBS, 2021)	Urban aspects (CBS, 2021)	Urban Code (CBS, 2021)
Alphen aan den Rijn	112,607	6	Strongly urban	2
Hillegom	22,296	4	Strongly urban	2
Kaag en Braassem	27,756	4	Little urban	4
Katwijk	65,751	5	Strongly urban	2
Leiden	124,428	6	Very strongly urban	1
Leiderdorp	27,377	4	Strongly urban	2
Lisse	22,984	4	Strongly urban	2
Nieuwkoop	29,213	4	Little urban	4
Noordwijk	44,203	4	Moderately urban	3
Oegstgeest	25,279	4	Strongly urban	2
Teylingen	37,885	4	Moderately urban	3
Voorschoten	25,576	4	Strongly urban	2
Zoeterwoude	9,152	2	Little urban	4

The following selection of municipalities in the energy region Holland Rijnland is chosen to feature a good representation of the energy region Holland Rijnland. All municipalities in the region are small or medium-sized municipalities and fit well into the research scope of this research. Moreover, two validation cases are added, functioning as additional information about the energy region Holland Region.

Table 3: Selected municipalities in the energy region Holland Rijnland (CBS, 2021).

Municipality	Municipality size (CBS, 2021)	Municipality size code (CBS, 2021)	Urban aspects (CBS, 2021)	Urban Code (CBS, 2021)
Leiden	124,428	6	Very strongly urban	1
Katwijk	65,751	5	Strongly urban	2
Lisse	22,984	4	Moderately urban	2
Zoeterwoude	9,152	2	Little urban	4

The two following municipalities will shortly be featured as additional information. Firstly, Alphen aan den Rijn is featured because the participation processes in that municipality created friction among citizens, according to interviewee 2 from the RES Holland Rijnland and interviewee 25 from the municipality of Alphen aan den Rijn and is widely known among other municipalities in the energy region Holland Rijnland and frequently came up in interviews in other municipalities. Secondly, Nieuwkoop is featured because they work on their local variants of possible large-scale renewable energy production (LSREP) and look at the possibilities in their municipality before coming up with an ambition, according to interviewee 26 from the municipality of Nieuwkoop, which is the other way

around then is done on a regional level in Holland Rijnland. That makes it attractive as additional information to the region.

Table 4: Additional municipalities in the energy region Holland Rijnland (CBS, 2021).

Municipality	Municipality size (CBS, 2021)	Municipality size code (CBS, 2021)	Urban aspects (CBS, 2021)	Urban Code (CBS, 2021)
Alphen aan den Rijn	112,587	6	Strongly urban	2
Nieuwkoop	29,151	4	Little urban	4

Figure 7: Locations of cases in black circles, additional cases in grey circles (Apple Maps, 2022).

4.4 Data Collection

4.4.1 Desk Research

Literature research, documents, online reports (grey literature), and expert interviews will be required. Firstly, (policy) documents will be needed from municipalities. These documents contain information about policies regarding participation, active citizenship, co-creation, co-production, and local energy initiatives. The documents are publicly available at the municipalities. Documents and reports from the NP RES, the organization that supports the energy regions in creating their plan for the energy transition, for instance, facilitating knowledge sharing and connecting energy regions with each other (NP RES, 2021). This information will be used to get insights into how NP RES is supporting the energy

regions and their current status. Lastly, 'grey literature' in the form of reports & evaluations of participation in the energy transition will be used alongside text documents on the advice of people interviewed.

4.4.2 Semi-Structured Interviews

Semi-structured interviews will be conducted to obtain more information about how participation is shaped in the energy region Holland Rijnland. Semi-structured interviews are chosen because they provide guidance and leave room for the person being interviewed to provide detailed and additional information (van Aken, 2018). On the one hand, interviews will be conducted with civil servants and public officials of the municipalities chosen in the previously discussed case selection paragraph. On the other hand, interviews will be conducted with representatives of citizens' initiatives. Selection for the interviews will be based on criteria like being tasked with forming climate policy and having knowledge on the subject. The person needs to be able to share information that is informative, detailed, and reliable. This will give insight into both the views of local governments and active citizens. Via snowballing during the conducted interviews, more interesting subjects to interview could be identified. This includes a variety of actors that represent the state, community, and market. Lastly, the interview questions will be based on applying the theoretical framework mentioned in chapter 3, with a specific focus on using the theoretical framework in chapter 3.4.2.

4.5 Data Treatment: Validation and Reliability

Firstly, validity is one of the strong points of qualitative research. It is mainly about the study's accuracy (Creswell, 2017). Secondly, reliability in qualitative research can be better ensured by documenting the steps of the procedures done in the study in the best manner possible to make sure others can repeat these same steps in later research (Yin, 2009).

This research aims to collect and analyze information about the processes regarding active citizenship, co-creation, and co-production within municipalities of the energy region Holland Rijnland. The most relevant data source for the required information will be the conduction of interviews because insights into the ongoing processes are of crucial importance. The researcher of this study was not present at the meetings that took place processes regarding active citizenship, co-creation, and co-production. This means that interviews are the best-suited method to get insight into these ongoing processes.

Several interviews should be conducted to get as correct as possible about the embedded case studies. A minimum of three interviews per case will be set to ensure the validity and reliability of the collected data about ongoing processes regarding active citizenship, co-creation, and co-production. The main reason to select this number of interviews is that the methods can be subjective. More data sources are needed to ensure more reliable results and valid outcomes. Additionally, the interviewed persons should be part of these processes. This is necessary to make sure that the interviewed person is familiar with the procedures in the embedded case studies. Moreover, transcripts of the interviews will be created, and detailed information about the coding of collected data will be presented.

4.6 Data Analysis

4.6.1 Applying the Theoretical Framework to the Cases

Firstly, the collected data were analyzed using codes stated in the codebook in the appendix A. The codebook's basis for the codebook is the framework of Sillak et al. (2021) with additional codes and theory about the relevant governance dimension. Secondly, these codes were imported into 'ATLAS. Ti Scientific Software Development GmbH' to apply the codes to the four individual main cases, regional cases, and validation cases. Thirdly, all collected data in the form of documents, reports, and interviews were imported per case. Fourthly, the data is analyzed in ATLAS.ti with the codebook. This made the information per code viewable and usable to write the case. For instance, the code Articulation & Alignment under the group Activities was used to analyze the relevant data for that code in a case. Lastly, the sorted data per code is used to write the detailed cases down in a document. This was conducted for every code in every case to get a comprehensive overview of which one could replicate in the future for this case or other similar case studies.

4.6.2 Systematic Comparison of Cases

Besides getting a good within-case analysis, a cross-case analysis is also needed. Once the individual cases are written down, the cases need to be compared systematically. In this way, the similarities and differences will become clear. This is mainly done using the key takeaway tables featured at the end of every case studied. This gives a clear overview of the essential elements per case, divided per codebook. In this way, an overall results table can be made. This table is featured in the results in chapter 11. Moreover, this is useful for a complete system overview of the cases for the main results. The right similarities, differences, and patterns can be determined in the results. Furthermore, this helps draw conclusions and set up the discussion at the end of this study.

Additionally, there are both data available from a local and regional level. In the interviews, questions were aimed at local and regional levels. Therefore, distinctions were made in the codes of the codebook to separate local and regional governance. The right comparisons can be made when discussing governance aspects in the regional and local energy transitions. Moreover, links can be made between the local and regional levels without making the mistake of combining them into one governance dimension.

4.6.3 Validation Cases

The validation cases are meant as additional information for the overview of the energy region Holland Rijnland as a whole. Besides the main cases, the validation cases are mentioned frequently in the collected data. Therefore, two additional interviews are held with policy workers at the municipalities of Nieuwoop and Alphen aan den Rijn. To validate the findings found in the four main cases, these validation cases can be of additional help with the information gathered in the main cases. This could result in a more valid analysis of the municipalities in the energy region Holland Rijnland.

4.6.4 Coding for Collected Data

The conducted interviews will be recorded via Microsoft Teams. The information collected from the transcripts will be analyzed with the help of the software 'ATLAS. Ti Scientific Software Development GmbH'. The specific software version of ATLAS.ti is version number 22 for Mac (ATLAS.ti, 2022). In this manner, codes can easily be attached to text parts from the transcripts. A codebook will be manually

created to analyze the interviews found in appendix A for this to work correctly. This codebook is mainly based on the theoretical framework proposed in chapter 3. The basis is the framework of Sillak et al. (2021) with additional codes and theory about the relevant governance dimension.

5 | ENERY REGION HOLLAND RIJNLAND

Summary

The energy region Holland Rijnland is one of the thirty energy regions in the Netherlands. It is the collaboration network in which actors work on the regional energy transition policies. The main focus is on: 1) energy saving, 2) sustainable mobility, 3) heating; and 4) electricity. The involved actors are municipalities, water boards, the province of South Holland, environmental services, grid operators, and the advisory group called the 'programmaraad.' The activities focus on regional surveys to gather information about citizens' sentiment towards the energy transition and bundling participation processes of municipalities to get a regional overview. The 'programmaraad' advises about the regional vision. The energy region Holland Rijnland, as an organization, is supporting and not leading. The financial support mainly comes from the national and provincial levels for local citizen initiatives. The goals and outcomes are focussed on LSREP but face resistance from citizens in the region. Solar panels on roofs are viewed as better alternatives, while the middle group of citizens has no strong opinion of the energy transition. There is little desire among citizens to produce energy in their region or municipalities. The governance dimension shows that the partners in the region are leading and determine the direction. The RES 1.0 was easy to set up, but that excluded the possible locations for LSREP. This is partly due to restrictive policies from the province of South Holland and a challenging relationship between the province and the other RES partners.

5.1 Focus of Analysis

This case will differ in certain aspects compared to the four main cases studies in the following chapters. The structure is the same, but the focus will be different. The energy region Holland Rijnland is the overarching collaboration mechanism to make the energy transition happen, both on a regional scale and in the local municipalities. The decision-making authority is not in the energy region Holland Rijnland directly. Still, it is established by the combined efforts of all the relevant actors in the energy region Holland Rijnland. These are the authorities with formal authority and decision-making power, such as the municipalities, provinces, and water boards. This should be kept in mind while reading this case because this changes the nuances of the focus in this case of the energy region Holland Rijnland. Lastly, the rest of this introduction will focus on the energy region Holland Rijnland.

5.1.1 Introduction

The energy region Holland Rijnland organization stimulates and facilitates cooperation between thirteen municipalities in the region of the same name. The collaborating municipalities are Alphen aan den Rijn, Hillegom, Kaag en Braassem, Katwijk, Leiden, Leiderdorp, Lisse, Nieuwkoop, Noordwijk, Oegstgeest, Teylingen, Voorschoten and Zoeterwoude (Holland Rijnland, 2022). Energy region (or RES region) Holland Rijnland is an instrument for policy and implementation to make regional choices with societal involvement incorporated for the following topics: 1) production of renewable energy; 2) the

heating transition in the built environment and 3) needed storage and energy infrastructure to support the first two topics. Moreover, the energy region is a way of collaborating with regional stakeholders, both governmental and societal, to create projects. Furthermore, the RES is a product that showcases the energy region's strategy to reach local and regional energy goals. There is no legal basis for the energy regions and no formal accountability for municipalities and provinces to reach the national goal of 35 TWh (NVRR, 2020). The current status of the energy region Holland Rijnland in the 'RES 1.0' is the following. Most CO_2-emissions, 88%, come from energy consumption. The other 12% are methane emissions from agriculture. Moreover, most energy consumption occurs in built environments such as homes, offices, and schools. Mobility has an energy consumption of 30%. Therefore, the following main goals are essential for the energy region Holland Rijnland (RES Holland Rijnland, 2021):

1) Energy saving

There is an ambition to reduce energy consumption by 1.1 TWh by 2030, which is 11% less energy consumption than in 2014. That means 11% energy saving in mobility and 15% in the built environment, especially with heating in homes.

2) Sustainable mobility

Firstly, the reduction of CO_2-emissions in the mobility sector needs to be reduced by 22% in 2030, compared to 1990. Secondly, 11% energy saving in mobility as mentioned before. Further elaboration of these goals will follow after 'RES 1.0' in 2021 and 2022.

3) Heating

The assumption is made that enough renewable sources for heating are available in 2050 if the following terms are met: 1) 30% reduction of heating, e.g., insulation, behavior changes, efficient technologies; 2) municipalities collaborate on efficient sharing of scarce heating sources; 3) residual heat from Rotterdam. Until then, heating pumps are needed as an in-between solution. Local policies will be elaborated on in the 'Transitievisies Warmte' from municipalities of the energy region Holland Rijnland. Currently, the focus is on technical feasibility, while financial feasibility will become necessary for concrete projects, and new resources and governmental tools will be needed coming from higher governmental levels to get the heating transition started (RES Holland Rijnland, 2021)

4) Electricity

The regional ambition is to produce 1.05 TWh of renewable energy in 2030. This will consist of solar panels on roofs (0,25 TWh), solar fields, and wind turbines. Possible locations need to be found for LSREP that fit the area, have societal and governmental support, and reach the set ambitions of 1.05 TWh. The current search areas mainly focus on spatial fitting and near existing infrastructures. In theory, the possible locations are enough for the regional ambitions. However, it is advised to search for possible locations towards the 'RES 2.0' (RES Holland Rijnland, 2021).

5.2 Actors

The key stakeholders in the energy region Holland Rijnland are:

Table 5: The key stakeholders in the energy region Holland Rijnland

Actor	Actor group	Formal/Informal	Non-profit/Profit	Public/Private	Notes
Municipalities	State	Formal	Non-profit	Public	
Water board Rijnland	State	Formal	Non-profit	Public	
Water board Amstel, Gooi en Vecht	State	Formal	Non-profit	Public	
Province of South Holland	State	Formal	Non-profit	Public	
Environmental service (omgevingsdienst)		Formal			
Gridoperator Liander	Market	Formal	For-profit	Private	
'Programmaraad'	Mixed	Informal (changing members)	Non-profit	Private	Representatives of companies, big energy consumer, organisations for nature and recreation, energy suppliers, knowledge institutes, energy cooperatives

5.3 Activities

5.3.1 Articulation and alignment of expectations

In 2020, a regional strategy was formed within the energy region Holland Rijnland with the communication organization EMMA. In this strategy, arrangements were made with the region, province, and municipalities that participation processes mainly took place on a local level within municipalities, but regional participation and support were present. The municipalities' efforts are bundled and combined with regional surveys and interviews, giving a regional perspective, according to interviewee 1 from EMMA. The energy region Holland Rijnland has a facilitating role because the municipalities are closer to citizens than the region. From the fall of 2020 until the start of 2021, a regional participation process was aimed at the citizens of the energy region Holland Rijnland. This consisted of webinars, surveys, street conversations, and other methods. The emphasis was on local activities (RES Holland Rijnland, 2021). On a local level, differences can be seen because municipalities do their participation and no standard is available. The regional level is focused on doing the minimum, e.g., webinars and regional surveys, according to interviewees 2 and 3 from RES Holland Rijnland. This is backed by interviewee 4 from the province of South Holland, stating that it is undesirable if the province and energy regions want to execute the same participation. The municipalities are the leading governmental actor to involve citizens in the energy transition.

Moreover, the municipalities that conduct most participation activities expect the most significant impact from the energy transition on their municipality, for instance, by new renewable energy projects.

The energy transition is a fast process wherein a lot needs to happen with stakeholders. New information keeps coming in, and forming the proper approach is complex. The webinars and information sessions mainly informed about the already created policy plans. The surveys were conducted to view the terms and conditions citizens find essential to make the energy transition acceptable. This was quite broad, e.g., about the terms and conditions for wind turbines and not concrete questions about wind turbine x on location x, according to interviewee 1 from EMMA.

5.3.2 Social learning

The 'programmaraad' in the energy region Holland Rijnland advises about decisions taken on a regional level in the concept 'RES' and the 'RES 1.0' according to interviewee 5 from 'Rijnland Energie'. The 'programmaraad' consists of business companies, 'Natuur en Milieufederatie', housing associations, energy suppliers, knowledge institutes and representatives of citizens, and water supply companies. For instance, this focused on the feasibility, financial constructs, local ownership, financial participation, involving companies, and finding collaboration chances to reach the regional goals (RES Holland Rijnland, 2021). These advise stakeholders intending to involve them in the implementation phase later during the energy transition. All in all, the government is facilitating. Still, these stakeholders are crucial in making the energy transition a reality and are now a bit quiet, according to interviewee 3 from RES Holland Rijnland.

The energy cooperative 'Rijnland Energie' collaborates with several energy cooperatives in the energy region Holland Rijnland and. 'Rijnland Energie' wants to represent citizens in the region and think along in the first phase of policymaking. There have been talks about possible locations and cooperatives intensively involved in the past year. However, not many citizens are yet involved, and the next step will be talking about potential sites for LSREP. The 'programmaraad' and 'Rijnland Energie' advise on set moments. However, according to interviewee 4 from the province of South Holland, this could be improved by giving feedback and showing what has been realized with the advice given. Moreover, the energy cooperatives are already quite professional and work with commercial stakeholders. Thus, it should be considered that their opinions do not always align with general citizens. A similar sentiment is shared by interviewee 5 from 'Rijnland Energie'. The mistake is often made that views of energy cooperatives are equal to the opinion of citizens in a region or municipality.

5.3.3 Resource acquisition

There is financial support coming from the province of South Holland towards the energy cooperatives active in the energy region Holland Rijnland for local initiatives. That consists of starting capital, because funds are needed for expertise and professionals to become independent. These are citizens that want to become active in the local energy sector and start up with research, according to interviewee 5 from the province of South Holland. According to interviewee 5 from energy cooperative 'Rijnland Energie', it can create friction when the province of South Holland subsidies energy cooperatives that eventually want to start projects with wind and solar on locations that the province denies permission. Moreover, when 'RES 2.0' is nearing, it is essential to look at the present stakeholders and involve them intensively in the process.

Additionally, according to interviewee 3 from RES Holland Rijnland, there are funds from the municipality for the energy cooperatives. However, the possible locations for LSREP are not yet determined, which makes energy cooperatives wait before the decisions are taken at a regional and local level. The goal is to support 50% local ownership in the energy region Holland Rijnland.

5.3.4 Assessment and evaluation

How participation takes place on a regional level and in the municipalities of the energy region Holland Rijnland is of importance. There are plans to create minimum requirements for participation for municipalities so that the different local participation processes can be assessed and compared. Currently, that is hard to do because municipalities take their path, making it hard to determine if all municipalities have done enough to involve citizens. The lower limit for participation is the participation that happens on a regional level, according to interviewee 3 from the energy region Holland Rijnland. Moreover, it is not always clear for municipalities what they will do with the information gathered from participation processes. There is a lack of an expectation pattern and a lack of vision regarding the aims and goals of participation processes. That clearness should be present before participation processes are started. Therefore, more guidance could be fitting from a regional level, according to interviewee 2 from the energy region Holland Rijnland.

5.4 Goals and outcomes

5.4.1 Effectiveness and efficiency of the transition

The regional energy plans' initiation, design, and implementation started with the concept 'RES' in 2019 and was fully elaborated on in the 'RES 1.0'. At the end of 2021 and the start of 2022, the 'RES 1.0' is being determined locally in the municipalities of the energy region Holland Rijnland. Currently, the effectiveness and efficiency of the transition cannot be assessed or determined yet, because the implementation phase will come later during the energy transition. In paragraph 5.1, the primary goals in the energy region Holland Rijnland are described and elaborated upon: 1) energy saving; 2) sustainable mobility; 3) heating, and 4) electricity.

5.4.2 Social acceptability of the transition

The surveys conducted in the energy region Holland Rijnland show that almost half of the respondents find large-scale wind production in their municipality a bad idea. Middle and small wind turbines have face resistance, but resistance is still present. The conservation of nature and avoidance of noise disturbance are essential requirements. Only 25% of the respondents find it necessary to produce energy in their municipality. More than 90% of the respondents see solar panels on roofs as a good solution, while solar parks face the same opposition and concerns as large-scale wind production. The 'middle' group of citizens has no strong opinion about the energy transition and does not have specific preferences for how they are informed about the energy transition (EMMA, 2021a). According to interviewee 6 from Natuur en Milieufederatie South Holland, if regional actions are done, the involvement of citizens is more than just simple citizen participation. The whole environment is also essential when citizens do not want to engage with upcoming projects directly. These citizens need to be reached. Otherwise, they can become opponents. The main aims of the regional participation were focused on estimating the feelings and social acceptability among citizens. It is not focused on concrete

decisions that need to be taken but on measuring citizens' support. No concrete plans were formed in the current phase, and the initiation and design phase was present according to interviewees 2 and 3 from RES Holland Rijnland.

5.5 Governance

The 'RES' gives direction to the ambitions of the regional energy transition. It is about getting insight into supply and demand, developments in the market, changes in laws, technological innovations, and behavioral changes. The 'RES 1.0' was determined with formal partners such as the province of South Holland, Water Board of Rijnland, Water Board Amstel, 'Gooi en Vecht', grid operator Liander and the thirteen municipalities in the energy region. Collaboration is needed to achieve the ambitions and goals. This is about concrete projects, knowledge sharing, and developments towards the 'RES 2.0' (RES Holland Rijnland, 2021). Currently, the new national cabinet and the municipal elections are hovering above the 'RES' processes. From a national level, funds and support will be needed, and the person as the new climate minister will influence the progress.

Moreover, the municipal elections will influence the coming 'RES' progress and affect the upcoming 'RES 2.0'. All in all, it depends on the new ambitions of governors. The municipalities will, in the meantime, continue with the energy transition. Still, it remains to be seen which place the local efforts get in the upcoming 'RES 2.0' according to interviewee 1 from EMMA. The 'RES' partners determine the direction and the energy region Holland Rijnland supports the network forming. Governors need to show what they expect. The energy region can make suggestions with the external policy workers hired by funds from a national level and the municipalities, according to interviewee 3 from RES Holland Rijnland.

The 'RES 1.0' was relatively easy to set up, but the upcoming implementation phases can be harder to execute. The relationship between the energy region, province, and municipalities makes it challenging to reach the set goals because the municipalities and energy region focus on LSREP alongside infrastructure alongside roadway the 'N11'. In contrast, the province of South Holland does not approve of these plans. That makes reaching the energy production goals challenging in the energy region Holland Rijnland according to interviewee 1 from EMMA and interviewee 5 from Rijnland Energie. Moreover, interviewee 7 from the Water Board Rijnland states that the province of South Holland coalition accord is restrictive in specific ways about LSREP, making it challenging to work as equal partners towards a new 'RES'. Potential locations for LSREP are assigned on a regional level, for which support and social acceptability are present. In that case, it is challenging if the province of South Holland overrules those decisions from a higher governmental level role. Then, the core task of the province about spatial quality is leading. According to interviewee 3 from RES Holland Rijnland, this leads to challenging items in the municipalities and forces some areas, such as the 'Duin- en Bollenstreek' to make more room for possible locations. Interviewee 7 states: "*That creates friction. The precarious balance that is present in the region, is disturbed by higher governmental level decisions*". At first, it looked like the province was willing to look at possibilities, which are now more restrictive than anticipated.

Interviewee 4 from the province of South Holland confirms that it is a challenging process in which the province is, on the one hand, an equal partner in the 'RES' process, but on the other hand, has the role of guarding the spatial quality from a higher governmental level. Therefore, the province

has the autonomy to decide on LSREP locations, for which current plans can be seen on a map in figure 8. It is hard for municipalities that the province does not approve of possible sites in 'Het Groene Hart', especially when focusing on wind turbines. That also means that municipalities, such as 'Alphen aan den Rijn' and 'Kaag en Braasem', want wind production in their municipality to reach local goals but clashes with the province's decisions. That keeps the discussions going on a regional level.

Moreover, the energy region Holland Rijnland takes the route of settings ambitions and then finding ways to reach the set ambitions of 1.05 TWh. That is the other way around other energy regions, focusing on spatial quality and possibilities first and then calculating possible energy production in the energy region. The province of South Holland has determined multiple areas where LSREP could be possible, of which two are placed in the energy region Holland Rijnland. The province of South Holland and municipalities decided the goal for the energy region, but that goal does not match the current search areas. This results in goals and ambitions on a regional level that do not correspond with concrete possible locations for LSREP. This process is moved to the 'RES 2.0', which can mean a delay of two years in which not much is happening regarding LSREP, according to interviewee 5 from energy cooperative 'Rijnland Energie'.

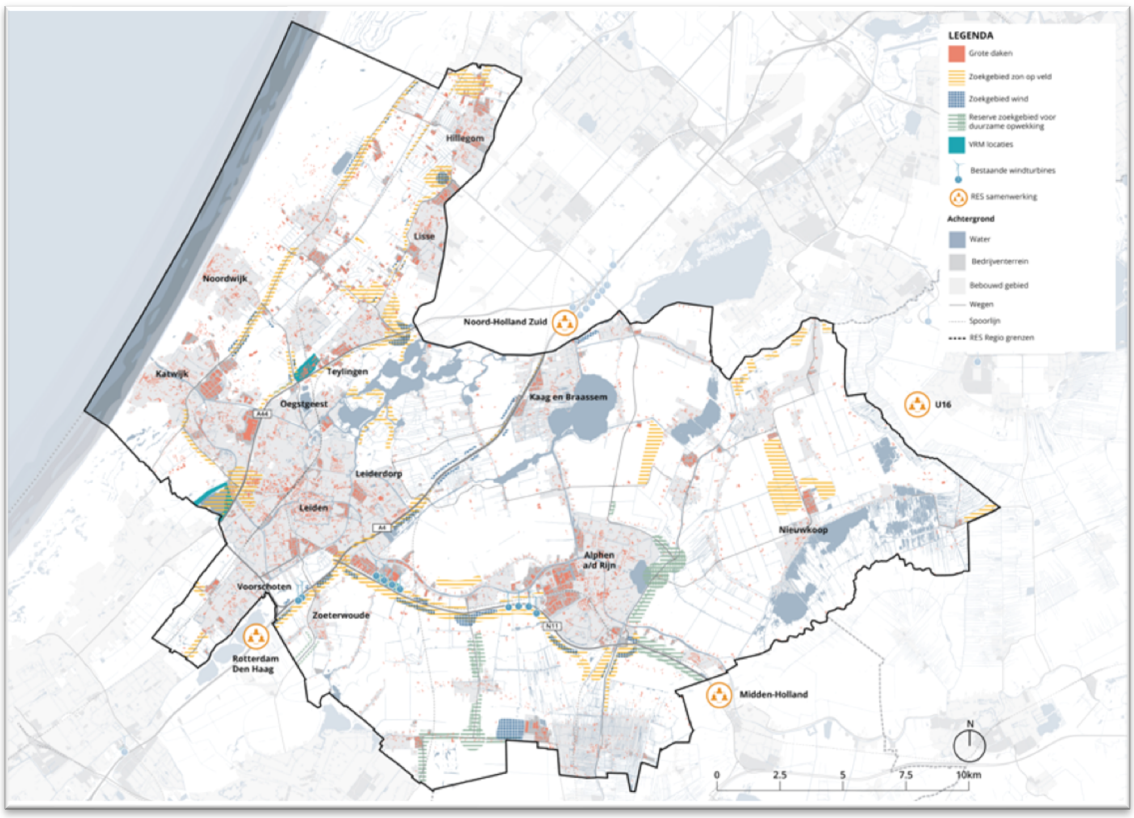

Figure 8: Map with search areas for renewable energy production in the energy region Holland Rijnland (Holland Rijnland, 2021).

5.6 Key Take-aways

Table 6: Key Take-aways for the energy region Holland Rijnland

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Regional surveys and information sessions to measure sentiment about energy transition among citizens - Bundled local participation processes to get a regional view of how citizens feel about the energy transition
Activities: *Social Learning*	- 'Programmaraad' with stakeholders to give advice about the 'RES' decision-making process
Activities: *Resource Acquisition*	- Energy region Holland Rijnland is supporting, the partners are leading - Financial support from the province of South Holland for local citizen initiatives
Activities: *Assessment and Evaluation*	- Plans to create minimal participation requirements for municipalities to make local efforts better comparable
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Energy saving; 2) Sustainable mobility; 3) Heating; 4) Electricity Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- LSREP faces resistance by citizens in region - Solar panels on roofs seen as good alternative by citizens - Middle group of citizens has no strong opinion of the energy transition - Little desire to produce energy in own municipalities - If LSREP needs to happen, preference near existing
Governance	- RES organization supports the partners that determine the direction and goals - 'RES 1.0' is relatively easy to set up, except locations for LSREP - The regional decision-making process can become more difficult towards the implementation phase - Complicated relationship with the province of South Holland as both partner and higher governmental actor regarding LSREP locations

6 | Municipality of Katwijk

Summary

The Katwijk case communication is focused on informing and activating citizens, for instance, through surveys and meetings. However, there is a lack of clarity in communication with citizens, partly due to the consequences of the impacts of COVID-19. Social learning is in its early phases. Plans are in the works to share knowledge and best practices with local and regional partners. There is contact with the local energy cooperative but is not on co-creation or co-production. Intensive stakeholders' participation focusing on network meetings is in the works. It doesn't seem easy for the municipality to pinpoint when to involve citizens. Citizens should not be affected too early in the process. However, too late can increase resistance. There is support in knowledge, time, and monetary funds for (active) citizens, but resources are scarce, and support from the national level is necessary. There are pilots in neighborhoods regarding the heating transition and a local energy strategy to assess and evaluate the local energy transition. The goals focus on developing the RES with the energy region, developing a local heating transition vision, stimulating the local energy transition among entrepreneurs and citizens, and strengthening leading and good examples. Energy savings measurements and small-scale energy projects face overall positive reception, but more significant projects face resistance. The governance dimension shows that regional collaboration on a future heating network from Rotterdam to the Leiden region is essential. The regional partnership regarding large-scale energy production faces complexity regarding support among local citizens, the equalness of local participation efforts, and the influence of the province of South Holland on the large-scale renewable energy production map.

6.1 Introduction

Katwijk is a municipality in the Netherlands in the Province of South Holland. The municipality has 65,751 citizens (CBS, 2021). Katwijk is one the bigger municipalities out of the 'Duin- en Bollenstreek'. In 2006, Katwijk merged with neighboring municipalities Rijnsburg and Valkenburg and is now combined the municipality of Katwijk (Eerste Kamer der Staten Generaal, 2005). While Katwijk is part of the energy region Holland Rijnland, local plans for the energy transition are also created. In Katwijk, this is the so-called 'strategische agenda duurzaamheid', translated as strategic agenda sustainability in English. This agenda provides perspectives regarding sustainability for Katwijk until 2050. It is a combination and coherent report that features all the previous policy reports and plans on sustainability in Katwijk to give a cohesive and clear view of the future of Katwijk sustainability-wise (Gemeente Katwijk, 2020). This agenda features the most important topics for the sustainability agenda in Katwijk: 1) energy transition, 2) mobility, 3) climate adaptation, and 4) circular economy.

Firstly, the energy transition in Katwijk focuses on renewable energy, energy savings, and in time stopping the usage of natural gas. The municipality marks itself as an active leader in connecting, informing, and activating relevant stakeholders to make the energy transition a success. Secondly,

mobility. They are making sustainable mobility consist of concepts that include electric vehicles and creating mobility hubs with a stronger emphasis on public transport. Thirdly, circular economy. The municipality of Katwijk intends to inform citizens, companies, and visitors about sharing economy concepts and takes a leading role in setting requirements for the circular use of raw materials in construction (Gemeente Katwijk, 2020).

All in all, the main topic focus will be on the energy transition in Katwijk. Since the strategic agenda sustainability in Katwijk in 2020, the RES 1.0 has been established in the energy region Holland Rijnland in collaboration with the other municipalities in the energy region. The regional plans will soon be translated into a local energy vision (Gemeente Katwijk, 2020; Wonnink, 2021).

6.2 Actors

The key stakeholders in the municipality of Katwijk are:

Table 7: The key stakeholders in the municipality of Katwijk

Actor	Actor group	Formal/Informal	Non-profit/Profit	Public/Private
RES Holland Rijnland	State	Formal	Non-profit	Public
Province of South Holland	State	Formal	Non-profit	Public
Housing association	Market	Formal	Non-profit	Private
Water company Dunea	Market	Formal	For-profit	Private
Katwijkse Energie Cooperatie	Third sector	Formal	Non-profit	Non-profit
Water board Rijnland	State	Formal	Non-profit	Public
Gridoperator Liander	Market	Formal	For-profit	Private
Gridoperator Alliander	Market	Formal	Non-profit	Private
Energy ambassadors	Community	Informal	Non-profit	Private
Neighbourhood organisations	Community	Informal	Non-profit	Private
Duurzaam Bouwloket	Market	Formal	For-profit	Private

6.3 Activities

6.3.1 Articulation and alignment of expectations

Citizen participation is vital to creating a sense of ownership and social acceptability in Katwijk. Moreover, citizens themselves have a part to play in creating solutions during the energy transition. Clear communication and aimed actions are needed to stimulate citizens to work with the municipality. Citizens cannot be forced to take measures into their own hands, but citizens can be encouraged to participate by informing them and showing the relevant funds available. Furthermore, there were efforts by conducting regional and local surveys to inform how citizens feel about the energy transition. The focus of the surveys was on the following topics in Katwijk (Haasnoot-Sieders, 2021):

1) A digital search area map for LSREP in which citizens can annotate which areas and places are preferred and suitable;
2) A survey among youth in Katwijk: to get representative results about the energy transition, youth were asked via partners about the energy transition and how they feel about it;
3) Online information overview about the energy transition;
4) Consultation meetings with policy officers to talk about the energy transition and ask questions;

The conducted surveys show that a diverse selection of citizens is presented regarding gender, age, and education level. However, older, male, and higher educated people are overrepresented in these surveys. Overall, citizens till 30 years old are underrepresented in the participation process and seem hard to reach in traditional participation processes. A separate survey, especially for youth, was implemented to make up for this. In other participation processes, the following groups of citizens need more attention to reach appropriately: 1) lower educated citizens; 2) age groups 25 to 54; 3) women, and 4) the 'silent middle' (Gemeente Katwijk, 2021). The municipality of Katwijk aims to have a comprehensive communication plan that goes further than just informing citizens. It is about informing, stimulating, and activating citizens. On the one hand, the communication is focused on showing citizens what this transition will mean for them and why it is important. On the other hand, the municipality wants to work together with citizens, companies, and other societal stakeholders to start to work on initiatives and makes that visible to the whole municipality (Gemeente Katwijk, 2020)

According to interviewee 8 from energy cooperative 'Katwijkse Energie Cooperatie' it is unclear for the average citizen what efforts they should make in their own homes and environment to make it more sustainable, for example, by investing in energy savings measurements such as solar panels on their roofs or isolating their homes. Moreover, it is challenging to let citizens take steps without possible regrets later during the energy transition. It is found that clear and good communication is needed to show citizens which funds are available to make efforts at home to save energy, which needs to be worked on. Clear and more direct contact with citizens is required according to interviewee 8.

According to interviewee 9 from the municipality of Katwijk, the last two years proved challenging to inform and consult citizens during information sessions about renewable energy production. This is necessary to determine how citizens look at these topics and what chances and obstacles are present. Not being able to meet in person proved difficult, and most of the information gathered about the feelings and sentiments among citizens was captured in surveys. These results showed insights into the support and social acceptability of the energy transition. It should also be noted that participation and topics regarding the energy transition most of the time will only play a role once the project is concrete to citizens, for instance, once a wind turbine project in the neighborhood is being planned. According to interviewee 9 from the municipality of Katwijk, the focus of participation processes was on the heating transition in the last few months. This also mainly went via webinars online by informing citizens, for example, by asking them how they feel about the upcoming changes in people's homes to replace natural gas and which opportunities they see.

All in all, the heating vision of Katwijk gained around 100 responses from citizens, which shows they are thinking along and finding these topics of importance. A select portion of citizens is willing to

think along and see what positive aspects this transition can bring. However, this also costs much time, energy, and resources from the municipality and citizens. Therefore, it is hard to create engaging participation activities. According to interviewee 10 from the municipality of Katwijk, the plans are to look carefully at how to involve and participate with citizens. In future participation processes, basic principles will be noted down when talking about the sustainability vision in Katwijk. Moreover, direct person-to-person conversations are needed to talk about possibilities to get citizens along. Most of the time, citizens are open to change but do not have all the information and want a clear overview of what is possible for them.

According to interviewees 9 and 11 from the municipality of Katwijk, most projects during the energy transition have a regional focus in the energy region. These projects, such as LSREP, are in early phases and feel too early to involve citizens. The input of citizens is more relevant once the municipality knows what possible locations are known. Therefore, the conversation should happen later in the process, according to interviewees 9 and 11. This also means that participation processes for LSREP and the heating transition will be done once concrete plans are known at the municipality. Interviewee 10 from the municipality of Katwijk states that it should be known to citizens in which phases of the energy transition they can participate. This will differ per project. Likewise, the communication should be transparent toward citizens. Otherwise, the expectations of the municipality and citizens have the risk of not aligning. That is important to consider before starting on new projects and not when the project is already well underway.

6.3.2 Social learning

The municipality of Katwijk wants to support participation regarding sustainability in two ways. One of them is broad citizen participation, which entails supporting the right behaviors, coming to agreements, supporting local initiatives, and highlighting good examples. The other one is stakeholder participation, which means that the municipality wants to contact societal stakeholders and give them the task of supporting and motivating citizens to participate (Gemeente Katwijk, 2022). Stakeholder participation focuses on collaborating with entrepreneurs, societal organizations, and regional organizations. Network meetings will be organized in 2022 and onwards, with sustainability as the central topic, focusing on the interaction between the municipality and the stakeholders on a local and regional level. The goal is to strengthen the connections and get insight into what is already achieved. Moreover, several speakers will inspire and talk about good practices on a local level to cultivate an environment that leads to new projects and renewed ambition for the energy transition (Gemeente Katwijk, 2022).

Likewise, broad citizen participation aims to involve citizens in the sustainability challenges for the municipality. This could be done by giving them active parts to play in specific projects, stimulating local initiatives, and letting citizens think about what kind of responsibility they can have. Citizen meetings and digital ways of informing will be used, such as the Citizenslab, to ask citizens about their opinions and clearly show citizens their roles. The municipality wants to show when participation is possible, and the 'Participatieladder' is essential for determining the conditions for projects. For the energy transition, the higher steps of the participation ladder are targeted to see co-creation to think along and participate in decision-making. Therefore, it is important to involve citizens open, transparent, and early to talk about citizens' roles, commitments, and contributions.

It should be noted that it differs per project and citizen group (Gemeente Katwijk, 2022). Examples are the new neighborhood approach with energy ambassadors for the heating transition and getting in touch with citizens to discuss making their homes more sustainable, with detailed help about their specific homes. Moreover, there are talks with the energy cooperative 'Katwijkse Energie Cooperatie' about their first project with solar panels on roofs (Gemeente Katwijk, 2022).

According to interviewee 8 from energy cooperative 'Katwijkse Energie Cooperatie', some form of co-creation is not established yet in Katwijk. However, this is something that is desired by the local energy cooperative. It would be good to talk with the municipality and alderpersons about policymaking regarding the energy transition and think together as partners about the proper coordination. This should focus on policymaking and implementing policies further along the road to make the energy cooperative successful and viable future. According to both interviewees 9, 10, and 11 from the municipality of Katwijk and interviewee 8 from the energy cooperative 'Katwijkse Energie Cooperatie', the focus is currently on getting in direct contact with citizens about energy savings in their own homes in which the energy cooperative and energy ambassadors help with information sessions in neighborhoods close to the citizens.

Furthermore, interviewee 10 from the municipality of Katwijk from the municipality of Katwijk states that different colleagues attend projects and initiatives from active citizens according to the relevance to the project. According to interviewee 8 from the energy cooperative 'Katwijkse Energie Cooperatie', it is sometimes not as clear which contact persons are available and direct contact with the alderman in Katwijk is needed to keep up the contact about new projects. A more proactive motivation from the municipality would be welcome. Moreover, there is the desire for the energy cooperative to be seen as a serious and relevant actor in the energy transition. According to interviewee 9 from the municipality of Katwijk, the municipality found that a more leading role from the municipality is needed. This is necessary to support the energy cooperative and smoothen the relationship between the municipality and the energy cooperative for long-lasting success.

Additionally, the municipality of Katwijk sees itself as having an active role in supporting and highlighting the local initiatives set up with monetary funds, knowledge, and expertise. A second task is wanting and having to collaborate with leading stakeholders such as companies, societal organizations, other governmental actors, regional organizations, local energy cooperatives and housing associations. Moreover, they find it important to work with regional stakeholders to share knowledge, lobby together, and coordinate which policies are decided on. For instance, in the context of the energy region, Katwijk makes agreements with other municipalities and other partnerships about circularity, such as 'Economie071' and 'Greenport Duin- en Bollenstreek'. The implementation of the new strategy is aimed to start in 2022, with support for local initiatives with knowledge, expertise, and funds. Once the nation-level government funds are available, the municipality wants to lead the heating transition with local citizens in neighborhoods. (Gemeente Katwijk, 2022).

Moreover, together with the municipality, information sessions are being organized, for example, about the neighborhood 'Hornes' in Katwijk and how to free it from natural gas. This gives citizens the information needed to know what the 'RES' entails and the possibilities, which helps to see the obstacles and chances during the energy transition in Katwijk. According to interviewee 9 from the municipality of Katwijk, the municipality enters a phase this year in which the collaboration with the energy cooperative should increase to let all interested citizens profit from the possibilities of getting solar

panels on roofs in a collective manner, even if that is not possible at their homes. Obstacles could be getting the business case right and ensuring that future projects will be established. Interviewee 9 from the municipality of Katwijk states that participation is crucial during the energy transition in Katwijk. Otherwise, the set goals cannot be achieved, and a sound vision of the involvement with citizens is needed. The municipality can have a leading role with good examples, but the real work must be implemented with local stakeholders and citizens.

6.3.3 Resource acquisition

According to interviewee 9 from the municipality of Katwijk, to involve citizens with upcoming plans during the energy transition, time, energy, and financial resources are necessary. Currently, the municipality of Katwijk is waiting for new funds from a national level. While the participation processes need to happen fast, the resources also need to be available to go into neighborhoods and talk about the possibilities, isolate their houses, install solar panels, and change how heating is done in homes. Interviewee 10 confirms these opinions and states that financial resources can be an obstacle when talking about participation processes and supporting citizens in their efforts to make their own homes more sustainable. Not only for citizens is this important, but also for upcoming participation processes in the energy transition. For instance, a heating network could be set up in the future in which participation from the start is essential. However, that process is resource-intensive and will cost time and energy from the municipality.

According to interviewee 8 from energy cooperative 'Katwijkse Energie Cooperatie', the energy cooperative 'Katwijkse Energie Cooperatie' already has concrete plans for solar panels on roofs which they own them for 16 years, and the municipality taking them over after 15 years with production and maintenance. These projects are still in early phases, and talks about potential financial funds still need to be discussed with the municipality of Katwijk. Support wise; there is financial support for starting up, notary costs, building a website, getting publicity, and informing citizens for the first year. Interviewees 9, 10, and 11 from the municipality of Katwijk state that the municipality supports the energy cooperative with their first project with solar panels on roofs in the start-up phase. Moreover, there is help with communication, creating a viable business case, and available knowledge. The support with resources is there to make it a reality. Moreover, there is involvement with active energy ambassadors who are also part of the energy cooperative and have relevant knowledge. They are engaged in neighborhoods with information meetings to inform citizens about possibilities.

6.3.4 Assessment and evaluation

Assessment and evaluation of participation processes are done using the found results from the surveys, both local and regional, according to interviewee 9 from the municipality of Katwijk from the municipality of Katwijk. These efforts are considered once the implementation plans are getting started later in the energy transition in Katwijk. For instance, the first pilot programs were created last year to make neighborhoods natural gas-free. In that case, the municipality notices a doubt among citizens if that is the right way to go. That led to new dialogues with citizens about the proper steps for now, instead of forcing our views into these neighborhoods. These conversations will continue in the coming period, according to interviewee 9 from the municipality of Katwijk from the municipality of Katwijk

6.4 Goals and outcomes

6.4.1 Effectiveness and efficiency of the transition

It should be noted that the phase of the energy transition is mainly situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implantation phase should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Katwijk. Most plans and visions are in the initiation and design phases. It has to be seen if these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years.

Katwijk is following the ambitions in the Dutch climate agreement, which means that 49% of CO_2 reduction will be realized in 2030, and 95% of CO_2 reduction will be realized in 2050. This also means that in 2050, the whole energy region Holland Rijnland will be energy neutral, which means that renewable forms of energy produce all used energy. This will mostly come out of the region, with the rest coming from nearby regions. A minimum of 30% energy reduction in 2050 should be completed to achieve these goals. It should be noted that it is not known in comparison to what energy usage and in which year this number is based. The following tasks are the priorities in Katwijk (Gemeente Katwijk, 2020):

1) The development of the Regional Energy Strategy (RES) with and for the region;

The 'RES' is being developed with collaborations and shared ambitions in a multi-year program. Renewable energy systems are being designed in the energy region Holland Rijnland, fitting in with the available space and areas. Intensive collaboration between regional and local partners is needed, and Katwijk explores the potential forms and ways of producing renewable energy (Gemeente Katwijk, 2020).

2) The development of a transition vision for heating in the municipality of Katwijk with partners;

This transition vision aims to make the built environment of Katwijk natural gas-free. The municipality's role should become more apparent in the coming period (Gemeente Katwijk, 2020).

3) Stimulating and motivating the local energy transition among entrepreneurs and citizens;

Collective and individual actions will be explored with heating and electricity. The municipality will use experience from outside and connect it to the local plans of Katwijk. Examples such as solar panels on roofs, wind turbines, aqua thermal energy, geothermal energy, residual heat, and forms of heat transport networks are stated as possibilities (Gemeente Katwijk, 2020).

4) Strengthen the leading and exemplary role of the municipality of Katwijk in their real estate.

The municipality of Katwijk wants to reduce emissions in its real estate within their financial and technical possibilities. New projects will be standard energy neutral and deliver energy where possible and stimulate the municipal organization to use sustainability as a norm in future endeavors.

It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Katwijk. Most plans and visions are in the initiation and design phases. It has to be seen if

these goals are made more tangible and how they fair once the implementation phase is reached in the coming period.

6.4.2 Social acceptability of the transition

According to interviewee 9 from the municipality of Katwijk, the heating transition is the most important upcoming topic for Katwijk. The plan is to explore neighborhoods and go into meetings and talks with citizens to find out how citizens support these upcoming changes and what is socially acceptable to them. Before making decisions in the municipality and within the city council, it is good to go into the neighborhoods and talk with citizens and take that extra step and ask: what do citizens want and need? Citizen participation is essential to create support among citizens and create a feeling of ownership. Moreover, a big part of the sustainability challenges has to be implemented by citizens themselves (Gemeente Katwijk, 2022). With means of the regional and local surveys, one of the citizen participation efforts implemented a digital map of possible areas for LSREP in the form of wind and solar to measure what kind of support and social acceptance is currently present among citizens.

According to interviewee 9 from the municipality of Katwijk, the municipality notices support for the energy transition among their citizens. In general, citizens see positive changes in measurements to save energy at home but are less supportive of LSREP, such as big wind turbines and big solar panel parks near Katwijk. When it comes to youth, the municipality notices that they are more open to possible LSREP. Moreover, according to interviewee 9 from the municipality of Katwijk, citizens can find it hard to determine which signals from different levels of government they need to believe. It can be uncertain for citizens to know what techniques and innovations are the most important and are afraid if they take measurements now that an innovation is more relevant in the coming years and instead wait for that. That is something that does not help to accelerate the local energy transition with the current techniques available. In the future, an active participation process is needed regarding the possibilities for LSREP in the energy region Holland. The main focus will lie on support and the process of social acceptability, according to interviewee 9 from the municipality of Katwijk.

6.5 Governance

As a formal partner in the energy transition of Holland Rijnland, the municipality of Katwijk has the objective to, both on a regional and local level, form policy, make decisions, and implement these decisions. The municipality is regionally working in several working groups. For instance, in the 'Duin- en Bollenstreek' and the Greenport 'Duin- en Bollenstreek' to form policy in line with the regional challenges that need to be dealt with. On a regional level, the RES 1.0 was determined last year. On a local level, Katwijk started by working on the local heating vision as part of the translation of RES 1.0 (Gemeente Katwijk, 2022). According to interviewee 9 from the municipality of Katwijk, the local heating vision should be finished in 2022. The local heating vision is currently in the city council. Several pilot neighborhoods are chosen to be the first to become natural gas-free in 2030.

Moreover, according to interviewee 9 from the municipality of Katwijk, the local energy strategy is in the making. This local energy strategy will help Katwijk get insights into how the collectively set goals can be made a reality, what is needed and how Katwijk will get there. Most of the work, energy, and resources are currently put into documents and receive feedback on the vision in dialogue with organizations, citizens, and other relevant stakeholders. It can be seen as a roadmap with plans for the

energy transition in Katwijk, and the implementation has yet to be started. According to interviewee 10 from the municipality of Katwijk, the local energy strategy can ultimately function as a straightforward way the regional vision is translated into local actions.

On a regional level, there are dialogues with the region around Leiden to talk about new sources for residual heat coming out of Rotterdam. Close collaboration is needed to get future projects off the ground. Moreover, the topic of LSREP is of importance. According to interviewee 9 from the municipality of Katwijk, this leads to discussions in the energy region with other municipalities and the province of South Holland. One of the main topics is 'Het Groene Hart' and the lack of possibility for LSREP. That naturally means that with the same renewable energy production ambitions, the possibility of a lot more wind turbines or solar parks in our nearby area, such as the 'Duin- en Bollenstreek', becomes an option. That creates obstacles because there is collaboration on a regional level, decision-making-wise, and local decision-making. Currently, the local and regional levels do not necessarily overlap on this topic. Local governments can independently decide what is desirable in their municipality.

Therefore, the local and regional level balance is complicated because the municipalities and region need each other. Creating a LSREP map with the support of all municipalities remains challenging and an urgent topic. All in all, there is a regional map with possibilities for LSREP. However, according to interviewee 9 from the municipality of Katwijk, the process towards this map was not always transparent, and sometimes possible locations were removed without reasoning for removal being evident to all municipalities. The reasons vary from having no support and from citizens to municipalities that still had to do their participation processes. Therefore, an evaluation point for the upcoming RES decision-making is to discuss the norms and rules for participation with other municipalities to transparently evaluate the local participation activities and conclusions of municipalities in the energy region. In that way, involved stakeholders can assess how local participation processes were implemented and if there is support for possible areas. The idea is still present to work together, but it is getting more complicated in the RES process. This is primarily due to potential locations being removed to produce renewable energy.

6.6 Key Take-aways

Table 8: Key Take-aways for the municipality of Katwijk

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Surveys on regional and local level about LSREP - Broad communication about informing, stimulating and activating citizens - Lack of clarity in communication towards citizens about what they can do and expect - Focus on participation in heating transition - Lacking participation, partly due to COVID-19 - Participation with citizens in concrete projects
Activities: *Social Learning*	- Plans for citizen participation with co-creation - Plans for stakeholder participation with focus on network meeting - Plans for sharing knowledge and best practices with local and regional partners for implementation phase - Close contact with local energy cooperative about informing citizens, wishes from local energy cooperative for co-creation and co-production

Activities: *Resource Acquisition*	- Support in form of resources, knowledge, time and financial funds for citizen initiatives - Financial funding from the national government is needed
Activities: *Assessment and Evaluation*	- Pilots in neighbourhoods regarding heating transition and evaluate support among citizens
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Development 'RES 1.0' with region; 2) Development of a heating transition vision in Katwijk with partners; 3) Stimulating and motivating the local energy transition among entrepreneurs and citizens 4) Strengthen leading and an exemplary local governmental real estate; Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Heating transition participation about desires of citizens to make transition acceptable and create support; - Citizens find energy transition overall positive with mostly energy savings measures and small-scale energy production - LSREP has little support - Citizens have concerns regarding current techniques to become irrelevant
Governance	- **Regional**: collaboration on future heating transport networks from Rotterdam to the Leiden region; - **Regional:** collaboration about LSREP production locations. Difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations - **Regional** complexity: 1) support among local citizens with possible locations; 2) equalness of local participation processes; and 3) influence of province of South Holland on possible locations; - **Local:** local heating vision. - **Local**: energy strategy 2022 as translation from the RES 1.0 to a local vision and implementation plan;

7 | MUNICIPALITY OF LEIDEN

Summary

The Leiden case participation focuses mainly on the heating transition because that proved to have the most concrete local plans. It is difficult to reach all citizens and capture opinions because the usual suspects are the most present. There were no alterations to local energy transition plans after participation with citizens. There is little knowledge sharing with other regional partners. Uncertainty regarding the capacity and expertise of the municipality to support citizen initiatives is present. There is on and off contact with the energy cooperative, and a more leading role from the municipality is desired. There is regular contact regarding the heating transition. Instead of using the social capital available in citizens, there is a focus on support to collaborate and share knowledge, skills, and expertise to co-create and co-produce energy transition plans. Neighborhood ambassadors help inform and support fellow citizens with their measurements at home regarding energy saving. There is assessment and evaluation in the form of broad and policy monitoring. The goals and outcomes focus on energy saving, renewable energy production, and a natural gas-free heating system. There is a struggle to incorporate citizens for support and social acceptance of the energy transition to come, and there is a need for support for their policies. The governance dimension highlights that Leiden lacks the tools to implement the energy transition locally. This means regional collaborations are essential, while that was also lacking. The regional partnerships were weak, and Leiden focussed on more concrete local topics such as the heating transition. The regional decision-making regarding large-scale energy production is complex, mainly due to a lack of possible locations.

7.1 Introduction

Leiden is a municipality in the Netherlands, in the province of South Holland. The municipality has 124,428 citizens 124,428 (CBS, 2021). Leiden is part of the energy region Holland Rijnland and is occupied with local and regional decision-making processes in the energy transition. On a local level, the municipality of Leiden has set the goal to be free of natural gas as heating in 2050. To achieve these goals, as one of the first municipalities of the Netherlands, Leiden started with a vision regarding heating (Berenschot, 2019). The municipality of Leiden created two main reports about their vision and implementation plans regarding the energy transition in the coming years. These reports give insights into how the municipality of Leiden wants to form the energy transition locally with citizens, societal organizations, and market stakeholders. The implementation plan is a report with actions that the municipality of Leiden will work on in the years from 2020 to 2023. The following main goals are the most important in the coming years: 1) energy savings, 2) producing renewable energy; and 3) a natural gas-free heating system (Gemeente Leiden, 2020).

In Leiden, there are currently two scenarios for the future: the current path towards 2030 and the second path towards 2050 to become climate neutral. The current approach towards 2030 aims for

around 7% CO_2 reduction compared to 1990. The ultimate goal is 49%, so there is a long way. Factors that will influence the reductions are the expected growth of Leiden and the lack of enough production of renewable energy in Leiden. Leiden cannot achieve the renewable energy goals locally, thus needing to make decisions about these challenges on a higher level, such as a regional level. Moreover, the energy consumption reduction needed cannot only be solved by the municipality of Leiden. Otherwise the CO_2-reduction will get stuck at around 40%. With the help of the municipalities in the region a 100% CO_2-reduction is a possibility (Over Morgen, 2021).

7.2 Actors

The key stakeholders in the municipality of Leiden are:

Table 9: The key stakeholders in the municipality of Leiden

Actor	Actor group	Formal/Informal	Non-profit/Profit	Public/Private
RES Holland Rijnland	State	Formal	Non-profit	Public
Province of South Holland	State	Formal	Non-profit	Public
Water board Rijnland	State	Formal	Non-profit	Public
Housing associations	Market	Formal	For-profit	Private
Energy producer: Vattenvall	Market	Formal	For-profit	Private
Grid operator: Liander	Market	Formal	For-profit	Private
Energy ambassadors	Community	Informal	Non-profit	Private
Energy cooperative: 'Zon op Leiden'	Third sector	Formal	Non-profit	Private
Energy cooperative: 'Energiek Leiden'	Third sector	Formal	Non-profit	Private
Neighborhood ambassadors	Community	Informal	Non-profit	Private
Duurzaam Bouwloket	Market	Formal	For-profit	Private

7.3 Activities

7.3.1 Articulation and alignment of expectations

The municipality of Leiden worked on a 'Handelingsperspectief', which focuses on the initiation and design phase. Moreover, the 'uitvoeringsprogramma,' the execution program, focuses on implementing the energy transition and is the way to a local energy strategy for Leiden. To set up the 'handelingsperspectief', the municipality of Leiden had conversations with multiple stakeholders such housing associations in Leiden such as 'de Sleutels', 'Ons Doel', 'Portaal', and grid operators 'Nuon' and 'Liander'. These stakeholders advised about the form and content of the 'handelingsperspectief'. All in all, the municipality of Leiden concludes that the public responses did not lead to alterations of

the ‘handelingsperspectief’. However, general remarks such as sharper goals and setting up plans to monitor these goals were considered for the ‘uitvoeringsprogramma 2020-2030’. (Gemeente Leiden, 2020a).

The municipality of Leiden defines participation as managing the interests, expectations, and wishes of stakeholders and creating shared interests and solutions. Moreover, participation should entail the active involvement of stakeholders in the decision-making process. Effective communication strategies are essential for the municipality to communicate and inform citizens about the impactful energy transition. One of these tools is the ‘GaGoed’ campaign. This campaign informs citizens about Leiden's primary goals and ambitions and how Leiden will achieve these goals. Moreover, the municipality needs to share topics and projects that will take place and how citizens can contribute and be involved with these projects. These projects ask for specific participation approaches (Gemeente Leiden, 2020b).

Participation rounds about the ‘RES 1.0’ and energy transition in a broad sense took place in the Fall of 2020 and 2021. This happened on local and regional levels in surveys, webinars, and direct conversations in the street. 10,000 citizens were reached, and this is seen as a first step by the municipality of Leiden to involve citizens (Gemeenteraad Leiden, 2021). Besides the involvement of stakeholders, there were online sessions with local expert groups about the energy transition. In this process, 13 external stakeholders out of the network were invited to think along about the concept of RES and the road to ‘RES 1.0’. These stakeholders were citizen initiatives, entrepreneur association ‘BioSciencePark’, ‘Energiek Leiden’, energy cooperatives ‘Rijnland Energie’ and ‘Zon op Leiden’, ‘De Leidse Milieuraad’ and Leiden University. ‘De Leidse Milieuraad’ was asked for recommendations by the municipality of Leiden, and these recommendations essentially became part of the ‘RES 1.0’ (Gemeenteraad Leiden, 2021).

According to interviewee 12 from the municipality of Leiden, several conversations in the city, both online and offline, took place. This was mainly focused on heating because that topic reaches more citizens directly at home. Discussions were also held about the RES and the possibilities for wind and solar energy in close-by areas, but these talks were mainly done with stakeholders and neighborhood associations. In general, citizens will have feedback and opinions when concrete plans are available, like in the heating transition. According to interviewee 12 from the municipality of Leiden, it is hard to do participation right. There are extremes on both sides with opinions about the local and regional energy transition. Citizens ask: why not do it the other way? Or other citizens ask why we do these things at all and that the municipality is not noticing and acting in the interest of citizens. Conversations with citizens against current energy transition plans seem to keep happening, and there is a feeling that it is impossible to win them over. Moreover, these participation processes take much time. Only a select portion of the available public officials is working on the transition, which means that choices have to be made on where to focus.

According to interviewee 12 from the municipality of Leiden, it is hard to get citizens along that is in the middle and do not have extreme opinions on either side of the spectrum. It is hard to determine how many citizens are reached, especially with online participation processes that do not say everything. In the end, 1,000 citizens saw or participated in the live conversations. However, 14,000 live in Leiden, so there is still a long way to reach many more citizens. There are many participation activities, but the opinions and views of the municipality and involved citizens are not well aligned.

The active citizens say opposite things of what the municipality is stating in the 'handelingsperspecitef'', especially when it comes to the heating transition. That conversation is not well aligned and went wrong is during the formation of the 'handelingsperspectief' for the energy transition, according to interviewee 13 from the city council of Leiden. Likewise, interviewee 13 from the city council of Leiden states that the municipality views participation as 'process participation'. That means citizens are involved, but no fundamental changes will follow with these participation activities.

Moreover, participation in all policy domains seems to challenge the municipality. Citizens feel significant changes are about to happen, which means tensions can run high between citizens and the municipality. Citizens become better at networking with other citizens and sharing their knowledge, which gives them more resources to make an impact, according to interviewee 13 from the city council of Leiden.

It is hard for the municipality to assess what topics they can ask citizens their opinion about in the energy transition. Some projects and visions can be vague and abstract for citizens. Other projects come directly behind the door of citizens at home. The proper communication about the energy transition seems to be an issue for the government as a whole, according to interviewee 13 from the city council of Leiden. Interviewee 14 from 'Zon op Leiden' confirms this and states that many diverse opinions are among citizens, making the situation complex. It is hard for the municipality to choose when to share plans and projects, especially if views are opposite of the current methods of the municipality. According to interviewee 12 from the municipality of Leiden, knowledge sharing with other municipalities in Leiden about local participation processes is not actively happening. Municipalities know that it happens in other municipalities, but that is mostly it. There is no list of best practices, and each municipality does its participation processes in different ways. For example, Zoeterwoude does have more direct contact with its citizens.

7.3.2 Social learning

In feedback sessions with citizens about the implementation and formation of the 'RES 1.0', feedback was provided on the input citizens gave during sessions about the regional energy strategy, according to interviewee 12 from the municipality of Leiden. These conversations mainly focused on heating because these plans and projects are already more concrete. The municipality of Leiden mentions the following two lessons as learned according to participation activities while forming the 'handelingsperspectief': 1) investing in citizen initiatives pays itself back, and 2) voices and opinions of citizens out of neighborhoods are essential. Lesson 1 shows that the municipality notices that citizens are professionalizing and that collaborations create more visibility and awareness among citizens. The gap between the government and citizens can become smaller, improving the support and social acceptability of the energy transition. However, it is hard to determine frameworks and rules about expectations from both sides and which conditions are applied to these collaborations.

Moreover, there is uncertainty if the municipality has enough capacity to support citizen initiatives (Gemeente Leiden, 2021a). Lesson 2 states that conversations with neighborhood stakeholders are essential to start with the energy transition. A good relationship between the municipality and stakeholders is needed to create the most effective and efficient project supported by local stakeholders. According to interviewee 15 from the municipality of Leiden, there is regular contact

and meetings with relevant stakeholders such as energy cooperatives, the Water Board, energy company Vattenfall and grid operator Liander about the heating transition.

According to interviewee 14 from 'Zon op Leiden', the neighborhood ambassadors help with setting up advice for fellow citizens so that they can apply thermal insulation to their homes. The municipality has plans mentioned in the 'handelingsperspectief' (Gemeente Leiden, 2020a) to involve citizens more in forming the energy transition. Still, the initiatives are thus far not invited to think along in meetings. Therefore, energy cooperative 'Zon op Leiden' asked the municipality to state that active citizens are appreciated and show it. The question rises, according to interviewee 14 from 'Zon op Leiden': "*What do you want to do as a municipality for the initiatives that citizens set up?"*. It took a long time to get available roofs for solar panels, but ultimately the energy cooperative is happy with them. Most of the time, the energy cooperative needs to ask about details and concrete plans, while they would like it to be the other way around. The municipality also shows initiative for new concrete projects and how these can be formed because it can help achieve the municipality's goals and reduce their workload if citizens take that responsibility. All in all, the collaboration is getting better, but there is still a way to go. According to interviewee 14 from 'Zon op Leiden', there is now a set contact person in the municipality for them. That helps to coordinate projects and get in touch with the right contact persons in the municipality. However, the interviewee also states: *"Many initiatives take a lot of time to set up. It would be nice if there is support with resources from the municipality. That we are facilitated, and appreciation is shown. It shouldn't always be about money, don't get me wrong. But facilitating can also start with showing initiative and offering a budget in return. That's not happening to that extent now."*

Moreover, the energy transition for the municipality of Leiden is a process in which several stakeholders are involved. According to interviewee 12 of the municipality of Leiden, stakeholders such as housing associations, grid operator Liander, water company Dunea, and the Water Board are involved in the process. According to interviewee 13 of the municipality of Leiden, there is potential for a more intensive collaboration with the knowledge that is available under active citizens in Leiden. Leiden is a city with a university and enthusiastic citizens that have careers as professors and engineers and want to involve them with the energy transition in Leiden for free. Currently, the municipality is not allowing these citizens to operate at their maximum level. The municipality needs to learn how to coop with these new forms of interaction with citizens and see them as valuable assistants and knowledge to form and implement policies.

Furthermore, according to interviewee 13 of the municipality of Leiden, there have been moments of assessment and evolution about the feedback of active citizens on local plans for the energy transition. However, there were no reasons to change current plans according to the municipality which is disappointing according to interviewee 13. These feedback plans were sometimes multiple pages, which would otherwise cost a lot of public funds to be done by professional consultancy organizations. "*These active citizens are experts in their field, and their feedback is not taken well into account. These citizens give free consultation for their city, with heart and soul, and get the same response as other citizens without a well-founded opinion"*. Therefore, an expert group with active citizens would be welcome to create a more formal and constructive of incorporating this citizen's expertise in policymaking. Interviewee 13 of the municipality of Leiden states there is a lot organized among citizens, but the knowledge available does not seem appreciated enough by the municipality. Interviewee 13 hopes that it will go better in the future because these resources in the form of intelligent and capable citizens

failed with the current vision for the energy transition—interviewee 14 from 'Zon op Leiden' shares a similar sentiment. The sessions with the municipality of Leiden for solar panels on roofs were fruitful. However, there have not been any new meetings about upcoming policy creation or implementation in the local energy transition of Leiden.

7.3.3 Resource acquisition

According to interviewee 14 from energy cooperative 'Zon op Leiden', the focus to support citizens is mainly focused on financing information sessions of active citizen initiatives, supporting neighborhood ambassadors, and offering available roofs to the energy cooperatives for solar panels installation, according to interviewee 13 from the city council in Leiden and interviewee 14 from energy cooperative 'Zon op Leiden'. Additionally, according to interviewee 13 of the city council of Leiden, the municipality supports information sessions via webinars, helps the neighborhood ambassadors with subsidies to operate, and goes into the neighborhoods to talk with fellow citizens about the energy transition primarily focused on heating. Likewise, there are initiatives to set roofs available for the local energy cooperative to start with solar panels on roofs of buildings and houses in Leiden.

7.3.4 Assessment and evaluation

The municipality of Leiden focuses on two forms of monitoring the energy transition. The first focuses on trends and developments in energy consumption, energy production, and CO_2 emissions. The first form of monitoring (broad monitoring) gives more insights into general numbers about CO_2 emissions, energy consumption, and other trends. It shows the current status of the energy transition, but it can be hard to determine which actions are necessary to take. Local policy measures are little impactful in this regional energy transition (Over Morgen, 2021).

The second monitor (policy monitoring) focuses on creating and implementing policies and the expected results from these policies. This is the case because external factors present are not necessarily all linked to the policies of the municipality of Leiden. These are qualitative and are about topics such as subsidies and campaigns to create social support among citizens. This information gives a good overview but needs to be combined with the first monitoring form. It can help better determine the impact of individual actions on the local level in Leiden, but it does not provide a complete overview of the local energy transition. Combining both monitoring options gives the complete information to make new decisions for the future of the energy transition (Over Morgen, 2021). Moreover, the yearly execution plans of the municipality will be reviewed and changed where needed. The city council of Leiden will be notified of these changes, and reports on the annual financials will assess the three main themes mentioned in paragraphs 7.4.1.

7.4 Goals and outcomes

7.4.1 Effectiveness and efficiency of the transition

The energy transition is mainly situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implementation phase should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Leiden. Most plans and visions are in the initiation and design phases. It has to be seen if

these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years. Leiden's municipality worked on creating plans for their vision in 2030 and 2050 called 'Handelingsperspectief Gemeente Leiden Energietransitie' and the execution plans called 'Uitvoeringsagenda 2020-2023'. The execution plan for the energy transition has the function of setting the proper steps towards the goals set in 2030 and 2050. This helps form a more substantial role for the municipality, measurements, and activities to make plans a reality (Gemeente Leiden, 2020b). The following objectives are leading (Gemeente Leiden, 2020a):

1) Energy-saving;

The municipality of Leiden aims to reduce the total energy consumption by 1.5% each year. The regional ambition is to save 30% of energy compared to current energy consumption. The primary approach to achieve the goals are the following: 1) stimulate citizens to make their homes more sustainable with the help of neighborhood ambassadors and by providing funds; 2) work with housing associations to make homes more sustainable; 3) stimulate energy-saving programs among societal organization and business companies (Gemeente Leiden, 2020b).

2) Renewable energy production;

The municipal goal is to increase the renewable energy production of Leiden by 10% locally every year and achieve significant increases in the heating network of Leiden when it comes to efficiency. The following approaches will be used to achieve increasing renewable energy production: 1) collaboration on a regional level with the 'RES' and regional heating structure; 2) collaborating with nearby municipalities on a future proof electricity grid; and 3) small-scale energy production with solar panels on roofs of buildings in Leiden.

3) A natural gas free heating system;

The goal is to become natural gas-free in 2050 and have six neighborhoods natural gas-free in 2035. This means about 50,000 homes in total, with a rate of 1,500 homes per year to reach set goals. The primary approach to achieve the set goals is the following: 1) creating a new policy because of innovations and development in the heating and energy sector; 2) creation of a new heating network for the south-west of Leiden; 3) collaboration with the market stakeholders with the municipality as the leader for new heating methods; 4) neighborhood approaches to start with the neighborhoods with most possibilities to transfer the heating systems; and 5) new efficient and effective energy systems with the municipality as a leader in a municipality with increasing inner-city areas.

7.4.2 Social acceptability of the transition

The municipality of Leiden marks societal acceptability and support for policy and implementation of policy in the region and on a local level as growing essential topics. The need and desire for visible results become bigger. The involvement, acceptance, and participation of citizens and business companies are necessary to reach the policy goals mentioned in paragraphs 7.4.1. and earlier. This best be seen with the involvement of the neighborhood's ambassadors in Leiden and their impact on the relationship with citizens and the local government. However, according to interviewee 12 of the municipality of Leiden, it is hard to get a grasp of all citizens in Leiden and what they think of the

energy transition. Most of the time, the extreme sides are highlighted, which creates friction between people in favor and not in favor of the upcoming energy transition. It costs energy, time, and financial resources to reach all citizens and support and accept the transition.

7.5 Governance

The territories of Leiden offer zero to no available space for LSREP. That means that Leiden misses an option to reduce CO_2 emissions in their municipality. The energy transition becomes more challenging for Leiden to realize because of a growing amount of CO_2 emissions in the coming years and insufficient space for LSREP (Over Morgen, 2021). Currently, the municipality misses the needed instrument to implement large-scale energy transition in the local built environment. There is a need for a good connection between the local, regional and national challenges ahead (Gemeente Leiden, 2020b).

On a regional level, the municipality of Leiden wants to accomplish the following: 1) realization of a regional heating transport network (for instance, coming out of Rotterdam harbor) and making that crucial and priority in the energy transition in Leiden; 2) anticipate for increasing demand of heating out of the upcoming regional heating network and work together with local partners out of the region and other municipalities close-by, and 3) realization of as possible sustainable sources for every heating network in Leiden (Gemeente Leiden, 2020a). The goals and measurements mentioned on a local scale can be read in paragraph 7.4.1. The municipality of Leiden sees itself as strongly dependent on nearby municipalities and collaborations on a regional scale during the energy transition. Therefore, the municipality focuses on collaboration and alignment within the region. The municipality sees other municipalities not as competitors but as partners. Rest heat coming from Rotterdam is crucial, and a rising shortage of heat will pressure regional collaborations. Therefore, a performing governmental role instead of a facilitating part is needed that guides and explores the energy transition (Berenschot, 2019).

Leiden sees the 'RES' as primarily a discussion about available space for LSREP. In Leiden, that discussion is critical to a lesser extent, looking at the zero to no open space available. However, in the 'RES 1.0', search areas have been marked in the energy region Holland Rijnland, including locations in Leiden areas. The municipality wants to have conversations with relevant stakeholders, especially citizens living in these marked areas. These search areas are not finite and are seen as possibilities for producing renewable energy (Gemeente Leiden, 2021).

According to interviewee 12 from the municipality of Leiden, policies regarding the energy transition started in 2017 and predominantly only focused on heating. However, that changes with the 'uitvoeringsprogramma' in 2021 with broader topics such as mobility, energy-saving, and solar panels on roofs. The 'RES' is also one of these topics but was not that important in the earlier phases because it mainly focused on search areas for solar and wind, while Leiden focused on heating. This is changing because the energy transition is broader than heating alone. According to interviewee 15 from the municipality of Leiden, the 'RES 2.0' will take place in 2022, and Leiden will not play a leading role there because most efforts and time of the municipality of Leiden will primarily focus on the heating transition. The 'RES' is mainly focused on possible locations for LSREP.

On a regional level, thirteen municipalities, the Water Board, and the province of South Holland are discussing the 'RES'. Ultimately, 'RES 1.0' was determined with the involved stakeholders, except for the search areas for LSREP. That was mainly due to a complex situation in which the decision-making of the province of South Holland about the area called 'Het Groene Hart' clashed with

ideas of the energy region Holland Rijnland of possible search areas in 'Het Groene Hart'. That means that questions arise about the usability of the 'RES 1.0' according to interviewee 12 from the municipality of Leiden. Interviewee 13 from the city council of Leiden notices a similar sentiment and states that the translation of energy transition, in reality, is hard once areas are scrapped. There are discussions about a single wind turbine, which is the beginning of reaching the regional energy transition goals. If every municipality says no to LSREP, the national and regional goals will not be reached. According to interviewee 12 from the municipality of Leiden, the municipality of Leiden does not want to give up its last areas of green space to place new wind turbines. All municipalities are, in a way, 'NIMBY' (not in my backyard). Still, the municipality of Leiden has heating as a frontrunner in its portfolio, which helps in the regional decision-making and can be seen as useful spare change with the discussions regarding the 'RES'.

Likewise, interviewee 13 from the city council in Leiden views the energy transition as a governmental overcommitment. There is no good strategy or checkpoints built-in that can help evaluate specific criteria that can change course. Moreover, city council members do not always have the necessary knowledge and skills to assess the energy transition plans, which is harmful looking from the perspective of democratic control. *"In the end, city council members need to determine and assess energy transition plans for the coming 40 years with the right skills and knowledge, which is lacking currently."* according to interviewee 13 from the city council of Leiden. Moreover, there is an issue of continuity with the municipality and policy officers leaving for other organizations. Therefore, knowledge and resources are leaving Leiden. Likewise, external organizations write many programs and visions, and the question remains: who will assess these reports and assessments?

An example could be active citizens or knowledge institutions that think along, according to interviewee 13 from the city council of Leiden. As a local city council, it is hard to perform the democratic control needed on the regional plans in the 'RES'. Due to the many layers of local, regional, provincial, and national levels, the system became very complex. *"RES Holland Rijnland can feel like a black box. The decisions are already taken on a regional level, and no real changes can be made on the local level by, for instance, the local city council and citizens"*. It is hard to determine the correct period when influence is possible, and the processes are confusing, according to interviewee 13 from the city council of Leiden.

7.6 Key Take-aways

Table 10: Key Take-aways for the municipality of Leiden

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Not alterations in initiation and implementation in local plans after participation - Participation with local stakeholders about 'RES 1.0' - Participation focusses on heating, because of concrete plans - Difficult to reach all citizens and capture all opinions - No knowledge sharing with region about participation
Activities: *Social Learning*	- Uncertainty about capacity and knowledge within municipality to support citizen initiatives - On and off contact with energy cooperative, more initiative from municipality is desired - Regular contact about heating transition with stakeholders

	- Underutilized potential for collaboration with active citizens with knowledge, skills and expertise
Activities: *Resource Acquisition*	- Financial support for information sessions - Financial support for energy ambassadors - Financial support for energy cooperative projects, such as solar panels on built environment roofs
Activities: *Assessment and Evaluation*	- Broad monitoring of energy transition - Policy monitoring of energy transition
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals**: 1) Energy saving; 2) Renewable energy production; 3) Natural gas free heating system; Hard to assess four priorities, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Need and desire for societal acceptance and support for policy - Struggle to incorporate citizens for support and acceptance
Governance	- **Regional**: regional collaboration deemed less important in past years, because of focus the local focus on heating - **Regional**: complex decision-making about energy production, because of lacking possible locations - **Regional**: difficult relationship between province of South Holland as both partner and higher governmental actor LSREP locations - **Local**: lacking tools to implement energy transition, need for regional collaboration; - **Local**: lacking skill, knowledge and vagueness when assessing regional energy transition plans

8 | MUNICIPALITY OF LISSE

Summary

The Lisse case participation is mainly regional, with a focus on communication to inform citizens about the energy transition. Gathered feedback often focuses on the implementation phase, while Lisse is still in the design and initiation phase with their regional and local energy strategy. There are doubts if all citizens are reached with current participation efforts. Social learning is weak, with little influence of citizens on the local policy formation processes regarding the local energy strategy. The energy cooperative and municipality have a fragile relationship due to a lack of clear communication. There are plans from the municipality's early stages to involve citizens in citizen forums in later phases. Active citizens can feel like implementation takes longer, and continuous pressure is required for feedback and evaluation with the local authorities. The goal in Lisse is mainly focused on energy saving. The information regarding social acceptability and support for large-scale energy production is based on the regional participation process similar to the energy region Holland Rijnland case. This means little support for large-scale projects and a more positive attitude towards smaller-scaled energy production and savings. The governance dimension shows that local energy transition plans are primarily equal to the RES 1.0 on a regional level. The local energy strategy is a vision, while implementation is due for later phases. The later stages, such as 2030 and 2050, are vague to most citizens and implementation plans need to be formed for the presented vision.

8.1 Introduction

Lisse is a municipality in the Netherlands in the province of South Holland. The municipality has 22,984 citizens (CBS, 2021) and is situated in the 'Bollenstreek'. The 'Bollenstreek' is a region in the northern part of the province of South Holland (Duin & Bollenstreek, 2022). The municipality of Lisse is currently part of the same municipal organization called 'HLT,' together with the municipality of Hillegom and Teylingen. In 2017, the three municipalities merged their executive organization, serving three city councils, municipal authorities, and their citizens in the organization HLT (Hillegom, Lisse, and Teylingen). The municipalities consist of the following towns: Hillegom, Lisse, Sassenheim, Voorhout, and Warmond. The focus, in this case, will be on the municipality of Lisse (HLT, 2022).

The municipality of Lisse is active in the energy region Holland Rijnland, alongside other municipalities in the region. Alongside the regional energy transition plans, the 'RES', Lisse made efforts to establish their local energy strategy called the 'LES' ('Lokale Energiestrategie', in Dutch). This was created because it gives a clear overview of the local situation and the possibilities in the municipality of Lisse. It provides insights into how the energy transition in Lisse can take place and what is required to become energy neutral in 2050. The term energy neutral is defined, by translation, as the following in Lisse: *"CO_2-neutral means that there are no more emissions of fossil CO_2, i.e., CO_2 that is released during the combustion of natural gas, petroleum, and products derived from (petrol, diesel), coal and*

lignite." (Gemeente Lisse & Royal HaskoningDHV, 2021). The 'LES' shows the total energy consumption and how that will evolve over the coming years and features which measures are essential to reach the set goals for 2030 and 2050. It mainly focuses on making energy households more sustainable and mobility. It should be noted that the 'LES' is a general strategy, and the implementation plan is being worked on after the 'LES' is established, which happened in November 2021 (Gemeente Lisse & Royal HaskoningDHV, 2021).

In general, when nearing 2030, the municipality of Lisse plans to start with the following priorities: 1) energy saving, 2) sustainable heating, and 3); low scale energy production techniques (lower than 15 kW of power) to generate energy and make mobility more sustainable. After 2030, low-scale energy production growth should be possible and possibly LSREP. These growth possibilities will determine if Lisse may become energy neutral in 2050 (Gemeente Lisse & Royal HaskoningDHV, 2021). Moreover, important stakeholders such as citizens and entrepreneurs are involved in making the LES. In two phases, the municipality has asked citizens and other involved stakeholders about the LES and RES 1.0 and informed them about what the energy transition will entail, and gave them the possibility to ask questions in webinars about three themes: 1) energy savings at home; 2) low scale energy production around citizen's own homes; and 3) LSREP in the form of solar and wind. (Gemeente Lisse & Royal HaskoningDHV, 2021).

8.2 Actors

The key stakeholders in the municipality of Lisse are:

Table 11: The key stakeholders in the municipality of Lisse

Actor	Actor group	Formal/Informal	Non-profit/Profit	Public/Private
RES Holland Rijnland	State	Formal	Non-profit	Public
Province of South Holland	State	Formal	Non-profit	Public
Water board Rijnland	State	Formal	Non-profit	Public
Water company Dunea	Market	Formal	For-profit	Private
Grid operator: Liander	Market	Formal	For-profit	Private
Housing associations	Market	Formal	For-profit	Private
Communication orgranisation 'EMMA'	Market	Formal	For-profit	Private
Energie cooperative 'Lisse Duurzaam'	Third sector	Formal	Non-profit	Private
Consultancy Royal HaskoningDHV	Market	Formal	For-profit	Private
Duurzaam Bouwloket	Market	Formal	For-profit	Private

8.3 Activities

8.3.1 Articulation and alignment of expectations

During the energy transition in Lisse, stakeholders such as citizens and entrepreneurs are involved in making the 'LES'. In two phases, the municipality has asked citizens and other involved stakeholders about the 'LES' and 'RES 1.0', informed them about the energy transition, and allowed asking questions in online lectures with technical experts about three themes: 1) energy savings at home; 2) low scale energy production around citizen's own homes; and 3) LSREP in the form of solar and wind (Gemeente Lisse & Royal HaskoningDHV, 2021). The theme of LSREP was discussed with citizens, entrepreneurs, professional stakeholders, and government officials. There have been talks about whether Lisse should implement LSREP and at which terms. The discussions made clear that it is primarily favorable to do LSREP alongside existing infrastructure, to evade areas that have not been touched by infrastructure yet. The municipality wants to use solar on the roofs of buildings with the help of local energy cooperative (s) (Gemeente Lisse & Royal HaskoningDHV, 2021).

During the current participation efforts, the municipality of Lisse went into collaboration with EMMA, a research, consultancy, and participation agency. Citizens show in surveys and interviews with EMMA (2021) that small numbers of citizens see a future in wind energy in the 'Bollenstreek.' Most of the time, the reasoning is the following: 1) ruined and ugly skylines; 2) noise pollution and 3); a negative impact on the environment and nature. When discussing solar panels, involved citizens see locations for potential solar parks in Lisse. This could consist of meadows lying out of view and existing infrastructure near railways and dikes. Additionally, bottom-up local ownership between the municipality and citizens can improve the willingness to think about possible solutions regarding LSREP (Emma, 2021).

Moreover, EMMA found that many citizens do not know much about the plans and visions of the municipality. Only small initiatives are known, such as small funds to make their own homes more sustainable. These efforts are not seen as part of the upcoming, big energy transition. Several stakeholders ask the municipality to actively work with them to work on the energy transition and wait no longer (EMMA, 2021). Moreover, the municipality of Lisse wants a permanent conversation with citizens about the energy transition and involves them with the choices that need to be made. Frontrunners should be encouraged without losing side of other opinions. The main results of the existing participation process are the following (Gemeente Lisse & Royal HaskoningDHV, 2021).

1) The insights, wishes, and ideas are considered for the 'LES';
2) Involved citizens know which challenges the municipality will face ahead in the energy transition;
3) Engaged citizens learn from other citizens and know there are multiple perspectives to look at the energy transition

Moreover, interviewees 16 and 17 from the municipality of Lisse confirm that these surveys and meetings took place and data was collected. However, this data is concrete and focuses on specific implementation plans most of the time. The municipality of Lisse is currently strategically orienting the energy transition in the 'LES'. That means the information, remarks, and concerns about the energy transition will be used in the implementation phase and not yet in this initiation and design phase. Additionally, interviewee 16 from the municipality of Lisse states that it is not the case that the inputs from participation processes significantly influence the way the local energy transition is formed. The

conducted participation processes aim to make people conscious of the energy transition and bring along the transition by informing them about what it means for citizens, organizing energy transition lectures with experts and governments officials, and what concepts such as energy-neutral mean for citizens. Likewise, citizens want to know which companies and organizations can be trusted to make their homes more sustainable.

Correspondingly, this also means there is less focus on participating in the policymaking phase regarding the energy transition and more of an emphasis on informing. According to interviewee 16 from the municipality of Lisse, the new communication campaigns during the energy transition in HLT will primarily focus on communication and informing citizens. Participation-focused sessions are not on the agenda but will become relevant once projects come off the ground. Likewise, according to interviewees 18 and 19 from local energy cooperative 'Lisse Duurzaam', new plans for involving citizens are not known. In correspondence with these statements, according to interviewee 18, the past participation sessions are more on the informative side than the discussion side. The sessions were online, and most of the time, there was not much room for asking questions and starting a discussion.

Furthermore, interviewee 16 from the municipality of Lisse finds it hard to determine whether all citizens can be reached and if the results of these participation processes are representative of the municipality of Lisse. Likewise, interviewee 19 from the energy cooperative 'Lisse Duurzaam' shares these findings and states that there are not enough citizens involved. For example, according to this interviewee, he saw 20 fellow citizens at the online sessions, which is not enough. In a like manner, interviewee 17 from the municipality of Lisse finds that mostly above average interested citizens among these meetings already have a great knowledge of the upcoming energy transition.

8.3.2 Social learning

According to interviewee 20 from the local citizen initiative for introducing the CO2 performance ladder, several efforts have been made regarding active citizenship in the municipalities under the HLT organization. One of these projects is the 'CO_2-prestatieladder', freely translated as the CO_2 performance ladder. This tool can be used in the Netherlands to help companies and governments reduce their CO2 emissions and costs. This applies to the business operations, projects, and chains (Stichting Klimaatvriendelijk Aanbesteden & Ondernemen, 2022). The interviewee and several other citizens took the lead and presented the 'CO_2-prestatieladder' to the municipality, and the municipality responded positively to this new initiative. However, according to interviewee 20, the ''HLT organization advised the three municipalities and the city councils to implement the ladder in phases, which angered the citizens who led the initiative because it could go faster than the HLT organization is currently planning. In essence, the HLT organization is optimistic about the initiative. However, nothing has been realized yet, and citizens feel like there is still a lot to be done to implement this initiative fully. It should be noted that the citizens, according to interviewee 20, find it pleasant that the municipality keeps them up-to-date on the progress of the project.

Moreover, that means that citizen participation has potentially substantial influence. For example, according to interviewee 20, a citizen imitative let to the fact that Teylingen became a Fairtrade municipality. This citizen initiative was not present in Hillegom and Lisse, which meant that they did not become a Fairtrade municipality.

Furthermore, Lisse has an active energy cooperative consisting of active citizens called 'Lisse Duurzaam', a citizen-led organization with expertise on the energy transition and how to make that happen locally. 'Lisse Duurzaam' is an organization full of citizens that work voluntarily. Furthermore, according to interviewees 18 and 19 from the energy cooperative 'Lisse Duurzaam', the organization consists of energy coaches that operate in Lisse and help citizens make their houses more sustainable by saving energy. Moreover, they organize events with citizens to visit sustainable companies in the close environment, which leads to positive experiences among the participating citizens. The previous event attracted more than 200 people, according to interviewee 19.

Furthermore, 'Lisse Duurzaam' has contact with the municipality and advises the public officials. However, according to interviewees 18 and 19 from the energy cooperative 'Lisse Duurzaam, ' constructive and regular meetings are not currently happening. The collaboration process has no formal status and is open-ended without obligations for both stakeholders. This means that it can be unclear to 'Lisse Duurzaam' what impact they have on the decision-making processes in Lisse. It feels like a 'back box,' according to interviewees 18 and 19. Additionally, according to interviewees 18 and 19, some plans are taken directly from the energy cooperative by the municipality without any feedback or further updates on the matter, which causes frustrations among the energy cooperative. It seems complicated for public officials to do citizen participation successfully. Most of the initiatives come from citizens, without much support for new projects or other facilities coming from the municipality. According to interviewees 18 and 19, potential expertise and resources are available to active citizens, but it is not utilized well.

Furthermore, 'Lisse Duurzaam' follow the regional and local energy transition closely and want to have input on these initiation, design, and implementation phases in this transition, according to interviewee 18 and 19 from the energy cooperative 'Lisse Duurzaam'. According to interviewee 16 from the municipality of Lisse there is contact between the municipality of Lisse and 'Lisse Duurzaam', but the communication is on and off. They are occupied with getting their first project with solar panels on roofs in Lisse off the ground. There is contact to help with start-up time and monetary funds and have projects to work on. Moreover, they get invited to give lectures about the energy transition to members of the city councils. According to interviewee 19 from the energy cooperative 'Lisse Duurzaam,' there are more ideas to collaborate on, but the contact has faced obstacles. The active citizens of 'Lisse Duurzaam' pitched the idea of organizing an energy transition conference. Still, they did not get a response from the municipality of Lisse and felt like they obtained no information on what the municipality thought of their new ideas. 'Lisse Duurzaam' thinks that citizen participation is possible, but that is more than just informing citizens. Action and initiatives are needed to make the energy transition acceptable for local citizens, according to interviewee 19.

In the coming time, projects will start to make the local energy transition a reality. This means both the municipality and active citizens and companies can take the lead to reach the goals of the 'LES'. To involve citizens and start a permanent dialogue, there are ideas about starting citizen forums. This could help include citizens in the municipality's choices and build on the past experiences with involved citizens. The ideas are still early phase, so options about scope and intensity are currently still up for discussion. However, one citizen forum will likely act for all three municipalities in the HTL organization (Gemeente Lisse & Royal HaskoningDHV, 2021).

Moreover, the focus is on general communication and participation plans with local newspapers, meetings, and surveys. There are plans for more intensive participation. One of the new possibilities is a reflection meeting with citizens and entrepreneurs. However, it still needs to be clear what they can contribute and what will happen with this potential feedback before such initiatives are implemented (EMMA, 2021).

8.3.3 Resource acquisition

The municipality of Lisse helps the energy cooperative 'Lisse Duurzaam' with the start-up of their organization in the form of time, energy, funds and helping them get their first projects with solar panels on roofs in Lisse, according to interviewee 16 from the municipality of Lisse. According to interviewee 18 from the energy cooperative 'Lisse Duurzaam', that is right and establishing an energy cooperative can help establish the energy transition from the bottom-up. The municipality offers to look together for locations for solar panels on roofs. Establishing an energy cooperative can take much time, effort, and energy, according to interviewee 18, because citizens with expertise on several levels are needed, such as financial and legal expertise. Moreover, according to interviewee 18 from the energy cooperative 'Lisse Duurzaam', 'Lisse Duurzaam' talks with business companies in the immediate environment to inform presentations about the energy transition. This also brings opportunities to establish solar roofs on roofs of certain companies. Likewise, potential locations and opportunities are noticed by 'Lisse Duurzaam'. For instance, solar roofs on top of swimming pools, sports facilities and schools. Solar roof and heating solutions for these institutions could also be used in the neighborhood if capacity is left. According to interviewee 18 from the energy cooperative 'Lisse Duurzaam', 'Lisse Duurzaam' stresses that research about opportunities during the energy transition on a local level is needed, aside from the regional analysis and choices.

Likewise, miscommunications occur between the municipality and the energy cooperative 'Lisse Duurzaam'. According to interviewee 18 from the energy cooperative 'Lisse Duurzaam' plans were made to use heating cameras for the energy coaches, and a request was made for funding at the municipality. The municipality provided no feedback, and it seems hard to get the right funding and good communication. A good place to meet with citizens is desired by 'Lisse Duurzaam', but it seems complicated to realize by the municipality, according to interviewee 18. This is not always the case because the municipality arranged transport for the involved citizens with a recent excursion. All in all, the communication is on and off. According to interviewee 17 from the municipality of Lisse, the energy cooperative and energy coaches are pretty independent and have the freedom to do their projects activities. However, funds are available to get citizens in neighborhoods into the energy-saving theme.

Furthermore, according to interviewees 18 and 19 from the energy cooperative 'Lisse Duurzaam', the financial position of the three municipalities in the HLT organization makes it difficult to make plans for the energy transition. Energy cooperatives can be seen as cheaper alternatives to setting up municipal projects. However, it should be noted that local and citizen-led energy cooperatives are not comparable to professional consultancy organizations. It is not always clear for the energy cooperative if public officials have the right expectations.

8.3.4 Assessment and evaluation

According to interviewee 18 from the energy cooperative 'Lisse Duurzaam', there are plans of active citizens that want to go into specific neighborhoods in Lisse and start with pilots to save energy, inform citizens and let them get to know the available energy coaches. Furthermore, this is a proactive way of meeting citizens and does not have to cost much. This pilot neighborhood can then act as a learning experience for both the active citizens and the municipality. It has been named five times at the municipality, but no meaningful response on the plans has been given yet. Interviewees 18 of the energy cooperative 'Lisse Duurzaam': *"It feels like our pilot plan became part of a black box in the municipality"*. These pilot projects could provide a new way of assessing and evaluating the collaborations during the local energy transition in Lisse.

Moreover, as mentioned before, interviewee 20 from the local citizen initiative for introducing the CO_2 performance ladder worked on the 'CO_2-prestatieladder' in the HLT organization to measure the municipality's emissions and help them reduce these emissions. This proposal was done in 2019 by active citizens and approved by the municipality, but nothing concretely happened. This proved problematic in the three municipalities because not all wanted to put in the necessary funds to make this a reality in the whole HLT organization. To get it back on the agenda, interviewee 20 and fellow citizens managed to get the vital signs and brought the topic back on the political agenda. These examples of ideas and projects could prove as pilot projects that help the municipality assess and evaluate during the energy transition with their local, active citizens.

8.4 Goals and outcomes

8.4.1 Effectiveness and efficiency of the transition

It should be noted that the current energy transition phase is mainly situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implementation phase should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Lisse. Most plans and visions are in the initiation and design phases. It has to be seen if these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years. The municipality of Lisse has the ambition to become energy neutral in 2050. In line with the goals of the energy region Holland Rijnland, these are the following goals to reach before 2030 (Gemeente Lisse & Royal HaskoningDHV, 2021):

1) 15% energy savings in the built environment, in comparison to 2014;

The energy savings will be done by thermal insulation of buildings, (hybrid) heating pumps, and energy-efficient devices at homes aiming at 2100 buildings, which is about 20% of all buildings in Lisse. Most of the efforts aim to save energy in the heating sector with their 'Transitievisie Warmte'; in short, the vision is to have plans for alternatives to natural gas available for 2030. In 2050, all buildings will be natural gas-free (Gemeente Lisse & Royal HaskoningDHV, 2021). To stimulate energy savings practices, the municipality of Lisse wants to take a leading role by enabling energy savings measures in their real estate and show good examples to the citizens and companies in Lisse, according to interviewee 17.

2) 11% energy savings in mobility, in comparison to 2014;

This is visioned to be reached with the usage of electric vehicles. In 2050, all mobility in Lisse should be fossil-free. When nearing 2050, the municipality of Lisse thinks that hydrogen and other sustainable ways of using fuel will be relevant (Gemeente Lisse & Royal HaskoningDHV, 2021).

3) Renewable energy production goes from 5.6% in 2019 to 46% in 2030. In 2020, 25 TJ of energy will be produced, which will become 165 TJ in 2030.

Based on current policy in the municipality of Lisse, LSREP is not possible. To reach the targets of 2050 to become energy neutral, the municipality of Lisse will go back to its current opinion and see if a revision is possible. Moreover, innovations will be followed closely. If it is not enough, importing energy is an option as well. Likewise, there is an understanding in Lisse that the pace of the energy transition needs to increase to reach the goals. More attention should go to forms of small- and large-scale energy production. It is, in their opinion, possible that more renewable energy will be produced if more attention is forwarded to this topic (Gemeente Lisse & Royal HaskoningDHV, 2021). The following efforts are of most importance to reach the goals: 1) Solar panels on roofs; 2) Solar panels alongside infrastructure and 3) LSREP in the form of wind and solar.

8.4.2 Social acceptability of the transition

To get support from critical stakeholders and improve the social acceptance of the energy transition, the municipality of Lisse needs to get a general view of how citizens feel about the transition. It can help determine which plans are deemed socially acceptable and are supported, according to interviewee 16 from the municipality of Lisse. According to sessions with local citizens, it was found that citizens support the local energy transition and see the need for it. However, it was also found that market stakeholders and involved citizens find that LSREP with wind and solar is troublesome. Most citizens find LSREP, both solar and wind, not suitable for areas in Lisse. According to involved citizens, there is not enough room (EMMA, 2021). According to interviewee 16 from the municipality of Lisse, it is still unclear which LSREP locations are possibilities. Citizens do not support possible sites for these projects, but the conversation has to continue. It is still a struggle to find the right way to get citizens along within this process of searching for possible locations. If much resistance is met, there is a fear that many projects will not succeed.

Nevertheless, if LSREP must happen, the most logical locations would be near existing infrastructure such as roads, highways, and parking lots. In that way, existing untouched areas by the infrastructure can remain unaffected. Solar panels on roofs are considered most desirable with the help of the roofs of local companies and in collaboration with energy cooperative (s). Solar panels on roofs are seen as 'no regret' measurements because they do not have to be placed in the landscape and are at least providing some sustainable energy that does not have to be generated on a large-scale (EMMA, 2021). Correspondingly, there will be a focus on projects that help increase citizens' visibility and support to stimulate the energy transition (Gemeente Lisse & Royal HaskoningDHV, 2021).

8.5 Governance

This paragraph will elaborate on the regional and local aspects of the governance during the regional and local energy transition in the municipality of Lisse, with a focus on LSREP. As stated before, search

areas and possible locations for LSREP are topics that are being discussed regional-wide with all involved municipalities.

On a regional level, the municipality of Lisse decided to take as many decisions made in the regional process and implement them directly in the local policy regarding the energy transition, such as saving energy in the built environment, according to interviewee 16. The 'LES' is in the finishing phase and went to the city council for approval in January 2022. This means that further details will be added in the last stage. The main focus points of the 'LES' are 1) saving energy by thermal insulation and 2) looking into the number of renewable energy production needed in 2030, mainly by solar panels on roofs (Interviewee 16 from the municipality of Lisse). According to interviewee 17 from the municipality of Lisse, the implementation plan for the 'LES' will most likely be ready in Q2 of 2022 with a paragraph on communication and participation. This means looking at experiences of the last two years of communication and participation and keeping involving citizens in the energy transition. According to interviewee 17 from the municipality of Lisse, this participation process is mainly focused on changing citizens' behavior and letting them think about how they can be conscious of their energy usage, ways to save energy and make their own homes more sustainable.

According to interviewee 19 from energy cooperative 'Lisse Duurzaam', the LES (local energy strategy) report that a consultancy company writes is currently the central vision. Moreover, interviewee 18 from energy cooperative 'Lisse Duurzaam' feels a lack of local direction and urgency among civil servants in Lisse and more of a reliance on regional decision-making. There were online sessions where the consultancy explained the possibilities, but there was a lack of decision-making on which routes should be taken. It feels like the options are out there. Still, nothing concrete has been decided yet, and there is no feeling that citizens are involved in the local energy transition process of Lisse. There is a growing urge that citizens should know which changes are coming up in the next 10 to 15 years and have an influence on the decisions made here.

There are plans and visions presented for 2030 and 2050. However, besides possible solutions, the potential implementation plans will not be prepared until more information and knowledge are gathered about the programs and possible (financial) resources available from the national government, according to interviewee 17 from the municipality of Lisse. There are plans from the national government for the energy transition, but this will take time until the local municipalities take hold of resources and funds and continue with the implementation plans.

Additionally, according to interviewee 16 from the municipality of Lisse, the search area map for the energy region Holland Rijnland is made, but not all municipalities are committed to it. Likewise, this is the case for the municipality of Lisse. They acknowledge the search area map with the sidenote that it is not yet definite and could be seen as a potential search area. The local energy plan, the 'LES', goes into detail on plans and possibilities for LSREP. Research is needed locally before possible locations can be determined; that process is still ongoing. Currently, search areas on a local level do not necessarily correspond or are equal to search areas on a regional level. The discussions and streamlined decisions will occur in a later stadium during the energy transition.

Furthermore, according to interviewees 16 and 17 from the municipality of Lisse, the situation with the province of South Holland is complicated because certain areas such as in 'Het Groene Hart' and parts of the 'Bollenstreek' are currently available for l LSREP, because of their environmental policy that excludes these areas from LSREP. This was only clear at the end of the process. At that stage, the

municipalities in the energy region Holland Rijnland had already made decisions on the regional search area map. It remains to be seen how this conflict will be solved towards the 'RES 2.0'.

Moreover, according to interviewees 16 and 17 from the municipality of Lisse, there seems to be a sense of having to solve problems for other municipalities in the energy region Holland. A total amount of energy needs to be produced and divided among available areas in the energy region Holland Rijnland. Possibly, this could mean that some municipalities do not have room for LSREP, while others need to compensate for these lacking possibilities in other municipalities. According to interviewees 16 and 17 from the municipality of Lisse the discussion should not go sour and result in citizens resisting plans for LSREP. Once the next local elections in 2022 took place, and the 'RES 2.0' planned for 2022 is close-by, the discussion will likely start between municipalities about possible locations. According to interviewee 17 from the municipality of Lisse, it remains important that the traditional characteristics of the landscape remain intact in Lisse.

8.6 Key Take-aways

Table 12: Key Take-aways for the municipality of Lisse

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Survey, interviews and meeting about local energy transition plans with citizens - Gathered feedback from citizens about implementation phase - No concrete influence on the local energy strategy by citizen feedback - Broad communication plan about informing, stimulating and activating citizens - No new participation activities planned - Uncertainty if enough citizens are reached with current participation
Activities: *Social Learning*	- Plans to involve citizens in citizen forums and reflection meetings in early stages - Past active citizen initiatives show potential influence on local decisions-making process - Energy cooperative and municipality have mediocre relationship, due to lack of clear communication from the municipality - Little influence of citizens on initiation and design of the local energy vision
Activities: *Resource Acquisition*	- Mixed relationship regarding financial and general support for new projects of energy cooperative by municipality
Activities: *Assessment and Evaluation*	- Little to no feedback on citizen initiatives on pilot projects from the municipality - When citizen initiatives proceed in decision-making, the implementation can take long and requires continuous pressure feedback and evaluation
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals**: 1) 15% energy savings in the built environment, in comparison to 2014; 2) 11% energy savings in mobility; 3) Energy production of renewable energy goes from 5,6% in 2019 to 46% in 2030 Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Little to no citizen support for LSREP - Small-scale energy production with solar panels on roofs infrastructure is most desirable by citizens; - If LSREP needs to happen, preference near existing infrastructure

	- Focus on projects that increase visibility of the energy transition for support and acceptance of citizens
Governance	- **Regional:** LSREP locations are conflicting on a local and regional levels. Difficult relationship with province of South Holland as both partner and higher governmental actor LSREP locations - **Regional & local**: decision-making regarding visions for 2030 and 2050 are vague for citizens and do not feel like energy transition yet - **Local:** local energy transition plans mostly equal to 'RES 1.0' - **Local**: 'LES' is a vision in the initiation and design phase, implementation plans will follow in 2022

9 | MUNICIPALITY OF ZOETERWOUDE

Summary

The Zoeterwoude case participation focuses on both informing and involving citizens in the energy transition plans, for instance, with guidelines for participation between citizens and other stakeholders. Citizen initiatives are supported to co-create policies and long-time collaborations with active citizens, such as with the local energy cooperative and new initiatives such as an 'energy transition platform' with stakeholders. Financial and material participation is active among stakeholders, and funding is available for active citizens. The assessment and evaluation take place by doing pilots with solar parks. For instance, the rural contact makes contact direct and personal to get relevant feedback and talk about expectations, values, and responsibilities. The goal for Zoeterwoude is to enter the top 20 most sustainable municipalities in the Netherlands, although no explanation is provided on how to get there. Focus on solar and wind energy production, public-private collaborations, and generous subsidies. To get the support and acceptance of citizens, early involvement of stakeholders in all sectors is of importance, e.g., with the help of the 'energy transition platform' in combination with a clear communication and participation vision by the municipality. The governance dimension shows that participation from close-by municipalities can influence the local view and efforts regarding participation. Regional working groups are active regarding heating and large-scale renewable energy production. The relationship with the province of South Holland is challenging for possible locations for large-scale renewable energy production.

9.1 Introduction

Zoeterwoude is a municipality in the Netherlands in the Province of South Holland. The municipality has 9,152 citizens (CBS, 2021) and features several towns: 1) 'Zoeterwoude-Dorp'; 2) Zoeterwoude-Rindijk and 'Zoeterwoude-Zuidbuurt and neighbourhoods 'Gelderswoude', 'Weipoort' and 'Westeinde'. Moreover, the area's characteristics are the green rural areas mainly used for farming (CBS, 2021). Zoeterwoude is a polder with meadow landscapes and various monumental farms in the municipality and Zoeterwoude-Dorp. Furthermore, in Zoeterwoude-Rijndijk, one of the world's biggest beer brewer companies is located: Heineken. The head facility for Heineken is located in Zoeterwoude (City council of Zoeterwoude, 2020).

Zoeterwoude is active in the energy region Holland Rijnland alongside other municipalities. The ambition set on a regional level is also relevant for Zoeterwoude on a local level. These ambitions and goals have been formulated and put in the coalition program for 2018 till 2022 called 'Duurzaam Verbinden.' Alongside the regional call for a focus on electricity and heating, energy savings also have a place in the regional energy strategy that aligns with the Trias Energetica focus of Zoeterwoude. The core elements that the city council of Zoeterwoude finds essential are: 1) meadow and green characteristics; 2) entrepreneurial, and 3) social. Zoeterwoude sees the energy transition as a possibility to make progress in the rural areas that Zoeterwoude is part of. That means that an important condition

for Zoeterwoude is the following: the maintenance of the green and meadow character of the area is a critical factor during the regional and local energy transition. The polder landscape and certain buildings are of great cultural-historical value and influence daytime recreation activities (City council of Zoeterwoude, 2020).

Moreover, the energy transition should positively influence the preservation and strengthening of biodiversity in Zoeterwoude (City council of Zoeterwoude). Additionally, Zoeterwoude is seeing possibilities for entrepreneurs during the energy transition. For example, Zoeterwoude sees that buildings in the industrial sector have large roofs on which solar energy could be generated in theory. Besides that, research shows that some companies have residual heat lefts and that supply could be used for collective heating solutions in the municipality. Likewise, on a rural level, initiatives are to work together with farmers to use solar energy on their roofs (City council of Zoeterwoude, 2020).

Coupled with, from a social point of view, Zoeterwoude considers the support among their citizens of great importance. There has been a revision of the Communication, Participation, and Services plan in 2019, serving as a new guideline for participation. Besides social support, the municipality also sees opportunities to let citizens participate materially and financially with new energy projects at both a local and regional level (City council of Zoeterwoude, 2020).

9.2 Actors

The key stakeholders in the municipality of Zoeterwoude are:

Table 13: key stakeholders in the municipality of Zoeterwoude

Actor	Actor group	Formal/Informal	Non-profit/Profit	Public/Private
RES Holland Rijnland	State	Formal	Non-profit	Public
Province of South Holland	State	Formal	Non-profit	Public
Water board Rijnland	State	Formal	Non-profit	Public
Energy producer 'Eneco'	Market	Formal	For-profit	Private
Housing associations	Market	Formal	For-profit	Private
Grid operator 'Liander'	Market	Formal	For-profit	Private
Beer brewer 'Heineken'	Market	Formal	For-profit	Private
Energy ambassadors	Community	Informal	Non-profit	Private
Energy cooperative 'Zoeterwoude Duurzaam 2030'	Third sector	Formal	Non-profit	Private
Energy cooperative 'Rijnland Energie	Third sector	Formal	Non-profit	Private

Duurzaam Bouwloket	Market	Formal	For-profit	Private

9.3 Activities

9.3.1 Articulation and Alignment of Expectations

The RES Holland Rijnland, Zoeterwoude and other regional partners conducted online surveys to know the preferences, opinions, and worrying factors about the regional and local energy transition. This survey was a multiple-choice survey with quantitative data. This was conducted between 23 November 2020 and 10 December 2020. To inform local citizens about the survey, messages were posted in the local newspapers, posts on Facebook, and a poster campaign within Zoeterwoude itself (Municipality of Zoeterwoude, 2021a). Moreover, the 'GOED' newspaper has been introduced in Zoeterwoude. This newspaper focuses on everything considering the energy transition locally and regionally and what is possible for citizens (Municipality of Zoeterwoude, 2021b).

Several surveys were conducted on a regional level to view what citizens of Zoeterwoude think of the regional energy transition. According to interviewee 21 from the municipality of Zoeterwoude, it is hard to find the middle group of citizens who do not naturally share their opinions about the energy transition with the municipality and will most likely give their opinions once something happens in their streets or houses. According to interviewee 21 from the municipality of Zoeterwoude: *"The main question that arises is: is the municipality reaching the citizens that need to be reached with the participation processes? Or are the usual suspects the only ones reached? The extremely positive or extremely negative people about the energy transitions."* This seems to be a challenge coming in the upcoming years, to talk about the effectiveness of the participation processes and if all groups of citizens are reached, as well as youth. It remains to be seen if younger people are reached via surveys and the organization of participation sessions.

According to the guidelines for participation in Zoeterwoude (Municipality of Zoeterwoude, 2020c), citizen participation is mapping and weighing up what people find essential. By working towards a common goal with respect for everyone. A plan supported by more people and a plan that is ultimately executed faster. Moreover, as soon as the municipality has to make a formal decision about an initiative - for example, granting a permit - the municipality will ask the initiator whether their social environment is involved in preparing his initiative. And if so, how the initiator does this. And what is the result of that? The municipality will take the answers to these questions into account in its weighing of interests for the decision. The guidance report ((Municipality of Zoeterwoude, 2020c) has been conducted by working together between citizens, market actors, and initiators in Zoeterwoude and applies to the social and spatial domain.

According to interviewee 21 from the municipality of Zoeterwoude, the first information sessions started about the regional energy strategy in 2019. This has been done in the city cores, such as 'Zoeterwoude-Dorp' and 'Zoeterwoude-Rijndijk'. This has been done in a place that people are familiar with. Introductions about the transition have been done with presentations and information stands with local energy ambassadors and energy cooperative 'Zoeterwoude Duurzaam' and the RES 'Holland Rijnland'. They explained the regional story and what was happening in the coming years. One of the essential topics in Zoeterwoude is sustainable heating. One of the projects is called 'Van Gas Los' and is mainly focused on the city core Zoeterwoude-Rijndijk in the municipality of Zoeterwoude.

In participation meetings, citizens can apply, sign up to attend, think for themselves, and research the best options to move from gas to renewable heating solutions in 'Zoeterwoude-Rijndijk'.

The municipality of Zoeterwoude and energy cooperative 'Zoeterwoude Duurzaam 2030' have been active together for a long time and organized information markets or went into the neighborhoods of citizens to talk directly with citizens about isolating and saving energy in their own homes, according to interviewee 21 from the municipality of Zoeterwoude. Likewise, according to interviewee 22 from 'Duurzaam Bouwloket', 'Duurzaam Bouwloket' is involved in helping people at home make the right choices to save energy. 'Duurzaam Bouwloket' is a company hired by the municipality to give citizens a chance to have an objective opinion on how citizens can make sustainable changes in their own homes. The closer you get to citizens, how more involved the participation is, and people seem more open to taking measures they need to take.

On a regional level, according to interviewee 23 from the municipality of Zoeterwoude, the organization of RES Holland Rijnland supports the region, and there is a budget available for communication and participation. This must be done in close working relations with the municipality, which costs effort and energy to align the visions. There are some doubts about a regional communication strategy and its effectiveness. Moreover, there is a communication working group in which the municipalities are situated. Experiences are being shared, but during the process until RES 1.0, municipalities mostly did the participation processes independently and in different ways. This can be explained because municipalities have unique relationships with their citizens.

9.3.2 Social Learning

According to interviewee 21 from the municipality of Zoeterwoude, stakeholders and citizens participate in both the policy-making side and the execution of these policies, in which cooperatives are active. It is essential to create an energy transition policy and create support for the energy transition. Moreover, it should be noted that citizens and their initiatives are being supported instead of the other way around. The municipality encourages citizens to play a role in the process.

Moreover, there is support for energy cooperatives led by citizens. 'Zoeterwoude Duurzaam 2030 is an energy cooperative started in 2012. There is an existing bond between the municipality and the energy cooperative Zoeterwoude Duurzaam 2030. According to interviewee 21 from the municipality of Zoeterwoude and interviewee 24 from energy cooperative 'Zoeterwoude Duurzaam 2030' since 2012, the bond has grown stronger now that the energy transition is happening. Moreover, it is not a forced collaboration. There are regular conversations with the municipality of Zoeterwoude if actions need to be taken, such as organizing information markets. According to interviewee 24 from energy cooperative 'Zoeterwoude Duurzaam 2030', the municipality of Zoeterwoude financially pays for the website costs, notary fees, and costs to be established as an energy cooperative in the registrations. This also means that there are funds to make sure there are meeting rooms available for rent, and flyers are made. This leads to a good relationship between the energy cooperative and the municipality of Zoeterwoude.

According to interviewee 24 from energy cooperative 'Zoeterwoude Duurzaam 2030', stakeholders work together in Zoeterwoude. Such as the Duurzaam Bouwloket and Zoeterwoude Duurzaam 2030. To make houses more isolated and sustainable, Duurzaam Bouwloket got a subsidy from the province of South Holland to take on this project. The aim is to make twelve reference houses

meet extensive reports so that one can learn from these experiences. That takes much time, and Zoeterwoude Duurzaam and Duurzaam Bouwloket got in touch to let Zoeterwoude Duurzaam 2030 lead. This created a success story for energy cooperative Zoeterwoude Duurzaam 2030 and the funds needed to become more independent. It is important to look critically at each other in these projects and what can be done better in the next project. This applies to all stakeholders in the project, the municipality, Duurzaam Bouwloket, and Zoeterwoude Duurzaam 2030. There is an open culture where stakeholders can openly state their opinions, views, and current feelings about working together.

Energy Transition Platform

On a regional and local level, the energy transition in Zoeterwoude activities requires specific articulation and alignment of expectations with other involved actors. One of the themes in the energy transition is LSREP in the energy region Holland Rijnland. In Zoeterwoude, this is implemented by establishing a platform established by the municipality of Zoeterwoude. In this platform, which can be seen as a working group, several stakeholders are involved: energy supplier Eneco, solar panel producer IX Zon, energy cooperative Rijnland Energie, energy cooperative Zoeterwoude Duurzaam 2030 and network grid operator Liander and local citizens (Municipality of Zoeterwoude, 2020b). This platform is established with the following goals in mind. One of them is forming a process in which all stakeholders are involved and influence the process and decisions being made. Stakeholders can better work together and set the right priorities that are aligned. If you know from each other what is necessary, the chance is more significant that new initiatives will have broader social acceptability. The goals are:

- Researching how to work on social acceptability per initiative;
- Develop a joint working method;
- Treat new initiatives by shared values;
- Process the supervision of new initiatives;

This platform is relatively new in the municipality. It is unique because all stakeholders are evenly active, and the municipality is not the one taking the lead all the time. It depends on all stakeholders involved. According to interviewee 23 from the municipality of Zoeterwoude, unique about this platform is that Zoeterwoude is one of the earliest ones to introduce this kind of cooperation between stakeholders from all categories. The aim is to talk about the process and give it a fair chance. The meetings are every two months. The first meetings started in 2020.

9.3.3 Resource Acquisition

According to interviewee 23 from the municipality of Zoeterwoude, new wind turbines in Zoeterwoude are a potential option that lies in the search areas for new wind turbines on a large scale in the energy region Holland Rijnland, specifically in the corner of roadways A4 and N11. Stakeholders in the platform, such as 'Eneco' and 'Rijnland Energie' work together to make new wind turbines a reality. Both parties reach out to farmers to talk about options, and participation is part of this process. In this case, the project's initiators are also responsible for the participation process. After these plans are made, the municipality of Zoeterwoude takes a look at it and checks the process, and can make changes. The ownership is essential to the parties that initiate the new wind turbines. This is, for example, done by holding information sessions.

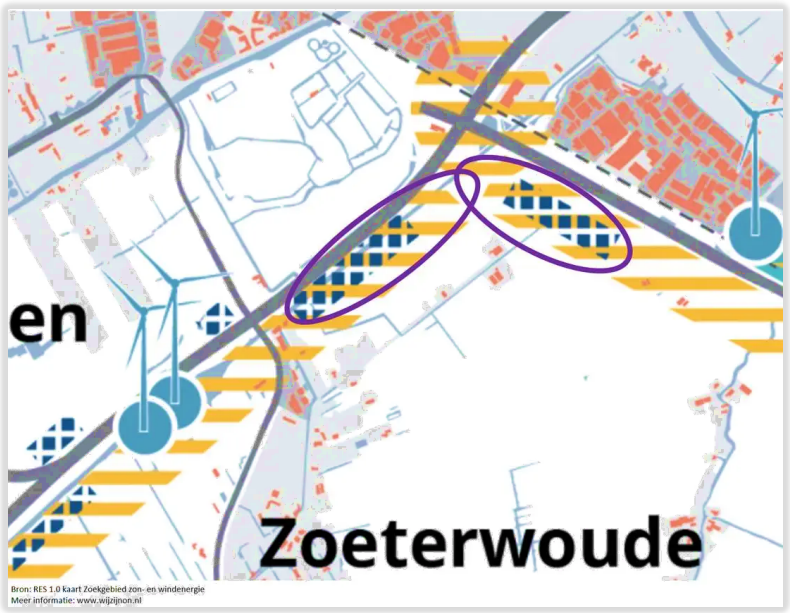

Figure 9: Potential locations for new wind turbines on a large scale in Zoeterwoude in the energy region Holland Rijnland from Eneco and Rijnland Energie (Eneco, 2022)

According to interviewee 23 from the municipality of Zoeterwoude, the beer brewer company Heineken has done similar participation processes with wind energy. Heineken did that process in an early stadium with several information sessions near the factory facility. Heineken visualized how big the new wind turbines would be in practice, which helped people make the proper assessment for themselves. That showed people that the wind turbines are relatively small at a distance and only big at close distance; this put things in perspective for citizens.

Furthermore, according to the City Council of Zoeterwoude (2020), the municipality of Zoeterwoude views local ownership as financial and material participation. New opportunities for LSREP alongside infrastructure establish new opportunities for local ownership. Citizen initiatives have shown interest in participation for wind turbines alongside het 'Papemeer' and potential expansion of the wind turbines alongside the roadway N11.

Moreover, according to interviewee 21 from the municipality of Zoeterwoude, Heineken wants to make its production process more sustainable with the help of wind turbines. In this process, also climate adaptation and biodiversity play a role. Other stakeholders are also involved because other parties, such as farms, could also use the extra wind turbines. And other topics, like using waste products of Heineken by farmers, are talked about to become more circular. Social learning goes further than just the energy transition alone. Moreover, according to interviewee 24 from the energy cooperative 'Zoeterwoude Duurzaam cooperative, there are actions in which market actors, such as solar panels producer 'IX-zon', energy cooperative Zoeterwoude Duurzaam 2030, and the municipality of Zoeterwoude work together to apply for funds at the province of South Holland.

9.3.4 Assessment and Evaluation

According to interviewee 24 from energy cooperative 'Zoeterwoude Duurzaam 2030', the bond between Zoeterwoude Duurzaam 2030 and the municipality is formed so that conversations take place.

They talk about expectations, what is going well, and what could go better. There is room for this kind of feedback and direct and personal contact between contact persons of the energy cooperative and policy workers of the municipality. This also means the energy cooperatives are in a position where they can call out on the municipality regarding the responsibility for the energy transition.

Moreover, the rural character of Zoeterwoude makes the lines between citizens and municipality short. However, this can also be found too quick, personal, and ad hoc. The balance between personal and professional contact is a factor to consider. Furthermore, participation is sometimes perceived as insufficient because those involved feel that too many decisions are already fixed. Communication should require low efforts for citizens and be accessible, the rural and characteristically touching of Zoeterwoude should remain, and there should be a focus on proximity to citizens (Municipality of Zoeterwoude, 2019)

According to interviewee 23 from the municipality of Zoeterwoude, contrary to new wind turbines, solar parks are less in favor in the municipality of Zoeterwoude. The market actor company 'IX-Zon' showed interest in setting up solar parks in Zoeterwoude. The information session about this project showed many objections from citizens. The municipality council also backs this up. The option has been given to start a pilot project with solar parks. The municipality made arrangements for this, and contact has been made with local farmers. This pilot project was the answer to market parties declaring they wanted to try out solar parks. However, after evaluation, the pilot was terminated because of a lack of support within the local community. According to interviewee 23 from the municipality of Zoeterwoude, this has mainly been the case for the following reasons. One of them is that solar parks will interfere with existing farming companies in the area. It could raise the prices for the open meadows once solar parks are allowed and implemented.

Moreover, the farmers have a good relationship with the municipality of Zoeterwoude because they facilitate the green meadows characteristic of the area of Zoeterwoude. Likewise, parts of the citizen community in Zoeterwoude have ties or are related to farming companies via family and friends. This means that potential solar parks come close to home for citizens, although it should be noted that only a few big farmers left. The project was a try-out to help form the upcoming policies regarding LSREP. The main aim for Zoeterwoude will most likely be wind energy generation, with solar panels on roofs where possible.

9.4 Goals and Outcomes

9.4.1 Effectiveness and Efficiency of the Transition

It should be noted that the current energy transition phase is mainly situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implementation phase should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Zoeterwoude. Most plans and visions are in the initiation and design phases. It has to be seen if these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years. According to the municipality of Zoeterwoude, Zoeterwoude should become an example for other municipalities and should achieve the following goals (Municipality of Zoeterwoude, 2020a):

1) Zoeterwoude should enter into the top 20 most sustainable municipalities in the Netherlands

This goal is not further explained besides the goals mentioned below.

2) Focus on the production of solar and wind energy

The goal is to reach 80% sustainable energy region-wide in Holland Rijnland. The municipality of Zoeterwoude will not establish solar and wind parks themselves but will be dependent on initiatives from other stakeholders such as energy companies. There will be plans to think about the landscape, consequences for the environment, and the citizens and companies living close by as soon as possible (Municipality of Zoeterwoude, 2020a). Together with companies, citizens, and other relevant stakeholders, everyone will participate in the initiatives. Furthermore, to make these projects possible, the electricity grid has to be expanded by grid operator Liander. This means additional electricity stations in the region and electricity cables (Municipality of Zoeterwoude, 2020a).

The program 'Energieteam' has several implementation projects, such as the project 'Grootschalige Opwek'. There is an ambition from the 'Regionale Energieakkoord' to become energy neutral in 2050. In RES 1.0, there should be 1.05 TWh of sustainable energy production with the help of solar panels on roofs, solar parks, and wind turbines. The goal of the RES 1.0 is to produce 0.25 TWh with solar panels on extensive roofs and solar on land. At the current moment, the production is around 0,04 TWh. Wind turbines aim to reach the goal of 0.89 TWh, which is currently 0.04 TWh (Municipality of Zoeterwoude, 2021c).

Moreover, the local policy goal in the sustainability program is to reduce CO_2 emissions by 40% by 2030. The realizations of projects regarding LSREP will have a significant influence on reaching those set goals. One wind turbine will be equivalent to around 6000 tons of CO_2 reductions per year of 0.015 TWh (Municipality of Zoeterwoude, 2021c).

This transition will impact society and spatial planning because of the new projects. It is essential to keep support from citizens in this process. The regional choices have been made, and a search area is now going to the local municipalities to make choices on how to get to the set goals in RES 1.0. In the working group 'Energie en Ruimte', decisions are made about the possibilities for locations. The boundaries that have been established are the following: 1) no solar panels on land areas; and 2) LSREP is a minimum of 15 kWp. Smaller initiatives fall under the energy-saving goals of the energy transition. Moreover, the 'Platform Grootschalige Opwek' meets every 6 to 8 weeks to talk about local, regional and national developments regarding the energy transition (Municipality of Zoeterwoude, 2021c)

3) Public-private collaborations

The Strategic Guidance Framework for Communication and Participation is relevant and states that efforts should be made on the sustainability agenda. Moreover, the municipality of Zoeterwoude created a platform specifically focused on participation during the energy transition and specifically LSREP. Furthermore, with the help of the municipality of Zoeterwoude, the citizen initiative is transforming into a 'gebiedscooperatie' as well, which will give them potentially more involvement in new projects and policies regarding wind parks and solar parks (Municipality of Zoeterwoude, 2021c). Furthermore, potential private partners are Liander, Heineken, Rijnland Energiecooperatie, Eneco and Prodeon (wind turbines), Rijnhart Wonen (housing corporation) and land owners, mostly farmers (Municipality of Zoeterwoude, 2020a). In the case of energy savings, there are collaborations with

'Duurzaam Bouwloket' and citizen initiatives such as 'Zoeterwoude Duurzaam 2030' to inform citizens and companies on how to reduce their energy usage. Moreover, there are 15 active energy ambassadors, who are citizens that help and advise other citizens about energy saving and making their homes more sustainable (Municipality of Zoeterwoude, 2020a).

4) Generous subsidy and incentive schemes, cheap loans for energy-saving measurements, such as thermal insulation with measures such as houses built after 1980 should receive energy label B at the minimum

Subsidies, loans, and incentives are necessary to get citizens and companies along with in the energy transition. Firstly, grants are available from the municipality, the province, and the national government for homeowners. This varies from free energy scans for houses to grants and loans to take the municipality's energy-saving measurements. This is available for homeowners, organizations, and companies. At a province level, help is available for local citizen energy initiatives, and the national government gives subsidies for thermal insulation, heating pimps, and sun boilers. Moreover, several subsidies are available for organizations in the municipality and the national government to make their company's real estate, production processes, and transport more sustainable (Municipality of Zoeterwoude, 2020a).

5) Trias Energetica: the energy triangle

This is the basis for the energy transition. The following three goals, in order, are important.

1) Reduce energy consumption: "Energy that is not used does not have to be generated":
2) Use sustainable energy: "Green energy out of the wind, solar or other sources":
3) Use fossil fuels as efficiently as possible: "If there is no other option, be conscious of the use of fossil energy":

9.4.2 Social Acceptability of the Transition

Information sessions can help citizens give more information on wind turbines. Several questions will be answered, such as: why is this happening? What are the advantages of the energy transition? Citizens get invited and are being informed. Once this has been done, initiators of these projects will evaluate and see how it went. Did people think this was a good idea and what were the problematic points that came up? After this process, the municipality steps in, and the initiating party asks for a permit. In the case of Heineken, only one objection came around. According to interviewee 23 from the municipality of Zoeterwoude, objections can best be dealt with by getting people into the process early instead of later. This will most likely raise the number of complaints. According to interviewee 24 from energy cooperative 'Zoeterwoude Duurzaam 2030,' the primary responsibility for new search areas where possible wind turbines could be placed is on the municipality. This also means the plans to involve citizens.

Moreover, the platform mentioned earlier about energy production on a large scale is also partly aimed to increase the social acceptability and support among citizens (Municipality of Zoeterwoude, 2021c). According to the guidance program for participation, participation is the following: "*Participation is mapping and weighing up what people find important by working towards a common goal with respect for everyone. You'll get a better plan then. A plan that is supported by more people and a plan*

that is ultimately executed faster" (Municipality of Zoeterwoude, 2020b). Moreover, the city council of Zoeterwoude finds it socially important that there is support for new projects during the energy transition among their citizens. The vision of Communication, participation, and services for 2019 is guidance in this process. This also focuses on financial and material participation on local and regional scales with projects such as Zoeterwoude Duurzaam 2030 (City council of Zoeterwoude, 2020).

9.5 Governance

In the municipality of Zoeterwoude, a program team regarding the energy transition has been established. Much new information was coming from the establishment of the RES region, and many ambitions have been set up. According to interviewee 23 from the municipality of Zoeterwoude, around ten people are part of this team. They are concerned with teams in the regional energy transition, such as energy savings, heating, mobility, and LSREP. The establishment of a new LSREP comes with its issues and obstacles. In Zoeterwoude, there is also contact with other municipalities such as Alphen aan den Rijn, also part of the energy region. Both municipalities are partly located in a potential area for new wind turbines. Alphen aan de Rijn made efforts for a participation process, but ultimately that did not result in local citizens' support, which also came through in their city council.

According to interviewee 23 from the municipality of Zoeterwoude, as a result, this meant that the new potential areas for LSREP are off for the time being, which also meant that Zoeterwoude did not go through with the aimed location. Moreover, it seems that Alphen aan den Rijn participated and reached a significant number of citizens in that process. However, it was mentioned that not much was done, and the participation process had to be done differently and again. This raises questions in Zoeterwoude about how effective participation should be done to reach enough citizens. The energy transition brings new challenges regarding involvement. Especially when talking about LSREP, in contrast to heating that comes more directly to citizens in their own houses.

According to interviewee 23 from the municipality of Zoeterwoude on a regional level, the municipality of Zoeterwoude talks with colleagues in RES Holland Rijnland. Furthermore, they are part of working groups, such as spatial areas. There is more contact about the heating topic in the regional energy transition. These are topics exceeding the boundaries of municipalities and need to be discussed in the region of Leiden and the 'Bollenstreek'. One of the potential options is heating from Rotterdam Harbor. This would be aimed at Leiden but is only relevant when other municipalities also use it. To make a good case against prominent market actors, such as Gasunie and Eneco, or heating companies in Rotterdam, it is essential to collaborate in the region with other state stakeholders to make a good case against these market stakeholders.

Moreover, the RES is adopted by Holland Rijnland and has several active stakeholders besides the municipalities. Also, other stakeholders such as Liander, the 'omgevingsdienst', and the Water Board are engaged. This means that implementation plans have to be decided on by all the involved stakeholders, which is difficult when talking about all policy documents involved in the regional energy transition.

According to interviewee 23 from the municipality of Zoeterwoude, the search for LSREP locations seems to be a hot topic that is pushed forward. In the eyes of the municipality of Zoeterwoude, they already started in 2011 with a sustainability vision and ways to save energy and get solar panels on roofs. There are already six of the ten wind turbines in the region in Zoeterwoude located. On the one

hand, Zoeterwoude wants to contribute to the regional energy strategy. On the other hand, it should also consider what the other municipalities contribute to new wind turbine or solar parks projects. Suppose Zoeterwoude is the only one doing it. In that case, this could result in rising opposition from citizens, which could affect the decisions that local city councils make if citizens see that other municipalities are not investing as much as their municipality does. It is still unknown when the topic will be put high on the political agenda.

Furthermore, according to interviewee 21 from the municipality of Zoeterwoude, the RES has been established with all municipalities in Holland Rijnland. However, this also resulted in municipalities becoming more careful with promises and ambitions, like with the scrapping of the search areas in Alphen aan den Rijn and Zoeterwoude retaking the plans to establish these search areas. It remains to be seen how the execution of these plans will be hindered. According to interviewees 21 and 23 from the municipality of Zoeterwoude, the role of the province of South Holland is a difficult one. The province of South Holland has made firm statements about the possibilities for LSREP in 'Het Groene Hart', which is not a possibility according to their spatial plans. However, according to the municipality of Zoeterwoude, this should be part of the possibilities. This also leads to a new discussion about what the search areas are. The plans are on hold, and it is time to take action to make these areas and locations a reality.

9.6 Key Take-aways

Table 14: Key Take-aways for the municipality of Zoeterwoude

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Local survey about energy transition among citizens; - Informing communication, e.g. newspapers, about the energy transition - Guidelines for participation between citizens, market actors and other stakeholders - Information sessions about the energy transition with energy cooperative and RES Holland Rijnland - Informing citizens at home with help of energy cooperative and market actors - Effectiveness of regional participation raises doubtful
Activities: *Social Learning*	- Citizen initiatives are supported in forming energy transition policy and implementation - Long-time successful collaboration with energy cooperative - Energy transition platform: aimed at developing joint methods, shared values, new initiatives with all category stakeholders
Activities: *Resource Acquisition*	- Collaborations between market and energy cooperatives to financially participate in LSREP - Financial and material participation: potential new wind turbines with local ownership - Funding at the province of South Holland with a collaboration between market partner, energy cooperative and municipality
Activities: *Assessment and Evaluation*	- Municipality and energy cooperative have direct and personal conversations about expectations, values and responsibilities - Rural character makes contact between municipality and citizens direct and personal - Pilot renewable energy production projects
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Zoeterwoude enters top 20 most sustainable municipalities in the Netherlands; 2) Focus on production of solar and wind energy; 3) Public-private collaborations;

	4) Incentive schemes and subsidies for energy savings measurements 5) Trias Energetica Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Work sessions with citizens about new renewable energy projects with help of stakeholder in early phases - Energy transition platform: aimed at increasing social acceptability and support among citizens and other stakeholders - Communication and participation vision by the municipality
Governance	- **Local**: participation process influence from close-by municipalities, e.g., Alphen aan den Rijn - **Regional:** working group with other municipalities regarding heating and LSREP - **Regional**: difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations

10 | Validation Cases

10.1 Municipality of Alphen aan den Rijn

10.1.1 Activities

Alphen aan den Rijn is a town situated in the western part of the Netherlands in the province of South Holland. The municipality of Alphen aan den Rijn conducted three local surveys regarding climate adaptation and the energy transition. At first, it was abstract for citizens, making it difficult to involve them. The participation process started in 2018 when not much interest was shown among citizens. Mostly, regional participation and communication took place, which was not enough. The three locally conducted surveys are 1) general survey about sustainability with topics such as circularity, the energy transition, and climate adaptation to get information for the new sustainability program of the municipality; 2) heating transition survey, and 3) regional energy strategy survey, specifically about LSREP with wind and solar according to interviewee 25 from the municipality of Alphen aan den Rijn.

Moreover, the overall feeling about the energy transition among citizens was positive, but there was a critique about LSREP. Once the 'RES 1.0' was decided, a backlash occurred among, for instance, the 'dorpsoverleggen, ' which represent the interests of citizens of towns in the municipality. They did not feel heard enough and that the 'RES 1.0' was already decided on, and citizens did not have enough influence on these policy documents, especially regarding LSREP (van de Griend, 2021). The 'dorpsoverleggen' felt like the possible location map was already determined and filled with LSREP. They were not actively involved in the formation process of the surveys, while that was initially promised to the city council of Alphen aan den Rijn. The 'dorpsoverleggen', such as Hazerswoude-Rijdijk-West, did their polls last year and saw 75% of citizens against wind turbines. That was in stark opposition to the new findings of the municipality (van de Griend, 2021). Ank Michels, a university professor in public administration at Utrecht University, states that surveys are mainly used as instruments to show support for the energy transition. In that manner, citizens do not feel like they are taken seriously, and support will decrease (van de Griend, 2021). Other points of critique are a lack of representation of citizens in Alphen. Because active citizens who were already involved in the energy transition were reached out to with the survey. Moreover, according to citizens in the survey, there were missing answer options. This powered the presumption that citizens favor at least a minimum amount of wind turbines in the area while lacking the possibility of being not in favor of any wind energy (van de Griend, 2021).

Hence, the city council of Alphen aan den Rijn was impressed by this backlash. That led to the exclusion of possible locations for LSREP, according to interviewee 25 from the municipality of Alphen aan den Rijn. The participation plans will be conducted again, for which the plans are now in the making, according to interviewee 25 from the municipality of Alphen aan den Rijn.

10.1.2 Goals and Outcomes

It should be noted that the current energy transition phase is mainly situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implantation phase

should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Alphen aan den Rijn. Most plans and visions are in the initiation and design phases. It has to be seen if these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years. The current plans are aligned with the decision made on a regional level, mentioned in the case about the energy region Holland Rijnland.

10.1.3 Governance

Regional decision-making is difficult to align with local governance. The fear among 'dorpsoverleggen' and city council members is that decisions are taken on a regional level, and the local authority is undermined. It is not democratically established how city council members in the local city councils can influence the regional plans. The 'RES' has no regional authority to make decisions, according to interviewee 25 from the municipality of Alphen aan den Rijn. The regional conversations about the 'RES' were effective for energy saving, mobility, and heating. However, LSREP is difficult because municipalities have their interests, and possible locations are removed from the map. Therefore, the consensus among RES partners is less than on other topics. Municipalities' most frequently heard arguments are a lack of citizen support or other plans with possible locations. Moreover, there is a lingering problem with the lack of possibilities and restrictive policies in 'Het Groene Hart' from the province of South Holland. That makes it hard to find possible locations in the region and reach the set regional ambitions, according to interviewee 25 from the municipality of Alphen aan den Rijn.

Table 15: Key Take-aways for the municipality of Alphen aan den Rijn

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Local survey about LSREP locations with backlash from involved stakeholders and local and national media coverage
Activities: *Social Learning*	Insufficient amount of gathered data
Activities: *Resource Acquisition*	Insufficient amount of gathered data
Activities: *Assessment and Evaluation*	Insufficient amount of gathered data
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Local goals are defined in the goals of the energy region Holland Rijnland case Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Local survey to gather support among local citizens for the energy transition, with a specific goal of support for LSREP locations
Governance	- **Local and regional** governance difficult to align, because the local city council members find it difficult to influence the decision-making processes of regional plans - **Regional**: LSREP locations are difficult to determine on a regional level, because of lacking support in municipalities among citizens and hard to compare individual participation processes

	- **Regional**: difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations

10.2 Municipality of Nieuwkoop

10.2.1 Activities

Nieuwkoop is a town and municipality in the western parts of the Netherlands, part of the province of South Holland. The participation processes in Nieuwkoop included a contract with a different organization than EMMA, a communication partner of RES Holland Rijnland, in the regional participation activities. Nieuwkoop collaborated with Citizens Lab to form their own 'Denk Mee Nieuwkoop' platform. This platform aims to give context, show the local LSREP map and conduct surveys. Likewise, webinars and information sessions were held with citizens about possible locations. In those meetings, mostly the usual suspects were involved, pensioned citizens with time and expertise in the energy field. This gave the right energy to continue and set the first steps in the participation process, according to interviewee 26 from the municipality of Nieuwkoop. The main reason for setting up their local participation processes is because sufficient support and social acceptability are important. The regional discussion was mainly about possibilities but less about getting society along in this transition. That makes decision-making on a regional level tricky, according to interviewee 26 from the municipality of Nieuwkoop. This approach led to three meetings with citizens and petitions. New citizens in Nieuwkoop were involved. Then, process agreements were made in more minor conversations with conversation leaders. This created the basis for new orientation areas, which have a higher chance of being socially accepted if more citizens are involved in the formation process. Moreover, the focus is on solar and not wind because surveys showed that wind is not possible with the available space in Nieuwkoop, according to interviewee 26 from the municipality of Nieuwkoop.

10.2.2 Goals and Outcomes

It should be noted that the current energy transition phase is primarily situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implantation phase should also take place. That means that for now, the current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most of the four priorities are in the energy transition in Nieuwkoop. Most plans and visions are in the initiation and design phases. It has to be seen if these goals are made more tangible and how they fair once the implementation phase is reached in the coming months and years. The main local goals are the following in Nieuwkoop (Gemeente Nieuwkoop, 2022):

1) The aim is to become energy neutral in 2050;
2) Energy saving in the built environment with a 3,5% reduction per year until 2030;
3) A natural gas free heating system in 2050, with a local vision on the heating transition already made;
4) Renewable energy production:
    - The aim is to produce a minimum of 0,28 PJ (0,08 TWh) per year of local renewable energy production. Under the condition that the goals can change, depending on the wishes and feedback of the municipality regarding the RES process;
    - Doubling the number of houses with solar panels compared to the 3400 homes in 2018 with solar panels;
    - Tripled power of solar panels of around 20000 kW peak

10.2.3 Governance

The municipality of Nieuwkoop is mainly involved with energy production in the energy region Holland Rijnland. Regarding heating, Nieuwkoop is not close enough to Rotterdam to interest them. Nieuwkoop differs from other municipalities because Nieuwkoop created a local map for possible LSREP locations to get a realistic view of what is locally possible. Once this map was realized, there was enough context to start a local participation process, according to interviewee 26 from the municipality of Nieuwkoop. Nieuwkoop sees the energy region Holland Rijnland mainly as a supporting partner, where knowledge and experiences can be shared. Most of the interactions are with close-by and neighbor municipalities, which can also be part of other energy regions, according to interviewee 26 from the municipality of Nieuwkoop.

Table 16: Key Take-aways for the municipality of Nieuwkoop

Type	Explanation
Activities: *Articulation and Alignment of Expectations*	- Information sessions, webinars and surveys to inform and gather sentiment of citizens on the energy transition
Activities: *Social Learning*	- Citizen Lab platform initiated by the municipality to encourage collaboration with citizens on the energy transition
Activities: *Resource Acquisition*	Insufficient amount of gathered data
Activities: *Assessment and Evaluation*	Insufficient amount of gathered data
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Renewable energy production: focus on solar instead of wind energy production 2) Natural gas free heating system by 2050 3) Energy saving measurements in built environment 4) Energy neutral per 2050 Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- Early involvement of stakeholders and citizens is crucial for an accepted and supported energy transition according to the municipality
Governance	- **Regional:** regional collaboration is seen as supporting and informative for the local energy transition vision - **Local**: local renewable energy production area map, separate from the regional map - **Local**: collaborations with close-by municipalities about energy transition, specifically the heating transition

11 | RESULTS

Summary

The results for all studies cases are focused on activities, goals and outcomes, and governance aspects regarding citizen participation and the formation of the regional energy transition. Firstly, the articulation and alignment are focused on broad communication, informing about the energy transition, and measuring the sentiment and feelings of citizens on both regional and local scale. Overall, it is hard to reach all citizens, and there is a desire to focus on participation in more concrete phases, such as the upcoming implementation phase. Secondly, social learning is present in energy transition platforms, citizen labs, and other forms of interacting with citizens and stakeholders. However, resources are lacking for the local municipalities. Relationships between municipalities and active citizens differ widely in scope and quality. Thirdly, resource acquisition is present in the form of available funding in the municipalities and province of South Holland.

In some cases, co-ownership and material participation is present. Fourthly, assessment and evaluation are complex because there are no guidelines for local participation activities, making them hard to assess and compare on a regional level. Moreover, evaluations and assessments for policy goals are stated in some cases.

The goal and outcomes focus on effectiveness, efficiency, and social acceptability. Firstly, the effectiveness and efficiency of current plans and ambitions are hard to assess. It remains to be seen how the current vision translates to the implementation phases. Secondly, the social acceptability. Citizens in the energy region Holland Rijnland are generally in favor of the energy transition. Still, they are hesitant and resistant to large-scale renewable energy projects close to their immediate environment. Smaller scaled projects, such as solar panels on roofs, are more in favor but are not enough to reach the target goals of the energy region renewable energy production.

The governance factors show that RES 1.0 was easy to set up, except for possible locations for LSREP, which is pushed back. This means that it will come back in later RES processes and be complex. This is mainly due to a mismatch between the preference of municipalities and their citizens for possible locations and the province of South Holland. Moreover, municipalities vary in scope and thematic focus in the RES and how they contribute to regional goals. Likewise, municipalities form their local energy visions based mainly on RES 1.0.

This chapter compiles the main findings and common themes found in the four municipalities of the energy region Holland Rijnland, the more minor validation cases and the region itself. The following categories found in Sillak et al. (2021) are used to structure the comparisons per theme:

- **Activities:** activities are focused on fostering change via 1) articulating and aligning expectations; 2) social learning; 3) resource acquisition, and 4) assessment and evaluation. This is mentioned more elaborately in paragraph 3.4.2.2.

- **Goals and Outcomes:** the theme of goals and outcomes are focused on 1) effectiveness & efficiency and 2) social acceptability.
- **Governance**: the governance themes used to analyze the local and regional governance activities, relationships, and decision-making progress in the energy region Holland Rijnland.

11.1 Results per Category

A complete overview with the key takeaways per category and case can be found in appendix C. This gives a comprehensive summary of all the main findings per category. The cases can be compared to each other. It should be noted that the energy region Holland Rijnland case should not be compared in the same manner that municipalities can be compared. Therefore, the energy region Holland Rijnland key take-aways are given a grey background to reflect this difference. The differences come from the fact that the energy region Holland Rijnland consists of different partners. For example, these partners are the municipalities with the autonomy and authority regarding decision-making. This is explained in more detail in the literature review in chapter 2. The differences should be taken into account when comparisons are made between cases. The following paragraphs will detail the similarities and differences between the different cases in the energy region Holland Rijnland.

11.2 Activities

11.2.1 Articulation and Alignment of Expectations

The section will detail activities categorized as 'articulation and alignment of expectations' in the municipalities of the energy region Holland Rijnland. The local and regional participation focuses mainly on broad communication plans to inform citizens of the energy transition by doing surveys, interviews, webinars, and other meeting forms. The general roadmap is laid out with goals and broad ambitions for 2030 and 2050. Citizens get a general view of what is coming to get them familiar with the energy transition and its meaning in the coming decades. On a local and regional level, the focus is on measuring sentiment feelings about the energy transition and gathering feedback about the possibilities of LSREP in the energy region, and bundling the local gathered participation provided the RES Holland Rijnland with a total view of the sentiment among citizens about the energy transition in general. One of the most prominent cases of traction regarding their participation activities was in Alphen aan de Rijn. In this case, a local survey about the energy transition focused on the possibility of LSREP gaining traction among citizens, 'dorpsoverleggen', and news media. The news media coverage was on a local and national level, which led to the city council annulling the current participation activities and demanding a retake of participation with more focus on directly including relevant citizens representatives and citizens. Moreover, this led to more caution in nearby municipalities and partners in the energy region about their participation activities and the effects it can have on the perception of the energy transition among their citizens. For instance, no new participation activities are currently planned in the Lisse case, and other cases keep these experiences in mind when initiating their participation activities.

Furthermore, the conducted participation is mainly process participation. This means that the gathered data in opinions and feedback is not used to alter policymaking in the current initiation and design phases. On the one hand, there is no substantial influence on forming the local energy strategy by citizens' input during participation activities in the Lisse case. Likewise, there were no alterations to

the local energy transition plans in the Leiden case, despite organizing activities such as meetings and feedback sessions with active citizens about RES 1.0 and the local energy strategy. On the other hand, in the Zoeterwoude case, intensive collaborations with citizens are present in the initiation and design phases.

Likewise, there are no existing guidelines on forming local participation activities in most cases. This is recognized in almost all cases and leads to plans to develop guidelines for participation with citizens and other relevant stakeholders. In the Zoeterwoude case, participation guidelines are formed and used to interact with citizens and other relevant stakeholders to develop local plans.

Additionally, the local and regional governmental actors work quite independently on local participation activities. There are collaborations between the RES Holland Rijnland and all partner municipalities to organize information sessions together for citizens about the energy transitions in the municipalities. However, the local participation processes are mostly separate from the other partner municipalities in the energy region. There is little coordination and alignment between the different municipal partners in the energy region on the following two topics: 1) how to form local participation, and 2) how to execute and implement participation plans with citizens and other actors. Not much knowledge sharing is happening regarding the experiences and lessons learned with local participation activities, as seen in the Leiden case.

Moreover, there is a shared feeling in the region and the municipalities that it is hard to reach all citizens. Primarily, the usual suspects are involved, who favor the transition or are against the energy transition. This can make it hard to understand what the 'average' citizen thinks of the energy transition. Therefore, it raises doubt among municipalities and the energy region if enough citizens are reached with current participation. Moreover, it has been hard to involve citizens in the last two years due to the effects of Covid-19 and the lack of meeting citizens in person.

Additionally, the implementation phase has yet to start. Most citizens are not quickly involved in the more abstract and vague initiation and design phases when forming the vision for the energy transition. In this phase of policymaking, it does not feel like it already affects the personal lives of local citizens yet. There is uncertainty in the energy region Holland Rijnland and the municipalities if enough citizens are reached with the current participation activities.

Furthermore, there is a focus and desire for participation during more concrete phases of the energy transitions, slated for later in the energy transition. This can be said for both the governmental actors as citizens in all studies cases. Besides the broad participation to get citizens aligned with the regional and local energy strategies. The concrete themes are 1) the heating transition and 2) energy saving. There is also a focus on earlier phase topics, such as a focus on LSREP, but these topics are more controversial and can lead to backlash, as seen in Alphen aan den Rijn. The more concrete topics are currently the most urgent because these two topics are reaching citizens at home more concretely, and other topics in the energy transition are deemed as too early to involve citizens. The heating transition is reaching citizens' homes directly, making it easier for both governmental actors and citizens to give feedback on concrete, such as installing a heating pump. The actions that need to be taken and what citizens can do about it are more precise. Likewise, energy saving is a topic that is present in almost all cases and is something citizens currently can do in their own homes. Current participation activities can show the demand and mismatch between governmental actors and citizens for concrete actions.

The citizens' feedback is focused on the upcoming implementation phase, while municipalities are currently in the initiation and design phases.

11.2.2 Social Learning

The section will detail activities categorized as 'social learning' in the municipalities of the energy region Holland Rijnland. On a regional level, there is a 'Programmaraad' active functioning as an advising entity consisting of several stakeholders from the market, state, and third sector actors such as energy cooperatives to advise on the RES decision-making process. It should be noted that citizens are not directly active in this 'Programmaraad'. Similar initiatives can also be seen in Zoeterwoude with their Energy Transition Platform, which aims to develop standard methods, shared values, new initiatives with all category stakeholders, and the active involvement and support to form energy transition policies together. This is done in Zoeterwoude, but the Nieuwkoop and Katwijk also started wth a Citizen Lab platform. The municipality initiates this to encourage collaboration with citizens on the energy transition. It should be mentioned that the need for more intensive partnerships to form the energy transition is noticed by other municipalities as well. For instance, in the Katwijk case, there are plans for citizen participation focused on co-creating policy plans for the energy transition with active stakeholders, among them citizens. However, it should be noted that there are uncertainties about the capacity, knowledge, resources, and available funds from a national level within the municipalities to support citizen initiatives in the best manner possible. For instance, in the Leiden case.

Although the lack of resources is an issue that may not be resolved in a short period, there are factors besides the available resources that can be improved. For example, meanwhile, in cases such as Zoeterwoude, there are activities in which influence by the direct involvement of citizens in policymaking is present. As seen in Lisse, there is little influence on the municipality's plans in their local energy vision initiation and design phases. However, there are plans to involve citizens in citizen forums and reflection meetings in the energy transition. Municipalities mostly know and feel that more direct and intensive participation with citizens is desirable. Past active citizen initiatives show possible concrete and positive influence on local decision-making processes, such as with the CO_2-performance ladder in Teylingen. The new plans to actively involve stakeholders and citizens are primarily in early phases and not yet a reality. Another example is the Leiden case, in which active citizens with expertise in the energy transition are present, but their knowledge, skills, time, and efforts are not yet utilized effectively. They could actively think about the local energy transition plans with the municipality. As can be seen, in the Zoeterwoude case, the direct involvement with citizens is going more smoothly.

Lastly, the relationship with energy cooperatives differs widely between the cases. In the Zoeterwoude case, long-term collaboration with the local energy cooperative has been established for years. While in other cases, such as Lisse and Katwijk, the contact is on and off, and the relationship between the municipality is relatively new. The relationships like in the Zoeterwoude work well because they already existed before the energy transition. Likewise, direct and personal contact with citizens is common in other policy domains, thus not specifically for the energy transition. This creates a certain amount of trust towards each other needed to collaborate successfully. This new form of collaboration takes much time, energy, and resources for public officers in most municipalities. As stated before, there is a desire for new resources and funds coming from a national level. Hence, there is the fear that there are not enough available local resources in the municipalities to involve energy

cooperatives correctly. That can lead to miscommunication, misunderstandings, and on and off contact between active citizens.

In some cases, the contact between energy cooperatives and municipalities is good. Still, it mainly focuses on the basic levels of collaboration, such as informing fellow citizens and setting up information sessions with the municipality. Trust from both sides is needed to give citizens more intensive tasks and responsibilities. For most energy cooperatives the cases, this is just the beginning. They also want to create policy together with and implement the policy in further stages of the energy transition with the municipality, which can be seen in Katwijk and Lisse, for instance. This asks for both trust from the government and citizens while also needing the right resources in the municipality to have the available time to create a more intensified bond with active citizens. This trust from both sides is required to work together on a more even level where responsibilities are shared and co-creating policies are possible. As stated before, sharing on a regional level could lead to learning more about the best practices of working actively together with citizens. Such as in the Zoeterwoude case.

11.2.3 Resource Acquisition

The section will detail activities categorized as 'resource acquisition' in the municipalities of the energy region Holland Rijnland. Support from municipalities for active citizens is necessary, state both stakeholders from the government, citizens, and third sector actors. Currently, funding is available from the municipalities and South Holland's province to support local citizens' initiatives. For example, local energy cooperatives can apply for financing in their municipality and the province of South Holland for new projects. However, new resources, knowledge time, and monetary funds are needed from a national level to enable local governments to support active citizens most effectively. Resources are currently lacking and create obstacles for local governments to increase their involvement with citizens. For instance, which can be seen in the Katwijk case.

Additionally, in cases such as Zoeterwoude, the collaborations between municipalities and citizens go further than basic support, such as covering the notary costs. The Zoeterwoude case focuses on the support and focuses on financial and material participation in co-ownership. For instance, that means collaborating with market stakeholders, energy cooperatives, and local and provincial governments to work on LSREP and collectively apply for funds at high governmental levels. Moreover, in the Leiden case, roofs are available for the local energy cooperative to set up projects and support them in similar basic manners by financing things like notary costs.

Furthermore, the sidenote can be made that resources can be seen as social capital and purely financial means. This study mainly discusses social capital in section 11.2.2 under social learning. However, one could argue that resource acquisition goes hand in hand with social learning by using the available resources as active citizens and other relevant stakeholders most efficiently and effectively. This can already be seen in the Zoeterwoude case, in which basic support is present and intensive collaboration to think and set up renewable energy projects with actors from all sectors, such as the market, third sector, and government.

11.2.4 Assessment and Evaluation

The section will detail activities categorized as 'assessment and evaluation' in the municipalities of the energy region Holland Rijnland. The assessment and evaluation can be applied to the following two

main topics: 1) participation processes and 2) the assessment and evaluation of the policy goals and ambitions. It is generally too early to review municipalities' assessment and evaluation methods, but current efforts and plans can be reviewed and analyzed.

Firstly, the evaluation of participation activities in the energy region and its municipalities. There are plans to implement minimal participation requirements for municipalities on a regional level to make the participation processes better comparable. That can help make better decisions on a regional level regarding participation efforts and plans going forward. This is the case because municipalities and other partners in the energy region can better discuss the conducted participation in their municipality. This can enhance the regional decision-making processes and better assess what activities are going well and which actions need improvement.

Moreover, it could enhance sharing of knowledge, best practices, and other information. To give an example, the participation processes are evaluated in Zoeterwoude. The municipality and the local energy cooperative discuss, and have direct and personal contact about expectations, values, and responsibilities in their local energy transition. One explanation for this smooth interaction between actors in the town's rural character is that it makes contact direct and personal. In other cases, such as Lisse, there is a lack of feedback on local energy cooperatives' ideas and initiatives and requires continuous pressure for feedback and evaluation. In Katwijk, there are pilots in neighborhoods regarding the heating transition to evaluate, assess and learn from these pilots to measure the support of their citizens. Likewise, in Zoeterwoude, pilot projects regarding solar parks helped evaluate whether that is desirable and has support among stakeholders and citizens.

In contrast, others focus on projects that create more visibility of the transition in the hope of more support and acceptance. This partly aimed to gather feedback about the heating transition in the neighborhood and alter plans if necessary. However, in the Lisse case, there is little feedback and continuously needed pressure to get feedback on initiatives of the local energy cooperatives.

Secondly, the assessment and evaluation of the policy goals and ambitions. When evaluating the ambitions and objectives set in the region and local plan, for instance, the Lisse case has broad policy and monitoring plans to evaluate and assess whether energy transition plans are on track or need adjustments. Pilot projects are also methods of testing the waters. Although not the main focus of this study, it could be relevant to develop common methods to assess local energy transition plans and regional energy transition plans. In that manner, local efforts can be adjusted to the regional goals to need to be reached in 2030 and 2050.

11.3 Goals and Outcomes

11.3.1 Effectiveness and Efficiency of Transition

The section will detail the goals and outcomes categorized as 'effectiveness and efficiency of the transition' in the municipalities of the energy region Holland Rijnland. It should be noted that the energy transition is currently primarily situated in the initiation and design phases. To assess the effectiveness and efficiency of the transition properly, the implementation phase should also take place. That means that current goals and aims are explained to give an idea about the road ahead. It is currently hard to assess how effective and efficient most ambitions are. Most plans and visions are in the initiation and design phases. It has to be seen if and how goals are made more tangible in the future and how they fair once the implementation phase is happening closer to 2030.

Firstly, the regional decisions made in the RES 1.0 are most of the time taken over by the local energy visions. The RES 1.0 consists of the following four main goals: 1) energy saving, 2) mobility, 3) heating, and 4) electricity. The municipalities reinstate these goals locally and state goals such as saving energy, producing renewable energy, and working on a sustainable heating system. On the one hand, the Katwijk and Zoeterwoude cases mention additional local efforts not explicitly mentioned in the regional plans. For example, the Zoeterwoude case sets more qualitative goals, such as becoming a leading example for the local community to stimulate other stakeholders to enable the energy transition and setting the goal of becoming one of the most sustainable municipalities in the Netherlands. However, no detailed explanation is given on strictly this should be achieved. On the other hand, the Leiden and Lisse cases state more quantitative goals to reduce energy consumption and increase energy production.

Overall, the regional plans are, in most cases, equal to the local energy visions in the municipalities of the energy region Holland Rijnland. The ambitions and goals named frequently in local and regional visions will need implementation plans that are all slated and worked upon for 2022 and onwards. The regional and local programs are similar because the local municipalities have jointly formed the regional energy transition. Despite that collaboration, the municipalities' differences in goals and nuances can be distinguished, which should be mentioned. One topic that differs the most widely is the attitude and plans towards renewable energy production. This is relevant because all municipalities have different opinions, views, and ideas about their efforts to produce more renewable energy as a region. Some municipalities have areas available for potential renewable energy projects, while others have little to none. For example, a municipality such as Zoeterwoude has potentially more potential room for wind and solar energy than a case as Leiden, which is considerably more urban and less rural. This significantly influences the goals, outcomes, and implementation plans to reach the goals and ambitions in this regional energy transition.

11.3.2 Social Acceptability of the Transition

The section will detail goals and outcomes categorized as ‘social acceptability in the municipalities of energy region Holland Rijnland. On both regional and local levels, citizens generally have positive views of the energy transition. There is an attitude that change is needed and can bring positive change to the region and municipalities. However, this is the view in general. Once the focus is on more concrete topics, most support is present for energy savings measures and smaller-scale energy projects, such as solar panels on roofs. This is most likely because energy-saving measures are concrete; citizens feel them directly at home and have a direct positive influence on their financial situations with electricity bills.

Moreover, these measurements have less influence on their immediate environment than LSREP. The concerns in the heating transition are already more visible. The more intensive participation, such as in the Leiden and Katwijk cases, took place in neighborhoods regarding the heating transition. Citizens can feel a lack of direction in the overall national energy transition and do not want to be used as pilot projects. Moreover, citizens can fear that current techniques will become irrelevant in the coming years.

Furthermore, the main concerns regarding social acceptability and support are about the implementation of LSREP in the energy region. It faces resistance from almost all involved citizens in

the performed surveys and information sessions, which results in little to no support. Likewise, according to citizens, there is little desire and need to produce energy in their region and municipality. Moreover, small-scale energy production through solar panels on roofs is an excellent solution for making renewable energy in the region and reaching goals and ambitions. However, this does currently not add up to the targeted numbers for 2030 and 2050, which means LSREP will be necessary. Moreover, citizens find LSREP more acceptable near existing infrastructure, such as highways and industrial areas. As can be read in paragraph 11.4 about governance, this preference of local citizens leads to other conflicts on a governance level.

Moreover, the resistance among citizens links to the fact that it is hard for municipalities to involve all citizens. This makes it harder to assess whether it is known among the authorities what most citizens support and accept. In the Leiden case, it is mentioned that there is a need and desire for social acceptance of policies in the energy transition. Still, it is also a struggle to incorporate citizens and get the desired support and acceptance. This seems like a shared desire for all municipalities in this energy region. However, some examples show a movement in the right direction. In the Zoeterwoude case, the earlier named energy transition platform helps bridge the gap between government, market stakeholders, and citizens and increases social acceptability and support. The local communication and participation vision helps the municipality with expectations and responsibilities. Sessions with citizens about the new LSREP are held early to involve them.

Additionally, in the Nieuwkoop case, the municipality deemed stakeholders' and citizens' early involvement crucial. This is the case because support and acceptance of the energy transition by local citizens are needed. In the Alphen aan den Rijn case, an apparent backlash was seen regarding their participation efforts with citizens. This emphasizes the need for more guidance and clarity on how to conduct participation properly and how it can help achieve the desired social acceptance and support.

11.4 Governance

The section will detail the governance influence on the energy transition in the municipalities of the energy region Holland Rijnland. The concept 'RES' and the 'RES 1.0' were the main focus for the energy region Holland Rijnland and its partners in the last years. The 'RES 1.0' was relatively easy to set up, but with a side note, the possible locations for LSREP are not included in the 'RES 1.0'. The sites are pushed forward in the RES formation process, with the main reason being that no consensus can be found yet among the 'RES' partners. The possible locations will most likely become a challenging theme in the later 'RES' processes, such as 'RES 2.0'. One of the most critical and complex topics in the energy region Holland Rijnland is LSREP. The 'RES' partners search together for possible locations to produce renewable energy on a large scale. There is a set ambition of 1.05 TWh. The challenge is to make that ambition fit within the energy region and spread the production around the region and areas of multiple municipalities. This is a complex puzzle because it was found that regional and local citizens are not in favor of LSREP. However, they see fit at existing infrastructure such as highways and other roads if needed. The search area map is excluded from the 'RES 1.0', which will play a significant role in the future of regional decision-making regarding LSREP.

The preference of citizens does not fit in with the decisions made by the province of South Holland regarding their spatial policy and the way the energy transition can fit into these decisions. According to the province of South Holland, it is problematic because it does not fit within their spatial

planning policies, which are leading decisions in the end for all municipalities and thus the regional decisions made by them. The province is both an upper-level governmental actor and partner in the 'RES', which makes the situation complex for all involved partners. Therefore, the wishes of the municipalities of locations that have support and are accepted by citizens collide directly with the decision-making authorities of the province. This makes the possibilities for LSREP in the energy region Holland Rijnland currently difficult because the possible locations left have little to no citizen support.

Moreover, LSREP locations are difficult to determine on a regional level because it is hard to compare the participation processes of municipalities. Municipalities do not have a clear overview of the participation processes of fellow municipalities, which makes comparisons hard. That can create situations in which possible locations are removed from the regional map without all partners knowing what the exact support and acceptability for that area are by citizens. Additionally, when participation activities get backlash negatively, they will be picked up by the regional partners. This can be seen in the Alphen aan den Rijn case, where citizens' backlash about participation was widely covered in local and national media. That resulted in an impact on close-by municipalities and regional partners. Other municipalities are likely to consider such events when forming their participation activities in the future.

Besides the challenge of setting up LSREP in the energy region, other themes are also important. There are regional working groups for the primary energy transition themes in which the municipalities work together on regional policymaking regarding mobility, energy-saving and heating. Currently, the main focus in the region is on heating with a future transport network from Rotterdam to the Leiden region and LSREP. This is important for municipalities close-by Leiden, such as Katwijk, Lisse, Leiden and Zoeterwoude. All municipalities work on both energy and heating visions. Not all municipalities are equally involved. For instance, there is a focus on heating in the Leiden case and less on LSREP because of a lack of possible available areas. Moreover, Nieuwkoop is actively working together with close-by municipalities to work on a sustainable heating system because residual heat coming from Rotterdam is not a logical option for Nieuwkoop. Municipalities vary in their focus on RES themes and how they approach their local efforts to contribute to the regional goals.

On a local level, energy strategies are made in municipalities. Most of the time, the local energy strategies are equal to the 'RES 1.0', but adapted to the specific municipalities. This means that the strategies are split into distinct heating and electricity strategies as a more significant part of the energy transition. This can be logically explained because the municipalities are the majority of the key actors that jointly form the regional energy strategy. They lead in this regional process, whereas the RES organization has a supporting role to the key actors. The decision-making process for the regional energy strategy mostly takes place on a regional level but with the needed authority from the municipalities. This also comes from a need for regional collaborations, for example, in the Leiden case, where opportunities are lacking to produce renewable energy in their area on a large scale.

Then, the strategies are translated to a local level with local strategy and vision. The local energy strategies are visions in the initiation and design phase, while implementation follows from 2022 onwards, just like regional strategies. Moreover, there is influence from the regional municipalities and municipalities close by such as in the Nieuwkoop and Zoeterwoude cases, with the influence of the participation activities in Alphen aan den Rijn. While in cases such as Leiden, there is a need to collaborate on a regional level because the municipality lacks the energy production possibilities and

tools to implement the energy transition alone. Furthermore, it can be difficult for local city councils to assess the energy transition reports adequately. Likewise, local city council members find it challenging to influence regional plans directly. Which was found in both the Alphen aan den Rijn and Leiden cases. Additionally, the regional decision-making will become more complex in later phases when implementing the visions is needed, and more concrete decisions need to be taken by the partners in the energy region Holland Rijnland.

12 | CONCLUSION

The challenges of initiating, designing, and implementing the regional and local energy transition in energy regions in the Netherlands are explained in chapter 2. The energy regions combine their efforts to reach the national Dutch Climate Agreement goals to deliver a minimum of 35 TWh of renewable energy in solar and wind power. To achieve these goals, all partners and stakeholders in the energy regions need to work closely to make the ambitions a reality. Not only on a regional level but also at a local level within municipalities. Therefore, the local citizens need to be involved because the energy transition will directly affect them in the coming decades. Citizen participation is becoming essential for governments on all levels and is determined as one of the Dutch Climate Agreement's key terms (Klimaatakkoord, 2019). The wishes and desires of citizens should be considered on a national, regional, and local government level. Citizens should contribute and be involved with concrete and attractive opportunities made by the government and involved public and private stakeholders.

Furthermore, many citizens are hesitant about the energy transition and should be involved. This is important to avoid resistance in the energy transition implementation phases (Klimaatakkoord, 2019). To effectively include citizens in the energy transition decision-making process, it is necessary to study *the influence of forms of citizen participation in the decision-making processes of regional energy transitions.* This conclusion will discuss answers to the main research question, the sub-questions, the limitations of this study, the academic discussion, recommendations for further research, and recommendations for policymakers.

12.1 Answers to Research Questions

SQ1: What are citizen participation, co-creation, and co-production in the context of regional energy transitions?

Firstly, citizen participation is a concept with several meanings, depending on who is asked. To what extent and manner citizens participate can influence how citizen participation is defined (Callahan, 2007). One definition that captures the definition of citizen participation is the following: "a group of procedures designed to consult, involve and inform the public to allow those affected by a decision to have an input into that decision" (Rowe & Frewer, 2000).

Secondly, co-creation can be defined as how public services are created with the active involvement of the people affected by the services created. It can be seen as the production process regarding public services of new renewable energy projects as part of the energy transition. Likewise, co-creation can be defined as a way in which governments and citizens work together to facilitate the energy transition. Citizens help co-design and produce public goods and services. That could make decisions more socially legitimate and effective at reaching and formulating policy goals (Itten et al., 2021).

Thirdly, co-production can be described as the act of working together between citizens and governments to produce public services or goods (Bason, 2010). Collaborations between citizens and governments can be established with co-creation, leading to co-production (Albrechts, 2013; Nesti, 2018). Likewise, a definition that is used frequently in the research field is the following definition: "a

wide variety of activities that can occur in any phase of the public service cycle and in which state actors and lay actors work together to produce benefits" (Nabatchi et al., 2017).

SQ2: Why are citizen participation, co-creation, and co-production of importance in the context of regional energy transitions?

This sub-question was addressed in chapter 2 in the literature review and chapters 3.1 to 3.3 in the theoretical framework. The choice for regional governance comes out of the necessity to involve local communities by direct participation and enable solutions for the transition that local citizens support. The RES needs to be socially accepted and supported by the social partners in the 'RES' processes, such as citizens, business communities, and other stakeholders. Citizen participation has become an important topic for governments on all levels and is determined as one of the Dutch Climate Agreement's key terms. The wishes and desires of citizens should be considered on a national, regional, and local governance level. Citizens should contribute and be involved with concrete and attractive opportunities made by the government. Furthermore, a large group of citizens who is currently hesitant about the energy transition should be involved to avoid resistance in later phases of the energy transition.

Likewise, the following goals are important in the RES decision-making processes according to the Dutch Climate Agreement: 1) social acceptance of RES; 2) informed decision-making by using available knowledge and skills from citizens, companies, and social organizations; 3) societal support for decisions that influence the RES; 4) community ownership: making citizens, companies and societal organizations (co)owners of parts of the RES. Likewise, this means that benefits should remain close to local communities. This includes the goal of 50% ownership of new renewable energy projects, citizen involvement during policy formations, and ensuring their interests. More public and private actors should be involved if the RES wants to become the social project it intends to be. This also means involving less organized citizens and societal partners. It doesn't seem easy to gather the necessary capacity, knowledge, and skills in energy regions to participate more intensively with the local community. Furthermore, fair participation of the community plays a role. Currently, it is hard for unpaid volunteers from local and regional citizen initiatives, such as energy cooperatives, to keep involved with paid employees from governmental bodies, and willingness to cooperate is declining.

Moreover, the regional energy transition policymaking mainly takes place in a decision-making process where rapidity is a priority. Ultimately, this reduces the time available to have public debates, which is necessary if citizens' opposition and resistance against renewable energy projects are avoided. Likewise, the decision-making processes occur on both a regional and local level. The regional partners, such as the municipalities, decide on the regional visions and ambitions. Then, the plans need to be determined and decided on in the local city councils of the involved municipalities in the energy region. This means an extra layer of bureaucracy is added to the overall decision-making processes. Likewise, this will take additional time for both the regional and local actors, while the speed of the transition is also accelerating. That means that there is pressure on all involved authorities, which also has consequences for regional and local authorities' available time and resources to involve citizens in the decision-making processes on both levels.

Additionally, listening to voices and feedback from the local community by local authorities can make municipalities more resilient, which can lead to better policies. Resilience is one of the factors

that can be seen as necessary to combat climate change and create adequate policies (Adger, 2005). Resilience can be defined as how a system can self-organize and keep essential structures, processes, and feedback intact when reoccurring disturbances and changes are present. Moreover, the concept of resilience is about adapting to uncertainty and surprises instead of attempting to control uncertain changes (Adger, 2005). Likewise, local governments are more capable of listening to feedback and acting on it than centralized ones. Collaboratively policymaking at local levels is increasingly becoming part of the global environmental governance to create a self-reliant local network. Citizens want to express their opinions about the influence of the energy transition on their local environment. In the form of co-creation and co-production, active citizenship can enhance the legitimacy, transparency, and outcome of policymaking.

Moreover, several factors influence citizen participation. The distinction can be made between four categories: process characteristics, contextual factors, societal and political. Firstly, the process characteristics are about the participation process itself. That means trust by having a real influence on decisions and fair distribution of benefits and downsides. Secondly, contextual factors are about the involvement of citizens with low ambiguity or responsibilities among actors and transparent participation formats that start with informing and end with empowering. Thirdly, societal aspects such as a good relationship between public organizations and citizens are important. Fourthly, political factors include viewing citizens as essential and worthy actors to involve. This is mentioned in the policy goals of the Dutch national government as an ambition.

Lastly, co-creating and co-producing policies can help increase public trust and acceptance if involved actors are aligned on goals and how to get there. Citizens should be part of all the planning stages regarding the development of renewable energy projects. It should include the policies that will affect citizens in their direct environment. The earlier this is done in developing renewable energy projects, the better. However, when co-creation is not performed well, this could result in accountability losses and actors not feeling responsible at all. Likewise, there should be caution within the co-creation processes of only attracting the few usual suspects. Governmental actors like to keep control to avoid mistakes being made and let go of control to make co-creation work. This can result in citizens being hesitant to join co-creation efforts when they feel that their ideas do not fit in with the plans of governmental actors.

An impactful example is Alphen aan den Rijn, in which the participation activities were found to be excluded too many citizens and organized citizens in towns of the municipality. Moreover, there was media coverage on both a local and national level, which found that the participation processes were already biased towards the fact that wind turbines would come to the area. Citizens felt like the main decisions were already decided on by the local and regional authorities, and they could only state which locations would see fit. Instead of co-deciding whether citizens prefer any wind turbines in the area. If the municipalities are conducting participation, it should be done well. Alphen aan den Rijn shows that you have to approach it carefully and hear all citizens from the start. Otherwise, obstacles are created, and it becomes even more difficult to regain trust. It is better to prevent citizens from speaking out against regional decisions by making involving and hearing them. After all, prevention is better than a cure.

SQ3: How do municipalities compare in terms of citizen participation, co-creation, and co-production?

Citizen participation plays an important role in all studied municipalities. They all find it important and want to involve citizens in the energy transition. Co-creation and co-production played a minor role, with activities in a few municipalities. That means that informing citizens about the energy transition in a broad sense is the priority. That way, citizens get a general view of what is coming and become familiar with the regional and local energy transition.

Moreover, measuring the sentiment and feelings about the energy transition among citizens in the region is a priority. Bundling regional and local efforts presents a clear representation of what citizens think of the energy transition in the region. However, the current forms of participation vary widely among municipalities, making it hard to compare the results and outcomes on a regional level. There are collaborations between municipalities and the organization RES Holland Rijnland regarding information sessions and surveys. However, most local participation activities occur without much knowledge sharing or standard guidelines about participation activities.

The regional approach to forming the energy transition is useful for sharing knowledge. Skills, ideas, and plans can be shared. That is one of the best reasons to organize the energy transition in this decentralized manner, compared to an energy transition coordinated from a top-down perspective via the national government. A focus on sharing the best practices could benefit the effectiveness and efficiency of participation activities in the energy region. Currently, this is not happening on a big scale. Municipalities in the energy region Holland Rijnland can learn from a case such as Zoeterwoude, where more progress is already made regarding social learning and the active involvement of citizens regarding the formation and implementation of policies in the energy transition.

Furthermore, municipalities such as Katwijk have ideas and plans to more structurally share knowledge and best practices with local and regional partners to enhance social learning in their municipality. This could be encouraged by the RES Holland Rijnland organization, but the municipalities should also take the responsibility to improve the sharing on a regional level. The municipalities are, in the end, the leading partners with the autonomy to decide on the regional policies and need to guide which way the energy transition will head. Enhancing the combined efforts, the individual municipalities should make sharing a key factor in the coming phases. This can improve the participation activities of all municipalities in a meaningful way, even when considering a lack of resources, funds, and time. The mere fact that this energy transition is regional can enhance the quality of the decisions made in the energy transition. A focus on the aspects that make regional decision-making unique is useful. This encompasses the ability to share experiences, skills, and knowledge more quickly than coming from a top-down perspective. The sum can be greater than the individual municipal efforts combined, which is not possible if all the municipalities keep their participation activities to themselves.

Moreover, a shared feeling in both the region and the municipalities is that it is hard to reach all the citizens intended to reach. Most of the time, the usual suspects are attending local participation activities. It raises doubts among municipalities if enough citizens are reached with current activities. Most citizens are not quickly involved in the initiation phases, which are often more abstract and do not reach citizens directly yet in their direct environment.

Additionally, the efforts and plans to work together in co-creation and co-production with citizens are low. Currently, the phases for policymaking are in motion in the RES, while implementation is slated for later down the RES. This naturally means co-creation is more likely to occur than co-production. However, the participation is mostly through information sessions, webinars, and surveys. Municipalities are not used to get feedback on policymaking in the initiation and design phases of the energy transition in most cases, such as the Lisse, Katwijk, and Leiden cases. The focus is more on concrete plans, such as enabling energy savings in citizens' homes and getting into conversations with citizens about possibilities regarding the heating transition. In the Zoeterwoude case, more intensive collaborations are already occurring for years and in other policy domains. This makes the shift to working more intensively on forming and implementing policy with energy cooperatives and other citizen initiatives natural and self-evident.

Moreover, there are plans to increase citizen involvement and stakeholder participation, focusing on network meetings, citizen forums, and reflection meetings. However, these plans are mainly in the initiation phases and focus on concrete projects during the implementation phases. The visions are not yet a reality and part of the municipal energy visions and strategies.

Furthermore, a lack of more intensive relationships with citizens and organized citizen initiatives is a lack of time, energy, and resources in the municipalities. Funds and resources should come from the upper levels of the government. New resources, knowledge time, and monetary funds are needed from a national level to enable local governments to support active citizens effectively. Resources currently lack and create obstacles for local governments to increase their involvement with citizens because there are not enough time, funds, and resources. The scarce resources and tools in municipalities also increase the need for regional collaboration. In theory, resources can be bundled and potentially be used for regional plans that benefit all municipalities in the region.

It is currently a complex process to incorporate active forms of citizen participation in earlier phases of the energy transition. Active citizens have the potential to use their expertise and intrinsic motivations to contribute to the energy transition substantively and enhance support and social acceptability among fellow citizens. Most municipalities focus on concrete projects and the upcoming implementation phase to actively involve citizens in the energy transition. As can be seen in some cases, such as Zoeterwoude, the involvement of citizens is already more intensive and successful.

SQ4: In which ways do governance structures influence local and regional decision-making?

The regional governance regarding the energy transition is interesting and novel because both bottom-up and top-down policies actively influence policymaking, resulting in conflicts. Regional energy transitions can be seen as a reaction to failed central top-down policies introduced in the 1990s to develop wind energy parks. Decentralized governmental bodies, such as the provinces and water boards, have decent amounts of autonomy and can be helpful to tackle issues that require cooperative action between the region and municipalities. In contrast to the provinces and water boards, the regions do not have autonomy and are not a formal part of the Dutch government. The RES can be the foundation for a regional vision for the energy transition, but the municipalities have to make the final decisions. RES pilots started with the formation of thirty energy regions. However, this is not in line with existing regional structures and other decentralized administrative networks in different policy domains, such as health care. The choice for regional governance was made, considering that direct

participation of local communities can help form solutions in practice supported by local communities. The main goals of the RES are reaching 35 TWh of energy production in 2030 and the development of a Regional Heat Structure (RSW). The RES can be seen as a way to sit between the top-down central approach and bottom-up initiatives, a new form of governance. The most profound issues in the RES are the following: trade-offs between top-down and bottom-up; transparency in costs and benefits; lack of governing capacity; systemic efficiency and optimization; and fair participation.

Specifically, the results regarding governance in the regional energy transition in Holland Rijnland are addressed in chapter 11.4. The concept 'RES' and the 'RES 1.0' were the main focus for the energy region Holland Rijnland and its partners. The 'RES 1.0' was relatively easy to set up, but with the important side note, the possible locations for LSREP are not included in the 'RES 1.0'. Possible locations for LSREP are a complex puzzle. Through participation activities in the form of surveys, interviews, and information sessions, it was found that citizens are hesitant toward the new LSREP. However, citizens see fit at existing infrastructure such as highways and other roads. Although, that possibility is problematic from the view of the province of South Holland because it does not fit within their spatial planning policies. That decision leads because the province is a higher formal governmental body than the municipalities and the informal energy region. LSREP in the energy region becomes challenging to set up because only locations with little to no citizen support are left.

Additionally, municipalities do not have a clear overview of the participation processes of fellow municipalities, which makes comparing them hard. That can create situations where discussions between municipalities about social acceptability and support for specifics of the energy transitions are complex—for instance, the possible locations for LSREP. Municipalities do not know precisely how support is present in other municipalities and have to trust fellow municipalities when they state the support of their citizens regarding possible locations. This can create friction because the participation activities cannot be compared and assessed individually.

Moreover, the municipalities are not equally involved in all themes in the regional energy transition. For instance, the Leiden case focuses their local efforts more on heating and less on LSREP because of a lack of possible available areas there. In that way, all municipalities vary in their focus on themes. Most of the time, the local energy strategies are equal to the 'RES 1.0' but finetuned for the specific municipality. The energy transition is being formed at a regional level, without many forms of direct citizen involvement. Besides the regional survey and interviews and active citizen initiatives in the 'programmaraad' of the energy region Holland Rijnland. Subsequently, the regional vision is translated to local energy visions. The local energy strategies are visions in the initiation and design phase, while implementation follows in 2022. Most of the content is decided on at the regional level, while most of the participation processes are determined to take place locally. That makes it hard to create room for direct citizen participation in the regional energy transition decision-making processes.

To create an environment where more direct citizen participation is possible, the municipalities could look at more successful cases like Zoeterwoude. Citizens can think along with the municipality about policy formation, the initiation of new renewable energy projects, and getting in contact with fellow citizens about what they can do at home. This is possible on a local scale and helps form local input on the regional decision-making process. In this way, the local municipalities form their point of view regarding the energy region in collaboration with active citizens regarding the formation and implementation of policies. This can be in the form of an energy transition platform, such as in

Zoeterwoude, or other methods such as citizen forums and regular reflection meetings. In this way, the municipality creates a local narrative in collaboration with citizens as partners, increasing support among their citizens. But more importantly, it establishes trust between the government and citizens because they see each other as serious partners to make this energy transition a reality. As seen in the Nieuwkoop case, local participation activities take the citizens as serious partners, for instance, to think about possibilities for LSREP. It may start with the usual suspects, but it can be a good start for the government and involved citizens if these activities work out well. Bit by bit, the trust in the relationship between the local government and citizens is being improved upon. This can be seen as a good starting point for further collaborations and a good foundation for the rest of the energy transition ahead. The earlier trust between citizens and government is established, the better chance this bond grows in the coming years. Moreover, if citizens are involved too late in the process, there is a chance that citizens feel left out. That can result in an even more complex procedure to create a good relationship between government and citizens.

Once a good foundation and relationship are formed on a local level, the municipalities will most likely have a better stance in the decision-making process on a regional level. This could be the case because the municipalities will make decisions that are more in line with the input of their local citizens. Local citizens' opinions, feedback, and critics are incorporated into the local visions, creating trust between citizens and the municipalities. Altogether, the social acceptability and support of the energy transition among local citizens will likely rise because the municipality can justify its actions, inputs, and decisions made to their regional partners and their citizens better. This will result in better insights for fellow municipalities about the participation activities and increase the knowledge about support and acceptability of possible LSREP locations. Ultimately, this could result in more fair, just, and democratic decision-making on a regional level because citizens have better insights into how their municipality represents them on a regional level. This is crucial because regional governance can be vague and abstract to citizens. Not being involved in the regional decision-making can establish the feeling among citizens that they are left out and unheard by their municipality. In this way, participation can bring the regional energy transition closer to local citizens and increase the chances of enabling a successful energy transition in the coming years with more support and less resistance from citizens and other involved societal stakeholders.

The decision-making and implementation processes in further RES continuation will be challenging on both a local and regional level. However, there are examples in municipalities of the energy region Holland Rijnland that show that collaboration with citizens is possible and has the potential to make regional energy policies more widely supported by local communities.

Main research question

The following question is the central research question functioning as the basis for this research:

"In which ways is citizen participation present, organized and influencing the initiation, design, and implementation phases of the energy transition in the energy region Holland Rijnland?"

The conclusion can be drawn that citizen participation is present and an important topic for municipalities in the energy region Holland Rijnland. It is important to note that this mainly concerns

the initiation and design phases because the implementation phases have not yet been covered on a large scale. How citizen participation is implemented differs widely between municipalities in the energy region. On the one hand, some municipalities implement participation in a basic manner with surveys, interviews, and online and offline information sessions. These activities' gathered input and aim range from informing citizens to gathering sentiment, feelings, and opinions about the energy transition in general. This includes a local and regional focus to measure how citizens feel about specific topics, such as LSREP and the heating transition.

On the other hand, some municipalities implement participation focused on social learning, collective resource acquisition, and serious efforts to establish working relationships between citizens and government to form the energy transition with policies and implementation. The municipalities view their local citizens as serious partners who can think about local policies. That can lead to local visions that are more democratic and legitimate because citizens have real input on the outcomes. Moreover, social learning and resource acquisition go hand in hand. In Zoeterwoude, energy cooperatives consisting of citizens work together with market actors and the municipality on new local renewable energy projects. Energy cooperatives are active in all municipalities, so there is potential for collaborations in the whole energy region. Likewise, co-creating and co-producing policies can help increase public trust and acceptance if involved actors are aligned on goals and how to get there. If the municipalities are participating with citizens, it should be done well. Alphen aan den Rijn shows that you have to approach it carefully and hear all citizens from the start. Otherwise, obstacles are created, and it becomes even more difficult to regain trust. It is better to prevent citizens from speaking out against regional decisions by making serious efforts to involve and hear them. After all, prevention is better than a cure.

Moreover, the energy region Holland Rijnland organization has a supporting role regarding citizen participation. The municipalities have the autonomy and leadership in energy transition decision-making by deciding how to form and implement policies. This study shows that involving citizens in the early decision-making phases is often found challenging by municipalities. There is no blueprint for implementing participation processes successfully, so all municipalities have to find their way of involving citizens in their local energy transition. There is support coming from the NP RES, which is the national supporting organization for all energy regions. For instance, this support includes worksheets with more detailed information on forms of participation and how regions and municipalities can work towards more direct citizen involvement in the upcoming RES 2.0.

Moreover, the 'Participatiecoalitie' finds and collects stories of successful participation activities. This kind of information could be used more effectively in the governance of the energy region. For example, the direct involvement of important actors from all sectors. This includes citizens, organized citizens, market actors, and third sector actors such as energy cooperatives and the government. This is already set up on a regional level but could be expanded. Examples of these initiatives are the Energy Transition Platform in Zoeterwoude and the 'programmaraad' in the region.

Additionally, there is a lack of shared experiences, knowledge, and skills in the energy region. In theory, the regional approach could be part of the solution. Regional governance should live up to the governance structure it intends to be. This can be done by enabling sharing of skills and knowledge of all municipalities that can benefit the energy region. This could be encouraged by the RES Holland Rijnland organization, but the municipalities should also take the responsibility to improve the sharing

on a regional level. A focus on the aspects that make regional decision-making unique is useful. This encompasses the ability to share experiences, skills, and knowledge more easily than coming from a top-down perspective. The municipalities are the leading partners with the autonomy to decide on the regional policies and need to guide which way the energy transition will head. Enhancing the combined efforts, the individual municipalities should make sharing a key factor in the coming phases. The sum can be greater than the individual municipal efforts combined, which is not possible if all the municipalities keep their participation activities to themselves.

Moreover, an additional factor influencing citizen participation activities in municipalities is a profound lack of time, resources, and funds, which should be made available at the national level. Likewise, the whole notion of working directly with citizens as partners is not naturally fitting in local governments and takes time to get used to. The scarce resources and tools in municipalities also increase the need for regional collaboration. In theory, resources can be bundled and potentially be used for regional plans that benefit all municipalities in the region. However, it should be noted that additional resources for municipalities are essential for a successful energy transition, even when collaborations are becoming more intensive and successful in Holland Rijnland.

Lastly, governance on local and regional levels affects citizen participation and the chance of a successful energy transition. The energy transition is being formed at a regional level, without many forms of direct citizen involvement. Besides the regional survey and interviews and active citizen initiatives in the 'programmaraad' of energy region Holland Rijnland. Subsequently, the regional vision is translated to local energy visions. Most of the content is decided on at the regional level, while most of the participation processes are determined to take place locally. That makes direct citizen participation hard in the regional decision-making processes. The municipalities should create a local narrative in collaboration with their citizens as partners, increasing support among their citizens. But more importantly, it establishes trust between the government and citizens because they see each other as serious partners to make this energy transition a reality. The earlier trust between citizens and government is established, the higher chance this bond will grow in the coming years.

Moreover, if citizens are involved too late in the process, there is a chance that citizens feel left out. That can result in a more complex approach to creating a good relationship between government and citizens and getting them along in the energy transition. This is a crucial aspect needed to achieve the desired support and social acceptance of citizens by the government and to make plans for possible LSREP a reality in the energy region Holland Rijnland.

Likewise, once a good foundation and relationship are formed on a local level, municipalities will most likely have a better stance in the decision-making process on a regional level. This could be the case because the municipalities make decisions more in line with their citizens' views, feedback, and opinions. Local citizens' ideas, feedback, and critics are incorporated into the local visions. It can positively influence the trust between citizens and the municipalities. However, municipalities need to give feedback to citizens and show them that their input is taken into serious consideration when forming policies, which is not often the case currently. In this way, participation can bring the regional energy transition closer to local citizens. Likewise, it can increase the chances of enabling a successful energy transition in the coming years by creating more support and less resistance among citizens.

12.2 Academic Discussion

This research contributes to this field of scientific research because it provides a detailed embedded-case study about the role of forms of citizen participation in the decision-making processes of regional energy transitions. There is no fixed definition for citizen participation. Moreover, citizen participation is a term that can be divided into several forms of participation that differ from more passive to more active forms of participation. This research gives insights into local governments and their visions to involve citizens in their energy strategies. The lessons and results found in the individual cases and the comparison results can be used in the future process of the RES in the energy region Holland Rijnland. Moreover, the findings and recommendations in this study can be applied to the other twenty-nine energy regions in the Netherlands. The following paragraphs will focus on governance and energy region aspects stated in the literature review and theoretical framework and the results found in this research.

In the first place, Schuurs & Schwencke (2017) state that the first pilot energy regions were encouraged to share experiences and discover the goals, visions, and strategies for the short and long term, such as becoming carbon neutral by 2050. With this in mind, this research shows that most municipalities do not share their experiences regarding participation. This is primarily a local matter. There are collaborations between municipalities and the organization RES Holland Rijnland regarding information sessions and surveys. However, most local participation activities occur without much knowledge sharing or standard guidelines about participation activities between municipalities. Municipalities do not have a clear overview of the participation processes of fellow municipalities, which makes comparing them hard. That can create situations where discussions between municipalities about social acceptability and support for specifics of the energy transitions are complex.

Likewise, the RES can be the foundation for making a vision and plan to form the energy transition. Still, the municipalities have to make the final decisions according to the outcomes of these pilot RET (Hoppe, 2021). These pilots showed that the policymaking in RET is difficult and complex, mainly because the RET are not formal entities in the decision-making processes. Municipalities, provinces, and water boards are needed for policymaking in the end. As an illustration, this complex situation is apparent in the energy region Holland Rijnland. Especially regarding the locations of potential LSREP locations. Municipalities mostly see fit at currently existing infrastructure because that fits in with the desires and support of citizens. Although, that possibility is problematic from the view of the province of South Holland because it does not fit within their spatial planning policies. That decision leads because the province is a higher formal governmental body than the municipalities and the informal energy region. LSREP in the energy region becomes challenging to set up because only locations with little to no citizen support are left. Moreover, the region as an organization does not have a leading role and only supports the regional partners that form the energy transition.

Moreover, the following goals for participation can be stated: 1) social acceptance of RES; 2) informed decision-making by using available knowledge and skills from citizens, companies, and social organizations; 3) societal support for decisions that influence the RES; 4) community ownership, in a way that makes citizens, companies and societal organization feel (co)owners of the RES and part of the RES (NP RES, 2019). This also means that benefits should remain as close as possible to the local stakeholders and local stakeholders involved. Subsequently, this research finds that municipalities have these goals stated on both regional and local levels. However, societal support and acceptance is

an ongoing process. These stated goals are not yet reached and are not evident in all municipalities. The need for more direct citizen involvement is present.

12.2.1.1 Trade-offs between Top-down and Bottom-up Governance

The RES decision-making processes mainly take place outside of the direct control of municipality councils, which can cause friction (van der Steen et al., 2020). These frictions arise because of the multiple layers of governance collaborating during the regional energy transition. In like manner, it is not necessarily the case that regional and local perspectives are aligned, which can create friction when municipalities want to make changes regarding feasibility, desirability, and if changes need to be made (Hoppe, 2021; Jesse et al., 2020). Moreover, municipalities could make choices from their perspective, which are not necessarily the best for the whole region (Boogers, 2019). In this study, there is support on a regional level from the RES Holland Rijnland organization and the nationwide supporting organization NP RES for instance. However, municipalities do local participation with citizens and form their local energy visions alongside the RES. The local authorities decide on the direction taken, and the RES Holland Rijnland is a supporting actor for the local authorities.

Moreover, especially regarding LSREP locations, ongoing discussions occur between municipalities, with the province of South Holland and the RES Holland Rijnland organization. Municipalities have to think about their local direct environment and citizens, but also about the regional feasibility and balance of benefits and downsides of decisions. Moreover, the province of South Holland has an overarching role besides being a partner in the process. All in all, this creates a complex decision-making process, which is the case in this research.

Likewise, the energy transition can be viewed from a technocratic or social standpoint. The 'Participatiecoalitie' calls this transition mainly a social one, in which the technology is available to support the transition and not the other way around (Participatiecoalitie, 2020). This is also why the preference is solar parks because citizen values are more aligned with solar power than wind power. If only the technocratic values mattered, wind parks would be in the majority because of lower costs and higher yields in general (Hoppe, 2021; van Santen, 2020). This study shows that municipalities confirm these statements and find foremost the most complex task to make decisions that align with the values and desires of their citizens.

12.2.1.2 Governing capacity

Furthermore, in general, municipalities lack capacity and budget cuts occur (van den Akker et al., 2019). Especially small and medium-sized municipalities lack enough staff to work on the transition, and it does not seem that this understaffing problem will be solved soon looking to the tight labor market (Participatiecoalitie, 2020). Additionally, according to the 'Participatiecoalitie' (2020), public and private actors were involved in forming the first RES concepts, but these were just small numbers of citizens and bottom-up initiatives. More citizens should be involved. However, it seems complicated to have the capacity, knowledge, and skills in energy regions to facilitate the necessary measures to let local communities participate.

Likewise, this can result in energy transition projects moving to external organizations and partners. These market parties, such as consultancies specialized on the topic, do most of the work and can prevent governmental bodies from learning from these experiences themselves. That can keep

being governmental actors depending on other (market) actors, as Rengers & Houtekamer (2020) stated. This is also found in this research, for instance, in the Lisse case, for which a consultancy writes the local energy transition. As an illustration, this research shows that the municipalities, in all instances, struggle with their efforts to involve citizens in their decision-making processes directly. The notion of involving citizens directly is primarily new for municipalities. More time and resources are needed to create new working structures to collaborate with citizens. There are collaborations between municipalities and the organization RES Holland Rijnland regarding information sessions and surveys. However, most local participation activities occur without much knowledge sharing or standard guidelines about participation activities.

12.2.1.3 Efficiency Problems of Regional Energy Systems

The new energy system needs to be efficient and optimized, while there is lacking focus on that topic in the RES so far (Matthijsen *et al.*, 2021). When looking at the system overall, several points of critique can be noted. Such as little focus on energy saving and the energy regions are not collaborating and coordinating well enough. On the one hand, this research finds that municipalities in the energy region Holland Rijnland focus heavily on energy savings. This is the case because it is a more concrete topic. It affects citizens directly at home and is seen as more doable in the short term than more extensive and regional topics such as LSREP locations. On the other hand, this study confirms that the collaboration and coordination in the energy region are not good enough currently. As stated before, there is a need and chance to collaborate. This is needed to live up to regional governance's potential to share participation activities, knowledge, skills, and best practices.

12.2.1.4 Fair Participation of Community

According to Hoppe (2021), it still seems unclear how the state is supporting the energy regions, which results in a passive approach in the regions. Moreover, trust is the leading force for work because there is no formal accountability between the regions. Furthermore, resources seem to be mostly at other actors than the regional and local ones. Resources are found mainly by commercial project developers, big energy companies, and the national government. Additionally, it is not yet sure how municipalities will work towards joint regional set goals regarding responsibilities. Participatory organizations and decentralized governments lack governance capacity during the energy transition (Hoppe, 2021). As an illustration, this research points out that municipalities lack resources and funds. That means they cannot put in all the time and effort needed to directly involve and support (active) citizens in their policymaking processes. Subsequently, municipalities find it is hard to assess if all citizens are reached, heard, and involved enough. Hence, making it hard to compare participation efforts on a regional level between municipalities. That makes it harder to work towards meaningful goals like LSREP and the heating transition. These big topics rely heavily on social acceptance and support of citizens and are marked as crucial elements for the energy transition on all governmental levels.

Moreover, Kuzemko et al. (2016) state that citizens should trust the process and want to influence the process once they are involved. They want to be taken seriously and listened to with a transparent playing field where actors are on the same level. In most cases, the energy cooperatives take on the role of organized active citizens, but the municipalities still need to learn how to work together as partners. Mostly, engaged citizens are seen as separate entities that do their own thing

without much guidance. At the same time, the active citizens want more frequent discussions about policies and implementation as a serious partners with expertise.

Moreover, citizens see the goals and ambitions to involve them actively but do not see that happening to the extent promised on paper in visions, as Devine-Wright (2011) mentioned. This study shows that most of the statements that Devine-Wright (2011) and Kuzemko et al. (2016) mention can be found in this study as well. Most municipalities need to work towards a way of working in which citizens are seen as partners and not separate entities. On the one hand, in cases like Zoeterwoude, this is quite successful. On the hand, the local energy cooperative in Lisse sees the goals and ambitions on paper but does not see the promises and visions in real life. That creates frustration among active citizens that want more frequent meetings and active involvement.

12.2.1.5 Theoretical framework of Sillak et al. (2021)

This study contributes to the frameworks that Sillak et al. (2021) present in their research about urban energy transitions. This study adds a governance aspect lacking in Sillak et al. (2021). The main focus of the theoretical framework is on co-creation by analyzing: 1) activities; and 2) goals and outcomes in an energy transition. This can be divided into several phases: 1) initiation; 2) design) and 3) implementation. However, the theory does not incorporate governance aspects in a detailed manner in the analysis. It is essential to realize that this aspect is crucial to analyzing the regional energy transition.

This is important because the participation processes in the regional energy transition are strongly related to governance. Firstly, the need for more direct involvement of citizens comes from the national government and trickles down to the local authorities. There is a focus on the support and acceptability of the energy transition by the region's citizens. To put it another way, without the support and involvement of citizens, the decisions made on a regional level cannot be made a reality. These decisions will then most likely face resistance from citizens. Thus, governance and citizen participation are inherently and deeply linked to one another in this transition. There is a need to incorporate governance elements to understand how and why citizen participation in the energy region Holland Rijnland is formed and implemented in the way it is. There is a need to study how the regional partners come to regional decisions and how they view the role of citizen participation on both a local and regional level in policymaking. Researching citizen participation in combination with governance provides insights into how the regional energy transition is currently being formed. As seen in this study, the local efforts differ widely and are not aligned in many ways.

Moreover, there is a lack of shared experiences, skills, and information. Ultimately, this link between citizen participation and governance will most likely affect the regional and local decisions. Moreover, it will influence the feasibility of reaching the ambitions set for 2030 and 2050. Therefore, it is important to consider governance aspects when researching citizen participation, such as co-creation and co-production, during the energy transition in the Netherlands.

12.3 Limitations of this Study

12.3.1 Selection of cases

The energy region Holland Rijnland was chosen with four municipalities as main cases and two additional cases. To get a complete view of the region, the rest of the municipalities could give a more comprehensive overview of the energy region. Moreover, due to time constraints, the two additional

cases could not be elaborated upon equally to the four primary cases. More detailed cases could provide more data for the analysis of the energy region.

12.3.2 Interview process

The method of interviewing involved actors is relevant to collect data about the current policymaking processes in the energy region Holland Rijnland and the four municipalities in it. In all cases, efforts were made to interview many involved actors, such as active citizens, policy workers, governors, and other relevant stakeholders. However, it is hard to grasp the general citizen in all cases. They all have their preferences and opinions. Therefore, interviews were conducted with citizens known for citizen initiatives in the municipality, for example, in the form of an energy cooperative or energy ambassadors. More interviews with citizens out of the 'community' category, e.g., households, protests, and advocacy groups, both more inactive and more active, could have provided relevant information. It should be considered that citizens' perception is hard to summarize and is by definition a complication when defining their preferences, opinions, and experiences during the energy transition.

Likewise, more even distribution could be beneficial by doing more interviews with involved stakeholders in the market, state, third sector, and community sector. A selection was made, which is not complete. For instance, interviews with a more diverse group of active citizens besides energy cooperatives, e.g., interviews with groups of opposing citizens. Moreover, an attempt was made to involve city council members of the selected municipalities. However, only one interview took place. More interviews with city council members in all cases could have provided a complete dataset. Furthermore, the interviewees do not have the same knowledge and experience in the RES process. That means one interviewee could have more extended experience with the energy transition than others. Likewise, all interviewees have their own experiences and bias about the energy transition.

12.3.3 Methodology

This study is explorative and qualitative with interviews, which implies limitations. The primary forms of data collection were desk research, in the form of reports and documents, and interviewing stakeholders and participants. The researcher was not directly involved in meetings or other forms of (direct) citizen participation in the process. This means that the data collected from interviewees and desk research was the basis for this research.

12.3.4 Limitations of Theoretical Framework

The theoretical framework used in this research from Sillak et al. (2021) is a framework that focuses on the initiation, design, and implementation phases of urban energy transitions. However, the Dutch energy transition is currently primarily in the initiation and design phases. This makes it hard to apply the whole framework to the Dutch energy transition and does not fit entirely with the steps used in Sillak et al. (2021). Moreover, the framework is quite minimalistic and does not extensively incorporate forms of participation and governance structures.

12.4 Suggestions for Future Research

The study focused on citizen participation and how these processes influence decision-making on a local and regional level in the energy region Holland Rijnland. Firstly, future research could focus on

taking local citizens' support and social acceptability into consideration when researching citizen participation. It is mentioned in this study, but a more coherent and researched overview of the support and social acceptability among citizens could enhance the findings and possibly finds connections between the spectrum going from inactive to active forms of participation and the social acceptability and support for the energy transition. Secondly, RES 2.0 and onwards will focus more and more on the upcoming implementation phases. As mentioned before, Sillak et al. (2021) studied the case of Sønderborg in Denmark, in which implementation is already well underway. Therefore, it would be helpful to apply Sillak et al. (2021) once later in the regional energy strategy to get more insight and apply more parts of the theoretical framework. Thirdly, this study does not take participation forms extensively into consideration. The distinction is being made between inactive and active forms of involving citizens. Still, future research could be elaborate, especially once the RES takes on more concrete structures in the coming years.

12.5 Recommendations for policymakers

Altogether, the following recommendations can be made to policymakers going forward in the regional energy transitions of the Netherlands:

- The relationship between energy cooperatives and municipalities is important in establishing good contact with a broad group of citizens. There are successful examples found in this study. Firstly, in Zoeterwoude, there has been good contact with the local energy cooperative for years. The energy cooperative has responsibilities in projects and feedback sessions with policymakers from the municipality. Projects that could be part of these collaborations could be: 1) working on new renewable energy projects and establishing co-ownership between citizens, market parties, and the government; 2) setting up information, feedback, and brainstorming meetings together for the local citizen; 3) going directly into neighborhoods to talk with fellow citizens on how to save energy, how to influence local policymaking and how to give input on the energy transition. Secondly, in Katwijk, there is good contact between the municipality and the local energy cooperative. That relationship is not yet as far as Zoeterwoude, but the start is made. The future also means that these active citizens are involved in forming policies and implementing them. Moreover, the energy cooperatives have contact with close-by energy cooperatives and there is a regional energy cooperative. These are all opportunities for municipalities to involve citizens more intensively. A good relationship with the local energy cooperative can be a good way to set up the link for a more direct relationship between government and citizens. Once that start is there, there is more trust between these active citizens. Therefore, that can open the way for more direct contact with other citizens via these active citizens;
- Attracting the 'usual suspects' citizens in the first stages of citizen participation is not necessarily bad. For instance, in Nieuwkoop, the start is made with local sessions with citizens. The usual suspects come to these meetings at the start, but that can also be seen as a good way to increase the trust between these more "high-profile" citizens. Via that route reach, other less involved citizens can be involved as well eventually. This can be done by making the best practices with the active citizens more visible to all citizens, both in their municipality and on

a regional level. This creates more trust for citizens and shows them that their feedback and opinions are taken seriously and used in the decision-making processes by the municipality;

- Common guidelines for participation activities in the future could help on both a local and regional level. This is already encouraged by organizations such as the NP RES, the 'Participatiecoalitie', and the energy region Holland Rijnland organization itself. However, there is currently no regional consensus on how to conduct participation, while even broad arrangements could enhance the accountability of municipalities. That can be done by making use of this existing knowledge and experiences. That can be incorporated into regional discussions. Standard guidelines and rules can be created for all partners in the energy region. Then, they can be used to assess all local participation activities. Ultimately, that will lead to better discussions about the support and social acceptance of citizens of the energy transition. Municipalities can make better comparisons between local participation activities and outcomes. Subsequently, more appropriate decisions can be made about topics in which one of the key elements is support and acceptance, for example, LRSEP locations and other topics that rely heavily on the direct involvement of citizens.

These recommendations can help make citizen participation and the relationship between governmental actors and citizens more intensified and thriving in the coming years during the energy transition.

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A | CODEBOOK

Main category	Sub category	Code
Participation: co-creation, co-production	**Activities**	Alignment of expectations
		Social learning
		Resource acquisition
		Assessment and evaluation
	Goals and outcomes	Social acceptability
		Effectiveness & efficiency
Actors		Community
		Market
		State
		Third sector
Governance		Local decision-making
		Regional decision-making
		Influence municipalities
		Influence province
		Influence energy region
Energy Transition Theme		General
		Energy saving
		Large-scale energy production: solar
		Large-scale energy production: wind
		Search areas: large-scale energy production
		Mobility
		Heating

B | INTERVIEW PROTOCOL

Introduction
Student Industrial Ecology, een masterstudie aan de Universiteit Leiden en TU Delft. Ik heb een achtergrond in Bestuurskunde aan de Universiteit Leiden. Op dit moment na twee jaar studie in de afrondende fase met een scriptie over de energietransitie in de regio Holland Rijnland, met een focus op burgerparticipatie tijdens de regionale en lokale energietransitie. Daarin doe ik onderzoek naar de regio Holland Rijnland, met daarin vier gemeenten die ik verder uitdiep. Dat zijn Katwijk, Zoeterwoude, Leiden en Lisse. Daarbij houd ik ook interviews met de provincie Zuid-Holland, Hoogheemraadschap van Rijnland en de RES Holland Rijnland. Daarin verzamel ik data door documenten te analyseren, maar vooral mensen te spreken in de regio, zoals in de gemeente, gemeenteraden en de initiatieven die door burgers zijn opgezet om een goed beeld te krijgen van de huidige staat van burgerparticipatie in de regio Holland Rijnland en enkele gemeenten daarin.

Het interview duurt naar verwachting uiterlijk 60 minuten.

Onderdeel A: Introductie & Energietransitie

1. Wie bent u, aan wat voor organisatie bent u verbonden en wat is uw positie binnen deze organisatie en de energietransitie in X?
    a.
    b. *Hoe is het verlopen? Traden er problemen op? Is er een doorbraak geforceerd?*
    c. *Wat zijn de grootste obstakels en kansen die daarbij plaatsvinden of hebben plaatsgevonden (zie voorgaande vraag)?*
2. Wie zijn volgens u de belangrijkste actoren betrokken bij het vormen en uitvoeren van de plannen binnen de energietransitie in X?
    a. *In hoeverre zijn energie coöperaties opgezet door burgers betrokken bij de energietransitie?*
    b. *In hoeverre zijn energiebedrijven betrokken bij de energietransitie?*
    c. *In hoeverre zijn overheidsactoren, zoals de provincie en nationale overheid, betrokken bij de energietransitie?*
3. In hoeverre hebben deze stakeholders/actoren invloed op het vormen en uitvoeren van de plannen?
    a. *Wat zijn de grootste obstakels en kansen die daarbij plaatsvinden of hebben plaatsgevonden?*
4. Zijn er naast de betrokken actoren ook actoren die niet worden betrokken?
    a. *Waarom worden ze niet betrokken?*

Onderdeel B: Participatie

5. Wat is uw mening over actieve participatie van burgers binnen de energietransitie in X?
6. In hoeverre speelt burgerparticipatie een rol binnen de energietransitie in X?
7. In hoeverre worden burgerinitiatieven betrokken en ondersteund bij de vorming en uitvoering in de energietransitie in X?
    a. *Wat zijn de grootste obstakels en kansen die daarbij plaatsvinden of hebben plaatsgevonden (zie voorgaande vraag)?*
    b. *Hoe ziet de ondersteuning eruit voor ontwerpen en uitvoering?*
    c. *Hoe hebben betrokken partijen hun verwachtingen geuit en is het gelukt om op één lijn te komen met elkaar?*
    d. *In hoeverre zijn er financiële middelen beschikbaar om energie coöperatieven te ondersteunen?*
    e. *In hoeverre wordt er besproken welke doelen het waard zijn om te bereiken en hoe die doelen bereikt zouden moeten worden? (first and second order learning)*
    f. *In hoeverre vindt er evaluatie van activiteiten plaats?*
8. In hoeverre zijn er doelen opgesteld om burgers te betrekken bij het vormen en uitvoeren van plannen in de energietransitie in X?

a. *Wat zijn de grootste obstakels en kansen die daarbij plaatsvinden of hebben plaatsgevonden (zie voorgaande vraag)?*
b. *In hoeverre is de effectiviteit van de energietransitie verbeterd?*
c. *In hoeverre is de efficiëntie van de energietransitie verbeterd?*
d. *In hoeverre is de sociale acceptatie van de energietransitie verbeterd?*
e. *Waarom is voor die doelen gekozen? Wat is de motivatie?*

Onderdeel C: Governance

9. Wat is uw beeld van de wisselwerking tussen de RES Holland Rijnland, Provincie Zuid-Holland en gemeente Leiden als het gaat om de energietransitie?
10. Wat zijn volgens u de grootste obstakels en kansen die daarbij plaatsvinden of hebben plaatsgevonden (zie voorgaande vraag)?
11. Wat is uw beeld van de wisselwerking tussen de RES Holland Rijnland, Provincie Zuid-Holland en gemeente Leiden als het gaat om burgerparticipatie tijdens de energietransitie?

Onderdeel D: Afronding

1. Wil je nog iets delen dat ik niet mag missen of vergeten ben over te vragen?
2. Kent u andere waardevolle personen die relevant zijn om te spreken?
3. Zijn er nog relevante documenten en rapporten die u kunt aanbevelen?

Bedankt voor de tijd en moeite. Er zal vertrouwelijke worden omgegaan met de verzamelde gegevens. Mocht u nog vragen hebben, schroom dan niet contact op te nemen met mij.

C | RESULTS OVERVIEW

The following table consists of all the key takeaway tables per case. That means that for the cases of energy region Holland Rijnland, Katwijk, Leiden, Lisse, Zoeterwoude, Alphen aan den Rijn and Nieuwkoop the key take-aways can be compared.

Table 17: Key take-away overview table including all cases

Type	RES Holland Rijnland	Katwijk	Leiden	Lisse	Zoeterwoude	Alphen aan den Rijn	Nieuwkoop
Activities: *Articulation and Alignment of Expectations*	- Regional surveys and information sessions to measure sentiment about energy transition among citizens - Bundled local participation processes to get a regional view how citizens feel about the energy transition	- Surveys on regional and local level about LSREP - Broad communication about informing, stimulating and activating citizens - Lack of clarity in communication towards citizens about what they can do and expect - Focus on participation in heating transition - Lacking participation, partly due to COVID-10 - Participation with citizens in concrete projects	- Not alterations in initiation and implementation in local plans after participation - Participation with local stakeholders about 'RES 1.0' - Participation focusses on heating, because of concrete plans - Difficult to reach all citizens and capture all opinions - No knowledge sharing with region about participation	- Survey, interviews and meeting about local energy transition plans with citizens - Gathered feedback from citizens about implementation phase - No concrete influence on the local energy strategy by citizen feedback - Broad communication plan about informing, stimulating and activating citizens - No new participation activities planned - Uncertainty if enough citizens are reached with current participation	- Local survey about energy transition among citizens - Informing communication, e.g. newspapers, about the energy transition - Guidelines for participation between citizens, market actors and other stakeholders - Information sessions about the energy transition with energy cooperative and RES Holland Rijnland - Informing citizens at home with help of energy cooperative and market actors - Effectiveness of regional participation raises doubtful	- Local survey about LSREP locations with backlash from involved stakeholders and local and national media coverage	- Information sessions, webinars and surveys to inform and gather sentiment of citizens on the energy transition
Activities: *Social Learning*	- 'Programmaraad' with stakeholders to give advice about the 'RES' decision-making process	- Plans for citizen participation with co-creation - Plans for stakeholder participation with focus on network meeting - Plans for sharing knowledge and best practices with local and regional partners for implementation phase - Close contact with local energy cooperative about informing citizens, wishes from local energy cooperative for co-creation and co-production	- Uncertainty about capacity and knowledge within municipality to support citizen initiatives - On and off contact with energy cooperative, more initiative from municipality is desired - Regular contact about heating transition with stakeholders - Underutilised potential for collaboration with active citizens with knowledge, skills and expertise.	- Plans to involve citizens in citizen forums and reflection meetings in early stages - Past active citizen initiatives show potential influence on local decisions-making process - Energy cooperative and municipality have mediocre relationship, due to lack of clear communication from the municipality - Little influence of citizens on initiation and design of the local energy vision	- Citizen initiatives are supported in forming energy transition policy and implementation - Long-time successful collaboration with energy cooperative - Energy transition platform: aimed at developing joint methods, shared values, new initiatives with all category stakeholders	Insufficient amount of gathered data	- Citizen Lab platform initiated by the municipality to encourage collaboration with citizens on the energy transition
Activities: *Resource Acquisition*	- Energy region Holland Rijnland is supporting, the partners are leading - Financial support from the province of South	- Support in form of resources, knowledge, time and financial funds for citizen initiatives	- Financial support for information sessions - Financial support for energy ambassadors - Financial support for energy cooperative	- Mixed relationship regarding financial and general support for new projects of energy cooperative by municipality	- Collaborations between market and energy cooperatives to financially participate in LSREP	Insufficient amount of gathered data	Insufficient amount of gathered data

	Holland for local citizen initiatives - Financial funding from the national government is needed	projects, such as solar panels on built environment roofs		- Financial and material participation: potential new wind turbines with local ownership - Funding at the province of South Holland with a collaboration between market partner, energy cooperative and municipality		
Activities: *Assessment and Evaluation*	- Plans to create minimal participation requirements for municipalities to make local efforts better comparable	- Pilots in neighbourhoods regarding heating transition and evaluate support among citizens	- Broad monitoring of energy transition - Policy monitoring of energy transition	- Little to no feedback on citizen initiatives on pilot projects from the municipality - When citizen initiatives proceed in decision-making, the implementation can take long and requires continuous pressure feedback and evaluation	- Municipality and energy cooperative have direct and personal conversations about expectations, values and responsibilities - Rural character makes contact between municipality and citizens direct and personal - Pilot renewable energy production projects	Insufficient amount of gathered data	Insufficient amount of gathered data
Goals and Outcomes: *Effectiveness and Efficiency*	**Main goals:** 1) Energy saving 2) Sustainable mobility 3) Heating 4) Electricity Hard to assess the set goals, because implementation is slated for 2022 and later	**Main goals:** 1) Development 'RES 1.0' with region 2) Development of a heating transition vision in Katwijk with partners 3) Stimulating and motivating the local energy transition among entrepreneurs and citizens 4) Strengthen leading and an exemplary local governmental real estate Hard to assess the set goals, because implementation is slated for 2022 and later	**Main goals**: 1) Energy saving 2) Renewable energy production 3) Natural gas free heating system Hard to assess four priorities, because implementation is slated for 2022 and later	**Main goals**: 1) 15% energy savings in the built environment, in comparison to 2014 2) 11% energy savings in mobility 3) Energy production of renewable energy goes from 5,6% in 2019 to 46% in 2030 Hard to assess the set goals, because implementation is slated for 2022 and later	**Main goals:** 1) Zoeterwoude enters top 20 most sustainable municipalities in the Netherlands 2) Focus on production of solar and wind energy 3) Public-private collaborations 4) Incentive schemes and subsidies for energy savings measurements 5) Trias Energetica Hard to assess the set goals, because implementation is slated for 2022 and later	**Main goals:** 1) Local goals are defined in the goals of the energy region Holland Rijnland case Hard to assess the set goals, because implementation is slated for 2022 and later	**Main goals:** 1) Renewable energy production: focus on solar instead of wind energy production 2) Natural gas free heating system by 2050 3) Energy saving measurements in built environment 4) Energy neutral per 2050 Hard to assess the set goals, because implementation is slated for 2022 and later
Goals and Outcomes: *Social Acceptability*	- LSREP faces resistance by citizens in region - Solar panels on roofs seen as good alternative by citizens - Middle group of citizens has no strong	- Heating transition participation about desires of citizens to make transition acceptable and create support	- Need and desire for societal acceptance and support for policy - Struggle to incorporate citizens for support and acceptance	- Little to no citizen support for LSREP - Small-scale energy production with solar panels on roofs infrastructure is most desirable by citizens	- Work sessions with citizens about new renewable energy projects with help of stakeholder in early phases	- Local survey to gather support among local citizens for the energy transition, with a specific goal of	- Early involvement of stakeholders and citizens is crucial for an accepted and supported energy transition according to the municipality

	opinion of the energy transition - Little desire to produce energy in own municipalities - If LSREP needs to happen, preference near existing	- Citizens find energy transition overall positive with mostly energy savings measures and small-scale energy production - LSREP has little support - Citizens have concerns regarding current techniques to become irrelevant		- If LSREP needs to happen, preference near existing infrastructure - Focus on projects that increase visibility of the energy transition for support and acceptance of citizens	- Energy transition platform: aimed at increasing social acceptability and support among citizens and other stakeholders - Communication and participation vision by the municipality	support for LSREP locations	
Governance	- RES organisation supports, the partners determine the direction and goals - 'RES 1.0' relatively easy to setup, with the exception of locations for LSREP - Regional decision-making process can become more difficult towards implementation phase - Difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations	- **Local:** local heating vision - **Local**: energy strategy 2022 as translation from the RES 1.0 to a local vision and implementation plan - **Regional**: collaboration on future heating transport networks from Rotterdam to the Leiden region - **Regional:** collaboration about LSREP locations. Difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations - **Regional** complexity: 1) support among local citizens with possible locations; 2) equalness of local participation processes; and 3) influence of province of South Holland on possible locations	- **Local**: lacking tools to implement energy transition, need for regional collaboration - **Local**: lacking skill, knowledge and vagueness when assessing regional energy transition plans - **Regional**: regional collaboration deemed less important in past years, because of focus the local focus on heating - **Regional**: complex decision-making about energy production, because of lacking possible locations - **Regional**: difficult relationship between province of South Holland as both partner and higher governmental actor regarding LSREP locations	- **Local:** local energy transition plans mostly equal to 'RES 1.0' - **Local**: 'LES' is a vision in the initiation and design phase, implementation plans will follow in 2022 - **Regional:** LSREP locations are conflicting on a local and regional levels. Difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations - **Regional & local**: decision-making regarding visions for 2030 and 2050 are vague for citizens and do not feel like energy transition yet	- **Local**: participation process influence from close-by municipalities, e.g., Alphen aan den Rijn - **Regional:** working group with other municipalities regarding heating and LSREP - **Regional**: difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations	- **Regional and local** governance difficult to align, because the local city council members find it difficult to influence the decision-making processes of regional plans - **Regional**: LSREP locations are difficult to determine on a regional level, because of lacking support in municipalities among citizens and hard to compare individual participation processes - **Regional**: difficult relationship with province of South Holland as both partner and higher governmental actor regarding LSREP locations	- **Regional:** regional collaboration is seen as supporting and informative for the local energy transition vision - **Local**: local renewable energy production area map, separate from the regional map - **Local**: collaborations with close-by municipalities about energy transition, specifically the heating transition