The Interactions of Governments and Citizens in the Dutch Regional Energy Transition

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Abstract

In the Netherlands the *Klimaatakkoord* has been created to create pathways for mitigation and adaptation of climate change. One of these pathways, the Regional Energy Strategy, gives regional governments authority to govern the regional energy transition. Their aim is to create a regional and societal transition to a renewable energy system with the regional (non-)governmental actors, such as municipalities and citizen initiatives. How these interact with each other has been researched using multiple frameworks and interviews, on aspects of participation and governing capacity, with the overarching theme of knowledge sharing. What has been found is that regionally the interactions can hinder and benefit fruitful coordination towards a renewable energy future. Facilitating and sharing knowledge is beneficial for a renewable energy future.

Keywords: energy transition, governance, citizen initiatives, interactions, the Netherlands.

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1. Introduction

1.1. Research Context

Worsened air quality, loss of biodiversity and increased temperatures all over the world are all consequences of the drastic climate change we are experiencing today (United Nations, n.d.). This will have detrimental impacts on multiple aspects of society, such as increased climate migration, more people with cardiovascular diseases and failed agricultural crops (United Nations, n.d.). All of these effects of climate change are caused by the increase of emissions of Greenhouse Gases, such as CO2 (carbon dioxide) and CHx (methane gases), by human-made industries and practices (IPCC, 2021). Thus, to reduce the impacts of climate change, we should globally commit to the reduction of emissions of greenhouse gasses (Calvin et al, 2023). These commitments have been made with (inter)national agreements, such as the Paris Agreement. The Paris Agreement states that we should aim to stay well below 2 ºC of global temperature change compared to pre-industrial levels and preferably below 1.5 ºC (COP, 2015). This can only be reached by drastic reductions in the emissions we as humans cause.

The Netherlands is one of the countries that devoted to the Paris Agreement in 2015. This commitment resulted in the Dutch government establishing its *Klimaatakkoord* (climate agreement). The *Klimaatakkoord* proposes plans for the Netherlands to reach a reduction of 49% of greenhouse gas emissions in 2030 compared to 1990 (EZK, 2019). Making a transition from fossil-fuel energy sources to renewable and sustainable energy sources is how the Dutch government aims to reach their emission reduction goal. They have captured this in their aim of generating 35 TWh of renewable energy on land in 2030. Working towards this aim of 35 TWh is a societal change according to the *Klimaatakkoord*, which, thus, proposes ways in which society can contribute. Moreover, to shape the execution of the societal energy transition in the Netherlands, the *Klimaatakkoord* emphasises the need for regional governance. In practice, that means the Netherlands has been divided into 30 regions (RES, 2024a; see figure 1). These regions cover multiple municipalities and can go beyond provincial borders (RES, 2024). This division provides authority to the regional governments to create their own Regional Energy Strategy (RES). The regions then have the authority and power to choose how and how much they contribute to reaching the goal of 35 TWh of renewable energy. So, they can choose which locations will be used and which technologies (solar, wind, etc.). (EZK, 2019)

Figure 1. RES-regions in the Netherlands. (Source: Kaarten, n.d.)

The RES of a region, thus, covers decisions on how that region will shape its energy transition. These decisions have been made with the representative bodies of the Dutch sub-national governments, which are the municipalities, the province that the region is located in and the water board (*Waterschap)* (RES, n.d.). This RES arrangement is different from the "House of Thorbecke", which is the basis of the Dutch parliamentary democracy with the division of national, provincial and municipal authority levels (Koning, 2023). The connection of different governance bodies can be complex, as there are different roles and preferences for each of the different organisations (EP, n.d.) but is of great importance for the Dutch regional energy transition (EZK, 2019).

Another complex but vital aspect of the RES is the need for participation (EZK, 2019). Local governments were tasked with applying local knowledge and participation from citizens in carrying out the RES plans. This task has been created because renewable energy generation has an influence on the direct environment of citizens, so the citizens are much more "disrupted" by the new form energy generation (NPRES, 2022). One way of ensuring a participatory and bottom-up approach in the energy transition is utilising energy cooperatives. These are groups of citizens coming together to create their own energy projects which they can decide on and possibly profit from. Moreover, cooperatives aim to achieve another goal of the RES, which is 50% local ownership of energy projects (NPRES, 2022).

1.2. Problem Analysis

One of the 30 regions in the Netherlands is Rivierenland Fruitdelta (RF). This region is situated in the Eastern province of Gelderland, which is the biggest province of the Netherlands (IPO, n.d.). The RES-region RF covers 8 municipalities, which in turn consist of a total of 4 cities, 79 villages and 67 towns (Plaatsengids, 2020). The steering group of the RES, consists of representatives, one of each of these municipalities, one of the province, one of the *Waterschap* and some non-governmental organisations. The high numbers of villages and towns already highlights this regions' rural nature, as does the fact that a big part of the available land is used for agricultural (see Figure 2). As this region is supposed to carry out the societal transition mentioned above it needs a clear view on how to do this together with all of the regional governmental actors.

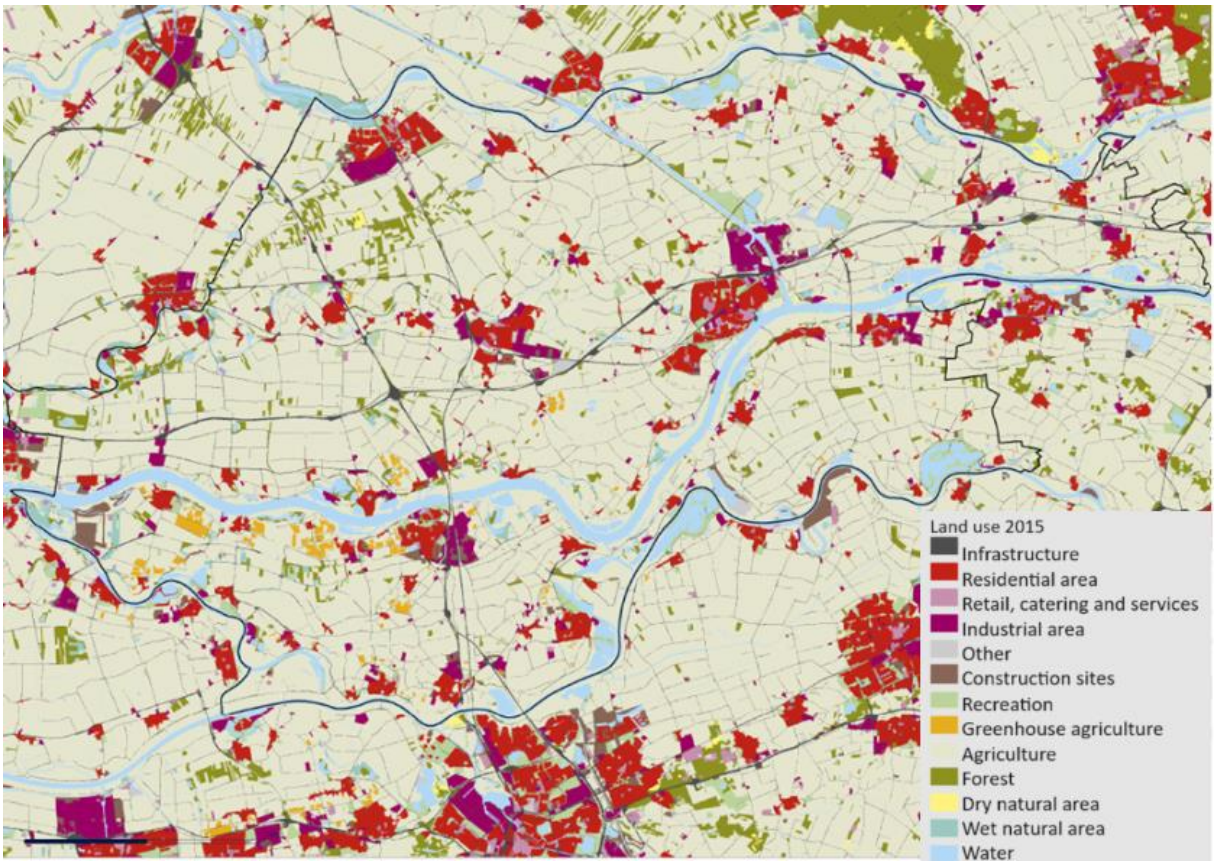

Figure 2. Land use in RES-region Rivierenland Fruitdelta (outlined in dark blue). (Source: PBL, 2020)

Within one of RF's municipalities, called Buren, eCoBuren (Energy Cooperative Buren) is operating. They established themselves in 2018 when they realised that there was a role for citizens and entrepreneurs in the energy transition (eCoBuren, n.d.). ECoBuren is fully led by citizens that have an affinity with the energy transition. They do not only execute renewable energy projects, such as solar roofs and electric car charging stations, but they also run the municipal's *Energieloket* (Energy Desk). This is a knowledge office for citizens and entrepreneurs that would want to know more about sustainability, such as insulation and energy saving. As a citizen initiative, they can play a role in achieving RES goals, as they can provide knowledge and a participatory approach.

As the previous research has focused on the urban context of the multi-levelled governance of an energy transition (Bulkeley and Betsill, 2005; den Exter et al., 2015), a regional perspective is lacking in research, although regions are where the implementation of policy for energy goals is taking place in the Netherlands. Moreover, the combination of the interactions between and within government institutions and citizen initiatives like eCoBuren have not been researched together before. This research is needed, since these very interactions are, in a sense what can break or make successful energy transitions and more specifically a good implementation of the RES plans (van Dijk et al, 2022).

1.3. Research Objective

This study aims to understand how government interactions are shaped within the RES arrangement of Rivierenland Fruitdelta. Moreover, the interactions between the citizen initiative, eCoBuren, and the government institutions are researched in the same scope as they are part of the RES arrangement's plans. This will be done using the following research question: *How are the interactions between and within governments and citizen initiatives*

shaped in the regional renewable energy transition? To reveal the interactions of the citizen initiative, firstly, a recently created framework by Teladia & Van der Windt (2022) will be used. This framework has been used before to analyse the participatory environment and level of participation in other energy cooperatives within the RES arrangement. This will be combined with the analytical framework created by Van Dijk et. al (2022) as this covers the interactions between governance actors in the RES arrangement. Van Dijk's framework consist of a combination of Multi-Level Governance and Transformative Climate Governance indicators and measures governing capacity. These two frameworks, by Teladia & Van der Windt (2022) and by van Dijk et al. (2022), share the theme of knowledge creation and sharing and how this can have a negative and/or positive influence on the energy transition.

Considering that this research is done in a specific region and with only one citizen initiative, lessons drawn from the analysis are not generalisable to other regions or initiatives. However, considering that the RES arrangements are structured around the same objectives in every region and regions are similar in governance structure, the same research methods could be applied to other regions too. Moreover, using framework in different regions could provide insight on the implications for future use, so this research could provide recommendations for broader or improved framework.

1.4. Outlook

This thesis will continue, firstly, by elaborating on the theoretical framework, which will consist of a combination of multiple frameworks that have been proven sufficient in analysing government interactions and citizen initiatives. This combination of frameworks will be the base of the interviews. The interview process will be described before the getting into the results. In the results section, the findings from these interviews will be presented. In the discussion, the analysis of the results will be carried out as well as the presentation of results beyond the framework. This will give an answer to the research question in the concluding part of this thesis. Lastly, limitations, implications and recommendations and suggestions for further research will be given.

2. Theoretical Framework

2.1. Diagnostical Framework for Participation

Citizens and their participation play a significant role in shaping the energy transition. For example, they can organise themselves in citizen initiatives like energy cooperatives. These vary in degrees of participation and structure. The NPRES also highlighted explicitly to not have one guideline on how to shape the participation (RES, 2024b). The regional RES-office of Rivierenland Fruitdelta endorses this and is finding ways on how to shape their regional participation (RES RF, 2021). Assessment of participation and citizen initiatives can also become difficult. A framework that is widely applicable is, thus, needed to diagnose participation in the RES-regions. Teladia & van der Windt (2022) succeeded at making an applicable diagnostical framework for participation by combining two frameworks: Arnstein's participation ladder and the Socio-Ecological Systems Framework (SESF). Both of these will be explained in the following paragraphs.

Arnstein's ladder was created in 1969 by Sherry Arnstein as a provocative typology of citizen participation to encourage a more enlightened dialogue (Arnstein, 1969) in a period of radical reform of public policy in the United States of America (Pairman, 2023). Nowadays, it is considered a pillar in community engagement studies (Pairman, 2023) and thus used, reviewed and critiqued often (Tritter & McCallum, 2006). The ladder consists of eight levels of citizen participation but is also considered a ranking of citizen power. In figure 4 the ladder is portrayed and this shows the eight different levels of participation and what this means for citizen power ("non-participation", "tokenism" and "citizen power"). It can be used in various ways, for example, Stelmach (2016) used it in analysing parents' participation in parent school councils, while Contreras (2019) used it as an assessment of participatory work in post-disaster Haiti.

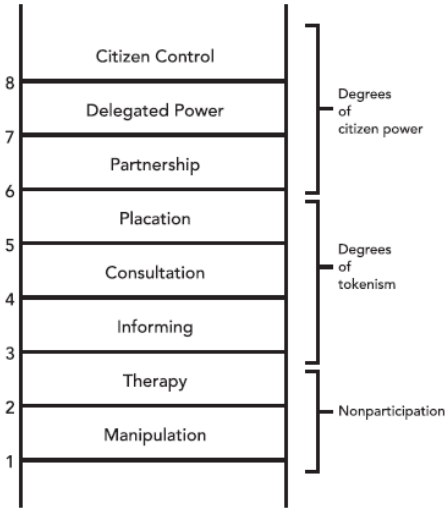

Figure 4. Arnstein's ladder of participation. (Source: Arnstein, 1969)

The Socio-Ecological Systems Framework (SESF) has been created by Elinor Ostrom in 2007 because there was a need for a framework for sustainable Socio-Ecological Systems (SES). SES are social natural resources systems such as fisheries with complex subsystems. These could be the resource system (e.g., a coastal fishery), resource units (shrimp), users (fishers), and governance systems (institutions for coastal fishing). To get to a sustainable SES, the SESF explore the interactions between these subsystems (captured in the indicators in table 1), as they do not operate and influence sustainability on their own (Ostrom, 2009). This framework can be used in different ways and also in combination with other frameworks and theories, for example, Budiharta et al. (2016) integrated SESF and systemic decision-making to inform forest restoration planning.

Social, economic, and political settings (S)	
S1 Economic development. S2 Demographic trends. S3 Political stability. S4 Government resource policies. S5 Market incentives. S6 Media organization.	
Resource systems (RS)	*Governance systems*
RS1 Sector (e.g., water, forests, pasture, fish)	GS1 Government organizations
RS2 Clarity of system boundaries	GS2 Nongovernment organizations
RS3 Size of resource system	GS3 Network structure
RS4 Human-constructed facilities	GS4 Property-rights systems
RS5 Productivity of system	GS5 Operational rules
RS6 Equilibrium properties	GS6 Collective-choice rules
RS7 Predictability of system dynamics	GS7 Constitutional rules
RS8 Storage characteristics	GS8 Monitoring and sanctioning processes
RS9 Location	
Resource units (RU)	*Users (U)*
RU1 Resource unit mobility	U1 Number of users
RU2 Growth or replacement rate	U2 Socioeconomic attributes of users
RU3 Interaction among resource units	U3 History of use
RU4 Economic value	U4 Location
RU5 Number of units	U5 Leadership/entrepreneurship
RU6 Distinctive markings	U6 Norms/social capital
RU7 Spatial and temporal distribution	U7 Knowledge of SES/mental models
	U8 Importance of resource
	U9 Technology used
Interactions (I) → outcomes (U)	
I1 Harvesting levels of diverse users	O1 Social performance measures
I2 Information sharing among users	(e.g., efficiency, equity, accountability,
I3 Deliberation processes	sustainability)
I4 Conflicts among users	O2 Ecological performance measures
I5 Investment activities	(e.g., overharvested, resilience,
I6 Lobbying activities	bio-diversity, sustainability)
I7 Self-organizing activities	O3 Externalities to other SESs
I8 Networking activities	
Related ecosystems (ECO)	
ECO1 Climate patterns. ECO2 Pollution patterns. ECO3 Flows into and out of focal SES.	

Table 1. Socio-Ecological Systems Framework second-tier variables. (Source: Ostrom, 2007)

Teladia & van der Windt (2022) used Arnstein's ladder as the basis for participatory enrichment to their framework. They added on to this with conflict resolution, levels and types of engagement, levels of decision making, citizen science, co-creation, ownership models and financial participation after an extensive literature review on participation (Teladia & van der Windt, 2022). The other part of the framework are the indicators from the Socio-Ecological Systems Framework. They have been combined in two tables, one for the Level of Participation (table 2, next page) and one for the Participatory Environment (table 3).

The Participatory Environment (PE) covers indicators that are related to the contextual variables of the community in which the citizen initiative operates. So A2 relates to the socioeconomic attributes of the citizens participating in the projects of the citizen initiative. A4 in turn is about the location of the citizen initiative. This goes on in the same way for the other indicators too, except for GS2, this is not quantified but rather just lists the involved government institutions. Almost all of the indicators get a scoring between 0 and 100 that relates to a traffic light colour. This assessment allows for drawing conclusions on the participatory environment, either there

is an enabling environment, a somewhat enabling environment or little to no enabling environment. By using the colours of the traffic light one can see at a glance what limits or fosters operating in an enabling participatory environment.

Participatory Environment (PE)				
Key second-tier variables for PE analysis	**A2 Socioeconomic attributes (High-100, Middle-50, Low -0)** A2.1.- Income level A.2.2.- Education level A.2.4.- # households owned/rented	**A4 Location (Yes-100, No-0)** A4.1. – Population characteristics (not quantified) A4.2. – RE sources are available and accessible A4.3. – There is existing energy infrastructure for integration A4.4- Energy consumption (not quantified)	**A6 Importance of energy source (Yes-100, Somewhat- 50, No-0)** A6.1. Citizens prefer to move away from natural gas	**GS2 Government organizations (not quantified)**
	A3 History or past experiences (Yes-100, No-0) A3.1 – There are existing decentralized energy projects A3.2 – There are expertise related to sustainable energy or sustainability	**A5 Knowledge of Sustainability (Yes-100, Somewhat-50, No-0)** A5.1- Citizens are aware of sustainability issues A5.2. Citizens are aware of the project A5.3. Citizens are willing to participate in the project	**A7 Sustainable energy technologies available (Yes- 100, No-50)**	**GS3 Nongovernmental organizations** (Mostly local-100, Some local-50, No local-0)
Linked classification of PE variable analysis	**(C) Outcomes (added variable):** **C1 Enabling participatory environment (67-100)** **C2 Somewhat enabling participatory environment (33-67)** **C3 Little or no enabling participatory environment (0-33)**			

Table 2. Indicators for the Participatory Environment. (Source: Teladia & van der Windt, 2022)

The Level of Participation (LoP) indicators provide an understanding of the level of participation across the technical, economic and social dimensions of the energy project. So, how the decision-making processes of the citizen initiative involve citizens is captured in indicator I2. Moreover, indicator GS4 is, for example, related to the hierarchy of the initiative. Almost all of the indicators get a scoring between 0 and 100 that relates to a traffic light colour. This assessment allows for drawing conclusions on the level of participation, either there is an full or equal power, tokenism or non-participation. By using the colours of the traffic light one can see at a glance what limits or fosters high levels of participation.

<table>
<tr><th colspan="5">Level of Participation (LoP)</th></tr>
<tr><td rowspan="2">Key second-tier variables for LoP analysis</td><td>GS 4 Network structure (Citizens equal power to others or owners-100, citizens involved but not equally to others-50, citizens play a passive role-0)
GS4.1. The connection between actors and the project (not quantified)
GS4.2. The roles of actors in the project</td><td>A1 Number of relevant actors (Mostly citizens-100, Some citizens-50, No citizens-0)
A1.1. # Investors
A1.2. # Private sector
A1.3. # Government
A1.4. #Non-governmental
A1.5. #Citizen scientist/ researchers
A1.6. # Local community</td><td>I2 Deliberation processes (Citizens are highly involved- 100, citizens are somewhat involved-50, citizens are not involved-0)
I2.1 Citizens are engaged in key processes prior to decision making
I2.2 Citizens have decision making power
I2.3 Methods used (not quantified)</td><td>I4 Investment/Financing activities (Yes-100, No-0)
I4.1. Local residents are included in financing activities
I4.1.1. Local residents participate in the financial decisions
I4.1.2. Local residents benefit from the project
I4.2. Amount of investment/grant/ fund etc. (not quantified)
I4.3 The local community are financial participants in the project
I4.4. Alignment of project to local financial resource capacities
I4.4.1 Locals can afford the participation cost of the project
I4.4.2 There are financial schemes for those who can’t afford to participate</td></tr>
<tr><td>GS 5 Rules in use (Citizens equal power to others or more-100, citizens involved but not equally to others-50, citizens not involved-0)
GS5.1. Operational-choice rules
GS5.2. Collective-choice rules
GS5.3. Constitutional-choice rules</td><td>I1 Information sharing activities (separate measurements)
I1.1 Methods used (not quantified)
I1.2 Nature of information (Yes-100, no-0)
I1.2.1 Feedback was used in project planning or in improving the project
I1.2.2 Local residents are satisfied with the information sharing activities
I1.3 Meeting attendance (High/ Majority-100, Medium/ Some- 50, Low/ None-0)
I1.4 There is some local capacity to collect data and disseminate it (or to outsource)
I1.5 There is a dissemination strategy to share information and scientific findings
I1.6 # of scientists participating in publication/ reports related to the project (High-100, Some- 50, Low/ None-0)</td><td>I3 Conflicts (Yes-100, Somewhat-50, No-0)
I3.1. Methods used (not quantified)
I3.2. Citizens can voice issues and/or opposition
I3.3. Conflict resolution processes is successful
I3.1.3 Local residents are satisfied with the processes</td><td>I5 Self-organizing activities (Yes-100, No-0)
I5.1. Ownership model used allows for sole ownership or joint power
I5.2. Barriers to participation have been explored
I5.2.1. Research/ Surveys of some sort has looked into the potential barriers for local citizen participation
I5.2.2. Identified barriers have been addressed through strategy changes
I5.3. There are clear avenues for willing local residents to participate
I5.4. The local community has been staffed for the project
I5.5 Local residents participate in the organization of project activities
I5.6 Distribution of responsibilities in the planning process is equal to other partners or citizens have full control
I5.7 There is sufficient local capacity and resources for local residents to successfully run the project without intervention</td></tr>
<tr><td>Linked outcomes of LoP variable analysis</td><td colspan="4">(O) Outcomes:
O1.1. Citizen power: citizens have full or equal control over the project (67-100)
O1.2. Tokenism: citizens are engaged but have no or less control than others (33-67)
O1.3. Non-participation: citizens are not engaged or are engaged linearly (0-33)</td></tr>
</table>

Table 2. Indicators for the Level of Participation. (Source: Teladia & van der Windt, 2022)

2.2 Analytical Framework for Governing Capacity

Within the RES-steering group, which is the decision-making group of the RES, there are different governmental actors. What the roles are for these actors differ from region to region because there are differences between regions. The governmental actors in the RF steering group are, next to the RES-coordinator, representatives from the province of Gelderland, all 8 municipalities and *Waterschap* Rivierenland. The role of these representatives is mostly represent their voters. Municipalities need to set their boundaries in the creation and decision phase of the RES. There can be a disparity between the boundaries of different municipalities. In the execution of the RES it is key that municipalities safeguard the RES-goals in their own municipal policy as this will then be the legal framework for initiative takers. Moreover, it is key that the municipalities actively work towards reaching the goal they set in the RES. The province supports in executing plans, setting legal boundaries and collaborating to execute the RES-goal. (RES RF, 2021)

As it can be seen, the RES-arrangement is multi-levelled, as it covers the different governmental levels of province and municipalities. It is important that these also orchestrate their goals, plans and the implementation of them. Therefore, van Dijk et al. combined two concept into a framework that cover these two facts. The first aspect is the orchestrating capacity from the Transformative Climate Governance as described by Katharina Hölscher (2020). The second aspect is the Multi-Level Governance of Hooghe and Marks (2003).

Transformative Climate Governance (TCG) is defined as “the processes of interaction and decision-making by which multiple actors seek to address climate mitigation and adaptation while purposefully steering societies towards low-carbon, resilient and sustainable objectives” (p.792). As a conceptual framework is shaped by 4 capacities. These capacities together, if all conditions are fulfilled, can create effective transformative climate governance for emission reduction in the broadest sense. The capacity, from TCG, Van Dijk et al. (2022) used is the orchestrating capacity, which can be defined as such: “the abilities to coordinate multi-actor processes and foster synergies and minimise trade-offs and conflicts across scales, sectors and time”. They chose to only focus on this as the interactions are between multi-level actors and their coordination problems. This capacity functions to coordinate multi-actor processes, which can create synergies and avoid trade-offs (Hölscher, 2020). This function can be enabled by a set of three conditions, strategic alignment (1), mediating across scales and levels (2) and creating opportunity contexts (3). Each of these are again divided in three activities, which can be seen in table 3.

Condition	*Indicators for conditions for orchestrating capacity*
Strategic alignment	1. Defining shared, long-term & integrative strategic direction & reference point for governance 2. Enlisting & engaging heterogeneous actor groups to create ownership over strategic direction & steer action in line with goals 3. Linking strategic direction to ongoing processes
Mediation across scales & levels	1. Recognising, brokering & integrating resources (financial, knowledge, human, etc.) & goals 2. Creating formal & informal convening spaces to exchange knowledge, resources & manage conflicts 3. Setting up formal & informal connection nodes, communication channels & facilitating information platforms to optimise interactions & link formal & informal processes
Creation of opportunity contexts	1. Providing institutional designs for synergies & action in line with goals (e.g. finance, guidance, technical assistance) 2. Determining (normative) action mandates & prioritising action & fields 3. Incorporating long-term, multi-scale thinking into decision-making, implementation processes & performance reviews

Table 3. Conditions and indicators for orchestrating capacity. (Source: van Dijk et al., 2022)

Multi-Level Governance (MCG) aspects are used by Van Dijk et al. to unpack the interdependencies and interactions between and across governance levels. This can be interactions between different territorial levels (such as municipality and province) or horizontal between governments and non-governmental actors (such as the municipality and local entrepreneurs). Hooghe and Marks (2003) defined two types of MLG by bringing together governance visions. The first one, Type I MLG is the more hierarchical structure, like the "house of Thorbecke" described above. Type II MLG is more complex and consists of a more fluid governance structure that is based on networks. Both types have the same four characteristics but different indicators defining them, which are depicted in table 4.

Characteristics	**Type I indicators**	**Type II indicators**
Governance bodies	Confined to a limited number of levels	Participating at multiple levels
Jurisdiction	General-purpose & systemwide	Task-specific and flexible
Political mobilisation	'Voice' type of action	'Exit' type of action
Structure	Hierarchical	Networked

Table 4. Characteristics and indicators for type-I and -II Multi-Level Governance. (Source: van Dijk et al., 2022)

None of the indicators for either TCG's orchestrating capacity or MLG's type I and II are directly measurable, quantifiable or scored. However, this framework still measures governing capacity for the energy transition. This is being done by describing how different governance conditions, that are outcomes of interactions between governance bodies within the RES-arrangement, create orchestrating capacity. This framework is suitable for unpacking these complex governance interactions and their influence on the capacity for regional energy transition governance. Moreover, because it highlights different government interactions it is exploratory and clarifies these sometimes hidden dynamics. (van Dijk et al., 2022)

2.3 The connection of the frameworks

Knowledge sharing practices are the connector of the two above described frameworks. This is, for both of them, already seen as one of the indicators. In the diagnostical framework for participation, knowledge plays a role in both the participatory environment (A5) as well as the level of participation (I1). For the orchestrating capacity, knowledge sharing is captured in the indicator 'Creating formal & informal convening spaces to exchange knowledge, resources & manage conflicts' as part of the condition mediating across scales and levels. How the frameworks explained above are connected to interactions and knowledge can also be seen in figure 5.

Figure 5. Connections of frameworks leading to knowledge. Own creation.

However, other literature has also pointed out that practices of knowledge sharing are necessary for an effective energy transition. For example, Hisschemöller and Sioziou (2013) consider knowledge a critical resource for organisations that assist citizen initiatives. Wagemans, Scholl and Vasseur (2019) even see providing context-specific knowledge and expertise to citizen initiatives as one of the five key roles of governments. The governance of complex problems, like the energy transition, is in essence a knowledge deficit problem according to Valkenburg & Cotella (2016). So they argue, if the government actors just obtain more knowledge they would be able to cope with the complex problem more easily. Lastly, different governance actors can have different degrees of knowledge on energy transitions (Hoppe & Miedema, 2020). Knowledge is, as can be seen, an important aspect and can connect the governance of the energy transition to the citizen initiative.

3. Methodology

3.1. Study design

This research aims to better understand the interactions between and within government institutions and between local governments and citizen initiative eCoBuren in the regional energy transition of Rivierenland Fruitdelta. This is guided by the following research question: *How are the interactions between and within governments and citizen initiatives shaped in the regional renewable energy transition?* To collect data for this research, semi-structured interviews of 60 to 90 minutes have been held. This method has been chosen as the above-described research by Teladia & van der Windt (2022) and van Dijk et. al (2022) also use interviews as a research method. Moreover, the authors of these papers have shared their interview questions and these have been used as the starting point for the interview guides for this research. However, some changes and alterations have been made to these question sets. So for the Level of Participation and the Participatory Environment, more specific questions to the indicators have been added. The interview questions from van Dijk et. al (2022) have been kept the same mostly, only some questions have been taken out to fit this research's scope and depth better. The interview guides of this research can be found in Appendix A: Interview QuestionsAppendix A: Interview Questions.

For the interviews, these questions have been translated to Dutch into conduct the interviews with the Dutch participants. Some participants of this research are board members of the citizen initiative eCoBuren. These interviewees were chosen since they are connected to the more general and very specific interactions within the initiative. The participants from eCoBuren could be reached through the email addresses on the website, however, this was not the case for the other participants. So, from the eCoBuren participants on, a snowballing approach was taken to recruit participants from the Municipality of Buren and the Province of Gelderland. The RES-region's interviewee could be reached through the email address on the website too. These interviewees that have been selected are policymakers and coordinators of policy implementation. Moreover, because of the RES-arrangement, it is considered that these people are working in the middle of these interactions and therefore suited for this research. The overview of interviewees can be seen in table 5. Note that participants 5.1 and 5.2 are the same interviewee but they have been interviewed two times in different ways and on different topics.

Nº	*Organisation*	*Function*	*Format*	*Topic*
1	RES – Rivierenland Fruitdelta	Strategical advisor	Solo, online	Governments & eCoBuren
2	eCoBuren	Board member	Pair, in-person	eCoBuren
3	eCoBuren	Board member	Pair, in-person	eCoBuren
4	Municipality of Buren	Employee	Pair, in-person	eCoBuren
5.1	Municipality of Buren	Coordinator	Pair, in-person	eCoBuren
5.2	Municipality of Buren	Coordinator	Solo, online	Governments
6	Province of Gelderland	Project manager	Solo, in-person	Governments & eCoBuren

Table 5. Participants interviews. (Own creation)

The interviews took place in person and online in April of 2024. Originally, the researcher planned the interviews to be in-person to mitigate the issue of not all people being equally technologically advanced and/or having the means to set up an online meeting. However, because of the travel distance between the interviewee and interviewer, some meetings were held online, and fortunately, the emerging trend of hybrid working allowed this (Sokolic, 2022). This has been done using Microsoft Teams and Google Meet. All interviews were recorded

using the default recording option of a Samsung phone. These recordings were stored on a private drive and were deleted after the completion of the research.

3.2. Data preparation and analysis

To carry out the analysis of the interviews, transcription using TurboScribe has been used first. From these transcripts, parts were taken out because some participants used specific cases to explain their initial point and these cases are not necessarily suited for publication nor relevant. Moreover, any data that could link the interviewee to this research was anonymised for privacy reasons. Mentioned personal names were substituted by "[NAME#]" and names of organisations were replaced by "[ORGANISATION#]".

Because the interviews were already structured around the indicators, the analysis was based on the answers participants gave to these questions. The participation indicators from the diagnostical framework for participation were scored on a basis of 0 – 50 – 100. A 0 meant that fulfilling requirements for the indicator were absent. Where on the contrary, a 100 meant that the fulfilling requirements for the indicator has been proven to be present. In the middle of this, a score of 50 was assigned when the indicator was being fulfilled but not fully. The 0, 50 and 100 scores were given the colours of a traffic light, red, orange and green respectively. For the governance indicators, this scoring was not available instead the indicators have been described using the descriptions interviewees gave.

Moreover, overarching and newly emerging themes were identified that are shaping the regional energy transition. These themes could be identified based on the coding of the transcripts. Topics beyond the scope of the frameworks that were mentioned by multiple interviewees were seen as recurring themes by the researcher. Because this would mean that it was not a one-time occurrence with only one perspective but instead more systematic and identifiable across the whole RES arrangement or citizen initiative. Moreover, if there was a topic recurring within one interview multiple times or if it was stressed by the interviewee that topics beyond the framework were important to them, the researcher also identified this as a new theme.

3.3. Ethical approval

This research was ethically checked, on the basis of a checklist filled in by the researcher, by the thesis supervisor from the University of Groningen. For the participants, the researcher created an information sheet and consent form (Appendix B: Information Sheet and Consent Form). In this information sheet and consent form, all aspects of participating have been highlighted. By signing the form, interviewees gave informed consent to the collection of their data for this study. In the form and during the interviews it was indicated that the participant is not obligated to answer any questions they do not want to answer. Next to that, they were made aware that they could ask questions at any point about the research. The option to opt out was also always a possibility, during and after the interview.

4. Results

This section will present the results of the interviews with seven interviewees who play a vital role in the regional energy transition of Rivierenland Fruitdelta. It will be structured the following: first, the indicators diagnostical framework of Teladia & van der Windt (2022), will be used to elaborate the participation interactions. Each indicator will be discussed by describing what the interviewees said about it, then it will be scored. For the second section the indicators will merely be described by showing how the interviewees portrayed these. Lastly, the overarching concept of knowledge structures also arose and this will be clarified.

4.1. Participation interactions

4.1.1. Participatory Environment

Starting off with the first indicator of the Participatory Environment (PE, see table 6), the socioeconomic attributes of the participants in the citizen initiative (**A2**). Here it was said by all of the government participants that they did not have any insight in this. Participant 4 noted: *"We do not have an insight in that, I can make a guess but that is complete guesswork."* Moreover, participant 5.1 said: "*I wonder if we would even want that, we also do not have this for the local football club."* However, participants 2 and 3 shared that most of the participants are high-earners with a high education level and only owned residences. However, no exact numbers were available on this as the participants can be different with each project. So, when it comes to scoring indicator A2, it will be scored with 100 as the socioeconomic attributes are currently high. It has also been said that non-participants in the municipality could see eCoBuren as an elitist club, they want to get rid of this framing, that the municipality reinforced. *"That is the problem that we are dealing with, because we get the response from the politicians: 'you are an advantaged group and you do not do anything for those with less to spend'"* (3).

The location indicator (**A4**), shaped by the location of the projects, renewable energy sources availability and the existence of energy infrastructure. The projects are all located in the municipality Buren and not specifically focused on one specific village (5.1), nor targeting all of the population. *"One of the problems is that Buren is a municipality with a lot of countryside and then the interests of a village like [VILLAGE NAME] are a lot different from those in [VILLAGE NAME]"* The percentage of people connected to energy cooperatives in general is also very low (1). Considering the energy infrastructure almost all interviewees gave the same answer. Which was that, yes, there is an infrastructure available, however, the national problem of grid congestion is not always allowing eCoBuren to use the infrastructure (1, 2, 3, 4 & 5.1). However, eCoBuren has been trying to find middle grounds with the network operator, Liander, by looking at off-grid solutions and being flexible with the energy laws. This will allow future projects to be implemented. Moreover, spatial integration is difficult and is almost entirely dependent on inhabitants (4). This makes that A4 is scored with a 0.

In the region, there are still enough non-renewable sources available. Moreover, participant 2 described that participating in projects of eCoBuren is still mostly for those who actually want to become more sustainable. It is not needed or preferred in Buren to move to natural gas. However, the participants do find it important and do prefer renewable resources. Therefore, **A6** will be scored a 50.

GS2 – government interactions – is not an indicator that will be scored but a description can be given. ECoBuren as citizen initiative is interacting with all interviewed government organisation, although, ranging in intensity and topic of conversation. Participant 1 highlighted that it is mostly an informal exchange of knowledge in both ways. For example, the RES-coordinator would like to be kept up-to-date on eCoBuren's projects and use their knowledge, the RES, in turn, provides eCoBuren with knowledge on decision-making processes in the municipal council (1). However, formal interaction between RES and eCoBuren is limited, only

the overarching organisation for energy cooperatives, EnergieSamen Rivierenland is involved with RES (3). The provincial government interviewee highlighted that they did urge eCoBuren to get more involved with EnergieSamen Rivierenland so they can have more control on new renewable energy projects in the region. But here (again), the province interacts mostly with this overarching organisation (6). The municipality is the most important government organization for eCoBuren, as they give permits and they operate solely within this municipality (2, 3, 4 & 5.1). Participants 2 and 3 said about this that the municipality is very much in the role of a director and eCoBuren has, thus, does not feel like they are being participating but rather being *bossed around* (2 & 3). Even though participant 5.1 ensures that eCoBuren is seen as a stakeholder and asked to think with the municipality on policy development. On the contrary, the municipality sees 5 roles for eCoBuren in participating as a citizen initiative (5.1), which intertwine, making the interactions with eCoBuren hard on the municipality: *"sometimes, while sitting down with eCoBuren I had to go back to see which role they were talking from"* (5.1).

The initiative takers of eCoBuren did not have experience with energy cooperatives before, however, they did have experience with voluntary citizen initiatives within the municipality. So, an experience with the municipality structure was present (2). There is expertise on sustainable energy and the cooperative is going through a professionalisation phase right now (3). However, considering that they are the first energy cooperative within the municipality of Buren, **A3** will be scored with 0.

When looking at the general population of Buren, there is some knowledge on and willingness to participate in eCoBuren's projects. However, participant 3 also emphasized on the fact that most citizens are *"driven by their wallets"*. This means that they are mostly interested in participating in these kind of projects if there is a financial benefit. Next to this, eCoBuren has not a lot of brand awareness within the municipality, which they are trying to solve with campaigns (2). When it comes to knowledge on sustainability, participant 2 and 6 also suggested that because of misinformation and lack of information from government institutions on, for example, wind turbines, citizens have the wrong information on sustainability. So, **A5** will also be given a 0 as score.

Apart from the grid congestion struggles discussed above, the sources for solar energy are available, but the municipality of Buren has completely blocked off wind-energy for political reasons (1, 2, 3, 4, 5.1 & 6). Solar is enthusiastically supported by the municipality and in the past eCoBuren has already, successfully, carried out solar energy projects. Therefore, **A7** will be scored with a 100.

The non-governmental organisations connected are, most importantly, banks. Moreover, Liander, the network operator is involved. With some of the projects, the talk to park managers of industrial zones. These are all local actors and with that **GS3** will be scored 100. (2 & 3)

Participatory Environment (PE)				
Key second-tier variables PE for analysis	**A2 Socioeconomic attributes - 100**	**A4 Location - 0**	**A6 Importance of energy source - 50**	**GS2 Government organizations (not quantified)**
	A3 History or past experiences - 0	**A5 Knowledge of Sustainability - 0**	**A7 Sustainable energy technologies available - 100**	**GS3 Nongovernmental organizations - 100**
	Linked classification of PE variable analysis: **(C) Outcomes (added variable):** **C1 Enabling participatory environment (67-100)** **C2 Somewhat enabling participatory environment (33-67)** **C3 Little or no enabling participatory environment (0-33)**			

Table 6. Scored indicators for the Participatory Environment. (Adapted from Teladia & van der Windt, 2022)

4.1.2. Level of Participation

The Level of Participation (LoP, table 7) will be tackled in the same manner as the Participatory Environment. What is important to not for all of the indicators in the LoP is that they all change per project, however, a general description will be given. **GS4** – network structure will described first. eCoBuren as an association is running fully on civilian members with a board guiding this (3). This board has to justify all of their choices to the members (2). Then, all of the projects are owned and executed by a private LLC that is fully owned by the cooperative's board, who then again have to justify their choices to the members (2). Considering that all of the board and general members are civilians and they have full power, GS4 is scored a 100.

Moving on to **A1**, the number of relevant actors. For the projects in the pipeline there is no insight on this at all (3). Within the initiative there is also no clear data on what kind of and how many people are participating. In previous projects there were 60-70 households participating. Because of a lack of concrete numbers and the insight in previous projects, A1 will be scored 50.

The power to decide lies with the citizen, since they control the decisions the board of the initiative can make. Thus, deliberation processes are led by the members of the initiative (2), since all decisions that the board wants to make have to be run by the general members first. So both prior to the decision being made and as the decision is being made, citizens have power. When it comes to projects, the investors have no power in deliberation processes since the projects are owned by the LLC of eCoBuren. This will make the scoring of **I2**, deliberation processes 100.

The financing activities are led by the board of the initiative for the general and for the generation projects by the participants and of the specific projects. If local residents want to invest and, thus, be included in the projects, then that is a possibility. However, it is not necessary to be financially included through investing since this can also be done through the financial decision making processes. Local residents only benefit from the project when that is established in the statutes of the project. They can, for example, choose to reinvest the money back into eCoBuren or return that money to the investors. These investors, however, can be citizens. Unfortunately for eCoBuren, it is difficult to have less socioeconomically advantaged people participate in these projects but the initiative is looking at ways in which to lower the financial threshold of participation. For example, they are looking at free memberships, but then they would then need money from somewhere else. There are subsidies available for making this possible, but this money has to come through the municipality and they decide on how they spend their money, which does not work out in favour of eCoBuren. Moreover, there are other national subsidies that can be used for research that eCoBuren is also not receiving because of the municipality's position. Even though they do not receive the money, it is available in the region, making that **I4** will score 100.

As said before, the citizens have, because of the initiative's structure, citizens have equal power in the initiative. This is also established in eCoBuren's rules and for these, there is no difference between operational, collective or constitutional rules. That is why **GS5** will also be scored 100.

eCoBuren shares information with its members during the general member meetings and also with the general public via social media and a newsletter. Once or twice a year they write an article for the local municipal magazine. They have also tried to enthuse local press by inviting them to the general member meetings, this has not been successful so far. With the members they share everything that has to do with the operationalisation of the initiative and the communication the general public is on general information with regards to what eCoBuren does to enthuse more people to participate. Due to eCoBuren's municipal nature the

municipality argued that eCoBuren is not always the best vessel to use for sharing information on participation with the general public on the energy transition (4 & 5.1). When it comes to communication to eCoBuren, in forms such as feedback, the interviewees said to always welcome that (2 & 3). Since eCoBuren is also hired as the "Energieloket" of the municipality of Buren, they collect and share information through that as well. This makes that the total scoring for **I1** is 100.

Conflict in terms of differences in views can occur within the initiative, as well as between the initiative and the government institutions. Interviewee 2 and 3 stress the importance of this, as differences can have a value and lead to effectiveness within the initiative. If there is a conflict within eCoBuren that can also always still be solved by utilizing their independent advisory board. From the municipality's side there is either a political or legal reason connected to the conflict. On the legal side it might have to do with permits and other legal frames eCoBuren needs to operate within, which can be solved using legal processes (5.1). Politically, the municipality can say that eCoBuren cannot execute a certain project because of the alderman's political stance, which can be solved by trying to get to a middle ground (3). The alderman will, for example, not accept a certain project because represent a group of people. However, then another conflict arises, as eCoBuren also represents a part of the municipality. Whether they get in a conflict is dependent on the roles eCoBuren and the municipality of Buren take. Because of the positive value of conflict within the initiative and the effective resolution processes for conflicts with the municipality, **I3** is scored 100.

The self-organizing activities of eCoBuren are established in its structure, as the statutes of eCoBuren ensure sole power for the initiative and distribute the responsibilities in organization processes. They have also found out that this does not mean that everyone within the municipality has access to this power, as not all citizens are able to participate because of the financial barriers. This has not been supported by surveys though, as this costs money, as well as changing their strategies to actually reach potential participants also costs money. This money eCoBuren rather spends on operationalisation of projects, so concrete changes also have not been made to the strategy of eCoBuren. But, if people want to participate, they can, this is being advertised, but it is unknown whether this has an influence on potential participants (see **I1**). Lastly, the initiative is understaffed, in the sense that they do not have enough knowledge or capabilities to run the projects without intervention.

<table>
<tr><th colspan="5">Level of Participation (LoP)</th></tr>
<tr><td rowspan="2">Key second-tier variables for LoP analysis</td><td>GS 4 Network structure – 100</td><td>A1 Number of relevant actors - 50</td><td>I2 Deliberation processes - 100</td><td>I4 Investment/Financing activities - 100</td></tr>
<tr><td>GS 5 Rules in use - 100</td><td>I1 Information sharing activities - 85
I1.2 Nature of information - 100
I1.2.1 Feedback was used in project planning or in improving the project - 100
I1.2.2 Local residents are satisfied with the information sharing activities - 100
I1.3 There is some local capacity to collect data and disseminate it (or to outsource) - 100
I1.4 There is a dissemination strategy to share information and scientific findings - 100</td><td>I3 Conflicts - 100</td><td>I5 Self-organizing activities - 100</td></tr>
<tr><td></td><td colspan="4">Linked outcomes of LoP variable analysis:
(O) Outcomes:
O1.1. Citizen power: citizens have full or equal control over the project (67-100)
O1.2. Tokenism: citizens are engaged but have no or less control than others (33-67)
O1.3. Non-participation: citizens are not engaged or are engaged linearly (0-33)</td></tr>
</table>

Table 6. Scored indicators for the Level of Participation. (Adapted from Teladia & van der Windt, 2022)

4.2. Governance

4.2.1. Orchestrating capacity

The orchestrating capacity is captured in three conditions, each consisting of three indicators (see table 3). How these worked out in the region of Rivierenland Fruitdelta will be explained in the following section.

4.2.1.1. Strategic Alignment.

In the region of Rivierenland Fruitdelta the first RES plan was collectively drafted through 32 so-called "ateliers" (1). Here, multiple stakeholders were involved, such as aldermen and deputies, but also citizens. This allowed for a very good first RES plan to be developed (1) that is supported and known by the different actors. It was even mentioned to be a parallel process, since within the RES, they wanted to establish the same plans the municipalities were establishing (1). However, the municipality of Buren did not mention this (5.2), so it is unclear how this played out in practice for them but for another municipality it meant using the same maps in their policies. When it comes to getting cooperatives involved in the RES arrangement, the RES also utilizes provincial goals (1). The province of Gelderland has the aim of generating 6,5 TWh renewable energy, which comes from the sum of all regions in the province, so there is a reference point for the province and that is aligned with the regions (6). This is all connected to the creation of plans, when discussing the reality interviewee 6 noted: "Yes, I sometimes have the impression that on paper they have been aligned, but when practice comes into play, people often look at how it can be translated differently or how one can get around it."

4.2.1.2. Mediation across scales and levels.

The integration, brokering and recognising of resources was not directly identified as something that happens in the RES arrangement of Rivierenland Fruitdelta. There is a shared sense of solidarity with all partners in the RES-arrangement but no shared resources (5.2), but this also is not the problem as the municipalities have the amount of resources they need (1). Knowledge is also barely being shared, or at least not in an useful way: "many wheels are being rediscovered" (5.2). Any means for financing or human resources for assisting the municipality of Buren in executing energy plans needs to come from the national government (5.2). However, participant 1 highlighted that labour power of the province supports municipalities in executing wind projects, for example. The role of the RES-coordinator in RF is building bridges and keeping short lines of communication (6), which helps to facilitate interactions, to steer the joint view and to keep everyone on board for the RES-goal (5.2). Participant 1 highlighted that building bridges is also one of their explicit aims and with this they are actively trying to support the regional government officials. This are the formal interactions, next to the regular decision-making interactions, but informally it was pointed out that most of the communication lines are very short and that whenever something is going on, people are in touch quickly (1, 5.2 & 6). When it comes to communication, there is a shared communication strategy for the region, which is created by the communications officers of the different actors within the RES (1).

4.2.1.3. Creating Opportunity Contexts.

The creation of opportunity contexts institutional designs, action mandates and long-term thinking has been discussed by interviewee 1, 5.2 and 6. When it comes to wind energy implementation, for example, there are two institutional designs that limit this. For one, the municipality of Buren has established in their agreements that wind turbines are not going to be placed in Buren (5.2 & 6). Secondly, there has been a court case that said that, before any wind turbine project can be carried out, an environmental effects report (MER) has to be made.

So now, nationally a MER is being created, however, municipal governments can also choose to make their own MER. Municipality's that create their own MER can continue carrying out wind projects and are advancing majorly, compared to those municipalities that are awaiting the national MER. Why some municipalities decided to create their own plans and some others did not, has to do with the fear of worried civilians. However, if there would be an association of worried civilians that would take legal steps against new wind turbines, they will almost always lose their court case, since the institutions test scientifically whether it is possible (6). So the institutional design can also advance the regional energy transition.

The creation of long-term plans is being hindered by the fact that there is a tendency to think in scopes of four years (elections) and that there is no clear end-goal and direction towards it. Even when there is a long-term plan, the implementation of this is difficult thanks to local developments. These local developments could be that there are worried civilians or that the implementers want to wait for political developments on the national level to see if their plans are still supported. Overall the courage to take action is lacking and there is fear of forcing people into taking action over the long-term. (5.2 & 6). Moreover, people cannot be forced within the RES-arrangement as this is not a legally binding agreement. The RES can only urge municipalities to take action but intrinsic motivation is needed to actually take action.

4.2.2. Type I and Type II arrangements

Type I and Type II governance arrangements are shaped by 4 characteristics (see table 4). These look different depending on whether it is a Type I or II interaction, how this looks will be described in the following sections.

4.2.2.1. Type I interactions.

Interactions within the RES-arrangement are meant to be of Type-II because of its set-up. However, there is only limited actualisation of these interactions. Municipalities make decisions for their own sake because they strongly perceive the RES as legally status-less. That does not mean that the RES is not used as a tool to hold municipalities legally accountable. Because the deputy of the province says that the RES-goals need to be met and if the municipality is lacking in that, the province will take over and implement the plans anyway (6). This hierarchical interaction only happens if a municipality refuses to implement the plans, which they agreed on in the RES, while they are spatially feasible. This intervention happens with a *PIP* (Provincial Integration Plan) and according to the *Gelderse Wind Ladder*, an escalation model for consultation between the region and municipality (6). Lastly, participant 6 highlighted that in the beginning of the RES, provincial and RES-plans were not aligned and instead side-by-side, making it feel like "Thorbecke's shed".

4.2.2.2. Type II interactions.

RES-actors are mostly engaging in Type-II interactions during the creation of plans for the RES (1). When the RES was being created through ateliers (see strategic alignment), the government levels were networking with each other. Moreover, this made that each municipality received specific tasks (their RES-contribution), that they could execute how they want (1). The municipality of Buren also execute their plans in a type-II arrangement as they are in contact with neighbouring municipalities for the execution of solar panel plans (5.2). Next to this, the RES-organization of RF is able to piggyback on other, legally binding, interactions, such as the AVRI (waste processes) and the ODR (environmental office) (1). With the role of the RES-coordinator as bridge-builder, they also initiate organisations to interact in these type-II interactions (5.2).

4.3. Knowledge sharing practices

Knowledge sharing practices is also a theme that recurred in all of the interviews, positive, as well as negative attitudes towards them have been shown. Positively, knowledge sharing by the introduction of a regional knowledge office could have beneficial effects for both governments as well as citizen initiatives (1, 2, 3, 4, 5.2, 6). Participant 1, for example, was positively talking about the regional *Energieloket Doe* Rivierenland, which the RES is stimulating. Doe is aimed at distributing knowledge office specially for entrepreneurs in the region RF that want to have solar panels on their company's roof. From the provincial side (6) national helpdesks were highlighted, such as *Wind op Land* and the NPRES (National Program RES) helpdesks, that can be used for advancing the regional energy transition. ECoBuren (2 & 3) also showed interest in a regional knowledge office like the *Energiewerkplaats* (energy workshop), that is located in Fryslân. This would mean that all of the energy cooperatives of the region would come together and share their knowledge. Then when certain knowledge (could also be labour) is needed for a project they can extract this from the RF *Energiewerkplaats* and they would not need to discover all of the knowledge themselves. This could make their operationalisation more efficient. However, within RF there is already the umbrella knowledge organisation *EnergieSamen* Rivierenland that eCoBuren can utilize. But *EnergieSamen*, compared to the *Energiewerkplaats*, cannot fully execute projects, they are mere advisors. A provincial form of this type of workshop is being set up by participant 6. They are debating whether the province will financially support a new academy called Flink, which is aimed at supporting energy cooperatives in a professionalization process so that the cooperative is more resilient. Next to this, the province is setting up an expert pool (consisting of consultancies) for municipalities to go to when they need to set up an energy project. This will make that the municipality does not need to have the knowledge or labour force themselves to execute energy projects.

In general, eCoBuren is also already contributing to knowledge sharing practices as they run the municipal *Energieloket*, which provides knowledge on the energy transition in the broadest sense to citizens of Buren (4). Other general activities in the region that contribute to knowledge sharing, are the ateliers mentioned earlier (1). Other governmental institutions (such as RIVM and GGD (environmental safety and healthcare)) are also utilized in getting knowledge on the energy transition (6).

Negatively, there is a lack of useful knowledge. This is because 5.2 discussed how they felt like they need a knowledge office that is more sufficient than the current national provincial knowledge offices. These offices are not generally insufficient, as they do work for bigger municipalities but they do not work for small village-oriented municipalities like Buren. However, they felt like the creation of this expertise centre is a "crossed bridge" (5.2). The need for this office comes from the fact that the municipality is constantly trying to "rediscover the wheel" with the advice or knowledge from other government institutions on energy transition policy but instead would like "a car", meaning to have ready-to-use plans coming from. The participants from eCoBuren felt as if the knowledge eCoBuren has on the energy transition is under-utilized by the municipality, especially because the administrative agreement vouches for the use of local knowledge (3). Lastly, knowledge sharing with citizens on the energy transition is not always done in a sufficient way since the language used can make it very complex and will, thus, not lead to more citizens acting towards a sustainable energy transition (5.2).

5. Discussion

5.1. Other identified themes

5.1.1. Participation

5.1.1.1. Roles and relations between citizen initiative and government(s).

ECoBuren currently feels like they are not participating enough when decisions are being made. This has to do with the complex interactions between them and the governmental organisations. For example, they see that the RES aims to achieve renewable energy goals with all of the municipalities, however, these organisations politicise the RES. Moreover, eCoBuren believes can help achieving the goals but because of this politicisation it is difficult for them to get involved. *EnergieSamen* Rivierenland (of which eCoBuren is a part) is participating, but only as an advisor, eCoBuren would like to get involved with decision-making too. Next to this, eCoBuren wants to contribute to implementing wind turbines in the region. Jurisdiction for this lies with the province, because the municipality of Buren refuses to take up the role of implementing these. So if eCoBuren want a role in the implementation of wind turbines, they would have to be in contact with the province and manoeuvre between governance levels. This is not necessarily the problem but considering that the initiative is fully run by civil volunteers there is a lack of knowledge and time available for this. Thus, with the municipality refusing to do wind turbines, they are forcing eCoBuren to "play chess on multiple boards" (2) and with that, because of the lack of power, they are "killing the citizen initiative" (3). If the municipality of Buren did not take up the role of a director they would not have these problems.

5.1.1.2. 50% Local Ownership.

50% local ownership, one the RES's aims, is difficult to reach for eCoBuren. They have identified some limiting factors in this. For one, they are reliant on investors and whether these are citizens or banks, there needs to be a business case that can provide them with enough return on the investment. This return on investment is often more important in the business case than the 50% norm and thus if the initiative fails to make a solid business case where there is both good return on investment and 50% local ownership, this 50% goal will not be eCoBuren's ambition. However, eCoBuren always strive for it but the importance of the return on investments limits the initiative. Moreover, the municipality of Buren has also not provided a good policy to safeguard the 50% norm. In other municipalities there is a norm that projects need to be owned for <u>at least</u> 50% by the local citizens but in Buren the policy says <u>up to</u> 50% is also good. Next to this, there is a municipal *Omgevingsfonds* (Environmental Fund), where owners of spatial and environmental projects, such as solar parks or wind turbines, need to give money to. This is about €1 per *x* Watts/year yielded by the project. In Buren the policy says that if a project does not comply with the 50% norm the amount of money per Watts per year doubles to €2. This policy rule makes that it is very hard for citizen initiatives to implement projects since they cannot necessarily safeguard the 50% and if they thus do not the costs are also a lot higher. But whenever a big investor comes in and does not meet the norm it way easier for them to just pay double. This makes the conversations eCoBuren has with the project developers very difficult, because the project developer says that they do not need to comply with 50% because of the above municipal policies. (2 & 3)

5.1.1.3. Early adopters.

When asked about reaching groups with a lower socioeconomic status both participants 2 and 3 but also 5.2 highlighted that this is an issue. They all named the fact that participation in the energy transition, either by individual means or as a participant in eCoBuren, so far is only something for the early adopters. And currently, not even all early adopters have been reached (5.2). The early adopters is a term from the Diffusion of Innovation Theory that was originally created by Rogers (1995). Both eCoBuren and the municipality would like to reach with a lower

socioeconomic status and with that reach the early majority Rogers (1995) talks about in his theory.

5.1.2. Governance

The additional theme for governance that could be defined from the interviews is the politics within the RES-arrangement. The RES steering group consists of the representatives of the governance bodies, so they all have a political standpoint when making decisions. This also has to do with the "legally status-less" RES-arrangement according to 5.2. They argue that because there is no legal obligation for the municipality to take part in all aspects of the RES. For example, the municipality of Buren has been able to say, from a political standpoint, that they do not want to have any new big wind turbines in their municipality. This has been accepted but politicized the RES (1 & 5.2). Moreover, the election results of the past provincial elections of 2023 also plays a role. Because of the shift to the right, the RES is found less important and the acceptance of the RES-goals is now more determined by the "worried civilian" (1). Because of these political interactions within the RES, participant 3 does not even see a new RES-plan being established any time soon.

5.2. Discussing the frameworks

5.2.1. Diagnostical framework for participation

As it can be seen in Table 5, the Participatory Environment is scored relatively negative. This has to do with the location, knowledge on sustainability and history or past experiences. This mainly has to do with the fact that the energy transition is still difficult in the municipality of Buren. The fact that it is a rural municipality consisting of very different villages, the fact that the energy transition is very new and with that that eCoBuren is the first energy cooperative, all impact the participatory environment.

In table 6 it is clear to see that it is mainly green and with a lot of citizen power. There is limited insight in the number of relevant actors, as well as the meeting attendance and scientists participating, but these are not greatly limiting factors. That is why those boxes do not score a 100. But overall, the conditions within eCoBuren are suitable for a high level of participation. Advancing factors were, for example, the network structure of the initiative which allows for a fair way of decision making and self-organizing activities.

Considering that citizen initiatives need to operate within a complex governmental network, their participation in it will be impacted by the complexity. This could also be seen from the additional theme above. These interactions are part of the participatory environment and limit the way in which eCoBuren can participate.

To make the framework more applicable and connected to the RES-goal of 50% local ownership, indicators could be added in regards to this. There are already indicators on the ownership and financing activities and whether that is owned by citizens yes or no. But in the frame of the RES, insights on local ownership of 50% are crucial to identify actual barriers and gaps for citizen initiatives in the Dutch regional energy transition. The limits identified by eCoBuren could be used as new conditions that need to be met for the participatory environment. Next to this, the Diffusion of Innovation theory could be added to the framework by Teladia & van der Windt (2022) to not only analyse whether there is participation but also what kind of participation. This is important to not only the initiative but also the municipality.

5.2.2. Analytical framework for governing capacity

The first condition for orchestrating capacity, strategic alignment, has been described as being fulfilled by all governments. However, what is important to note is that strategic alignment is mostly being fulfilled on paper and not in practice. This can be because of the political influences in the RES. Mediating across scales and levels is limited in Rivierenland Fruitdelta,

mostly because of the lack of sharing resources. But the communication and informal and formal connections are well established. It is a small world in which everyone knows one another, so quick and informal communication is easy. The RES-group and coordinator play a positive role to establish this. The creation of opportunity contexts, the last condition for orchestrating capacity, is not being met at all. Institutional designs hold municipalities back, which then hold the RES back, for both the municipalities are not held accountable. And more importantly, long-term thinking is limited thanks to local development and thinking in scopes of four years. Both Type-I and Type-II interactions play a role in the RES-arrangement and both are used to advance reaching renewable energy goals.

What can be added to the framework is the influence of politics. Even though the indicator 'Creation of opportunity contexts' does cover long-term and short-term thinking. These types of thinking are implications of election results, so indirectly politics are involved. But there is more to it. Politics also plays a broader role as it has politicised the RES-group.

5.2.3. Knowledge sharing practices

Knowledge sharing is something that is highly appreciated in region Rivierenland Fruitdelta. Plans for new knowledge offices are in the pipeline and the current knowledge offices are well utilized and are of great value to all interviewees. However, knowledge is not only positive for the energy transition. Firstly, it was highlighted that the providence of just knowledge will not be sufficient for municipalities. This contradicts the finding from the theory that stated that governments would be able to handle complex issues by receiving more information on the topic (Valkenburg & Cotella, 2016). What the interviewed government institutions did not acknowledge is that there is need for them to share knowledge with citizen initiatives (Wagemans, Scholl & Vasseur , 2019).

5.2.4. Assessment

So, to bring the frameworks together, it is important to have a starting point from which they can be connected. In the end, all of these interactions take place to reach renewable energy goals for a sustainable future. However, this is currently limited by a number of factors but this can also be advanced by other things. For one, the citizen participation is limited by the interactions between governments, since the political game between the municipality and the province makes their work complex. However, the initiative can and will mitigate some of this by getting professionalised, but there is a responsibility for the governments to facilitate better. Moreover, the municipality's role in facilitating for the initiative can be bettered in general. Their 50% local ownership policy and the wind turbine complexity make the job of eCoBuren a lot harder in contributing to reaching renewable energy goals.

When it comes to facilitating, knowledge plays a role too. Knowledge offices like the *Energieloket Doe*, *Energiewerkplaats*, *EnergieSamen* and Flink (see 4.3) can help government institutions in executing energy plans. These offices can also help citizen initiatives assist governments in executing renewable energy plans with local participation. With this, not only the renewable energy goal can be reached but also the participation aims of the region. It is important to bring this knowledge in a sufficient way. For the governments it needs to be in the form of a ready-to-use toolkit. While eCoBuren, as the *Energieloket*, should use easy-to-follow language to get as many citizens on board.

6. Conclusion

This research was guided by the research question: *How are the interactions between and within governments and citizen initiatives shaped in the regional renewable energy transition?* This question has been answered using a case study on Rivierenland Fruitdelta and its governmental institutions and eCoBuren. Interviews with government officials from the RES-region, municipality and province have been held for the governmental institutions interactions. For the interactions between and within the citizen initiative eCoBuren, two board members of the initiative and the same government officials have been interviewed. The data from these interviews could be used to analyse the participatory environment, level of participation, governing capacity and knowledge sharing practices.

What has been found is that there are limits in the participatory environment for eCoBuren. Politics and policies limit eCoBuren abilities to carry out their plans to contribute to create renewable energy. This also goes for the government interactions. Less politics and more knowledge sharing will be beneficial for the energy transition.

6.1. Significance

The limitations of this research are that there has been a small pool of interviewees, while other research uses bigger pools. Other research also combined the research with a document analysis, which also has not been done in this research. What limited the interviewees was that the questions contained a lot of academic jargon that they do not use on a day to day basis. So the questions had to be changed for the interviewees to give a proper answer. Moreover, Arnstein's ladder is critiqued already, so this research can also be critiqued on that.

Considering that the RES arrangements are structured around the same objectives in every region and regions are similar in governance structure, the same research methods could be applied to other regions too. Moreover, using framework in different regions could provide insight on the implications for future use, so this research could provide recommendations for broader or improved framework.

6.2. Recommendations for future research

For future research it is recommended to make the changes to the frameworks as this will make them more adaptable to the RES. Moreover, combining it with a document analysis would reveal the hidden things that will not come up in an interview. Lastly, it could also be interesting a change over time. Or what happens when changes are being made to the policies to facilitate for better coordination and participation.

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Appendix A: Interview Questions

Interview questions governmental institutions' interactions:

Thank you for participating. With this research you are helping to get an insight in what the interactions of the regional energy transition have looked like so far. This will be used to analyse the governing capacity.

Question set 0 – Introduction

- What is your role in the governance of the energy transition?

Questions set I – Governance arrangements

- From your perspective, how does the governance landscape within your governance level look like? Please briefly elaborate on the tasks of the actors identified.
  What networks and governance arrangements are in place?
  How do these relate to governance arrangements at other levels?

Questions set II – Conditions for transformative climate governance

Explain the idea of capacities for transformative climate governance. Elaborate on the orchestration capacity ("the abilities to coordinate multi-actor processes and foster synergies and minimise trade-offs and conflicts across scales, sectors and time") and its related conditions and activities (see conditions 1-3) that manifest in these capacities. Show the interviewee the activities that are identified in the literature.

- Do you find that the activities, mentioned in the capacities framework, fully capture the orchestrating capacity?
  If not, which activities would you add to these?

Questions set III – Interactions between governance bodies and conditions for transformative climate governance

- How would you describe (hierarchy, frequency, intensity, importance) the interactions of the governance bodies in the region:
  Between municipalities
  Between municipalities and the province
  The region and the national government
- How would you describe the role of the RES coordinator and steering group within your region?
- Can you explain for each of the activities of the RES coordinator identified, how these are influenced by the interactions between governance bodies?
  How do these influences relate to the institutional setup of the governance landscape identified in question set 1?

  Condition 1: Strategic alignment: It provides direction and clarity across governance levels necessary for collective steering of transformative change. Three activities create this condition: the creation of shared long-term strategies across levels and departments, enlisting and engaging heterogeneous actor groups, and integrating these strategies in processes.
  - To what extent are goals and strategies aligned between governance levels?
  - To what extent are general goals and strategies broken down for different sectors and organisations?
  - To what extent are priorities aligned across scales in the relevant sectors?
  - To what extent is there clarity about who is responsible for which objective?
  - To what extent are mechanisms of accountability in place? How is this in the context of the energy-region partnerships?

- How do governmental actors engage non-governmental actors to adopt sustainable energy strategies?
- To what extent are regional governance bodies dependent on national legislation in order to steer the energy transition?
- To what extent are concrete pathways defined to reach strategic goals?

Condition 2: Mediating across scales and sectors: Facilitates knowledge sharing and interactions across levels. Activities that create this condition include creation and facilitation of networks and communication channels, the integration of resources across levels, and creation of connection nodes (e.g. through process coordinators).

- How are funds for the energy transition distributed across governance levels?
- Do regional levels have sufficient funds and capacity to operate independently from the national level to commit to their targets?
- Do the energy-regions enjoy higher support from constituent organisations?
- How is progress reported and communicated across levels? Are governance institutions required to?

Condition 3: Creating opportunity contexts: It creates institutional conditions and designs that enable the implementation of strategies and assists actors across levels in enhancing their ability to steer towards sustainability. Activities for this condition include long-term thinking, the provision of institutional designs (e.g. financial incentives, regulations), and the creation of action mandates and a prioritisation of action and fields.

- What mechanisms are in place for financing and guidance of processes across governance levels?
- To what extent does the institutional setup support synergies to execute goals and stimulate action?
- What are institutional barriers for developing these synergies?
- Are legislative powers aligned with actions needed at different governance levels?
- Are priorities aligned across scales in the relevant sectors?
- How do misaligned priorities influence the region's capacity to determine action mandates?
- How are priorities aligned with strategic direction?
- How can short-term thinking be avoided?
- How can institutional setups be adapted to overcome short-term thinking and go beyond election cycles?
- What are other obstacles for effective transformative climate governance within the region that have not been addressed so far in this interview?

Question set IV – Closing remarks

- Summarizing, what do you think your contribution is to the regional energy transition? Are you satisfied with this? What could be changed, if anything?
- Is there anything you would still like to mention, ask, comment on?
- Would you like to receive the results of the research?

Interview questions for the citizen initiative and government(s) interacting with them:
Thank you for participating. With this research you are helping to get an insight in what the interactions of the regional energy transition have looked like so far. This will be used to analyse the level of participation and participatory environment.
Question set 0 – Opening question

- What is your role in the regional energy transition?

Question set I – Participatory Environment

- What does the socio-economic situation look like for the participants in this initiative? Is there knowledge on the mean income, educational level and number of households reached and whether these are owned or rented?
- Do the people working at or with the citizen initiative have past experience with regional citizen energy projects and/or sustainability in general?
    - If yes, what experiences from the past have been useful now?
- How does the "general population" (citizens from the region but not involved in the initiative) think of or interact with the projects and energy transition?
- How accessible are renewable energy sources and technologies in general in the region? Is there an infrastructure available already?
- Is there a support base for the use of renewable energy in the civil society? Is this initiative important for them?
- What government institutions are directly involved in this initiative?
- What non-governmental actors are involved in this initiative?

Question set II - Levels of Participation

- What is the network structure of the initiative? Who is in power?
- How many actors are involved (investors, private sector, government, non-governmental, citizen scientists/researcher and local community)? What are their roles? And how are they connected to one another?
- How deliberately is the citizen initiative (and citizens in general) involved? And what are the methods used for this involvement?
    - In processes prior to decision-making?
    - In decision-making?
- What does the financing look like for the citizen initiative?
    - Who decides and is included in the financial aspect?
    - Who benefits financially?
    - What grants/funds/subsidies are involved? Where does this money come from?
    - How do the initiative participants of the civil society participate financially?
    - What do the regional financial capacities look like for this project and in general for regional energy transition?
    - How does the cost of participating in the citizen initiative aligned with the local financial capacities? Do you have participants from multiple income classes?
    - Are there financial schemes available for those who want to participate in the citizen initiative (or regional energy transition in general) but don't have the means?
- What rules are involved in the operationalization of the initiative? This is connected to the local residents.
- What were the main methods of sharing information with citizens?
    - Has feedback been sought and received from citizens through information sharing?
    - Were citizens satisfied with this?
- How have conflicting or different views and interests been dealt with?
    - Is this satisfactory?
    - What kind of conflict arises, if any? How does this arise?

Question set III – Closing remarks

- Summarizing, what do you think your contribution is to the regional energy transition? Are you satisfied with this? What could be changed, if anything?
- Is there anything you would still like to mention, ask, comment on?
- Would you like to receive the results of the research?

Appendix B: Information Sheet and Consent Form

INFORMATION SHEET

"Untangling the Government Institutions' and Citizen Initiative's Interactions in the Regional Energy Transition"

Dear [NAME],

Thank you for your interest in participating in this research. This letter explains what the research entails and how the research will be conducted. Please take time to read the following information carefully. If any information is not clear kindly ask questions using the contact details of the researchers provided at the end of this letter.

WHAT THIS STUDY IS ABOUT?

In this research study the following research question will be answered: *How are the interactions between and within governments and citizen initiatives shaped in the regional renewable energy transition?* In order to answer this question 4-8 participants will be interviewed. These participants are involved in the regional energy transition either because of their work at a governmental institutions or at the citizen initiative eCoBuren.

You are chosen to participate in this study because you are working on the regional energy transition. Either at eCoBuren or at the regional office of Rivierenland Fruitdelta or working at the municipality of Buren or at the province of Gelderland. Your knowledge and expertise is valuable to this research as it can shed a light on the real-life interactions that cannot be read in a policy or report. Some participants have been contacted through other participants but no gatekeeping has been involved.

This research will be conducted by Carlijn Klinkhamer, third year RUG BSc student Global Responsibility and Leadership. As part of her graduation process this thesis research is carried out. No funding or third party interests are involved.

WHAT DOES PARTICIPATION INVOLVE?

Participation in this research involves an interview regarding the interviewee's involvement in the regional energy transition. The estimated time investment of the participant entails 45 minutes to an hour interview.

DO YOU HAVE TO PARTICIPATE?

Participating in this research project is entirely voluntary. Withdrawal from participation can be done at any time, without consequences or further reasoning. Furthermore, you can choose to not answer questions without consequences and or provision of reason.

ARE THERE ANY RISKS IN PARTICIPATING?

There are no risks in participating in our project, as we will ensure anonymity and confidentiality. This will be done by anonymizing your identity in the transcript as well as in the research output. The transcript won't be shared with anyone outside of the supervisor and the researcher and will be deleted in 5 years after the finished project is realised. In the final outcome there will be no personal information from what you could be identified.

ARE THERE ANY BENEFITS IN PARTICIPATING?

This research will have no direct benefits, however this research will contribute to the production of further knowledge on the regional energy transition. This means that it will further contribute to your close community as you are also affected by this project.

HOW WILL INFORMATION YOU PROVIDE BE RECORDED, STORED AND PROTECTED?

Recordings of the interview will be done through a phone. Hereafter, the data will be transcribed. In this transcription it will be ensured that your identity will not be revealed in any way. For instance, your name and/ or reveal personal information such as residential addresses or something else specific to your identity will not be revealed. These recordings and transcripts will only be used for academic purposes, to be specific they will only be used for this research. Furthermore, this data collection will only be accessible in the academic circle. It will be stored in the Y-drive of the University of Groningen server for 5 years, in correspondence with the university GDPR legislation.

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

It is expected that the results from this study will only be shared during the presentation in June. The academic output will be available via an online repository as this is part of the graduation process of the researcher.. It can also be shared with the interviewees.

ETHICAL APPROVAL

This research study has obtained ethical approval from the Campus Fryslân Ethics Committee and thus upholds the relevant ethical standards, such as ensuring confidentiality and anonymity.

INFORMED CONSENT FORM

It is kindly asked to you to fill in this informed consent form if you are willing to participate in this study. You are able to withdraw your participation anytime within the process, which also means that this informed consent is not definitive of your participation in the study. This informed consent will serve solely to ensure the protection of your rights as a participant.

WHO SHOULD YOU CONTACT FOR FURTHER INFORMATION?

If you have any questions about this study before or after participating, do not hesitate to reach out to the researcher.

Researcher: Carlijn M. Klinkhamer
Email-address: c.m.klinkhamer@student.rug.nl
Phone number: xxx

INFORMED CONSENT FORM
Title study: Untangling the Government Institutions' and Citizen Initiative's Interactions in the Regional Energy Transition

Name participant: .....
Assessment

- I have read the information sheet and was able to ask any additional question to the researcher.
- I understand I may ask questions about the study at any time.
- I understand I have the right to withdraw from the study at any time without giving a reason.
- I understand that at any time I can refuse to answer any question without any consequences.
- I understand that I will not benefit directly from participating in this research.

Confidentiality and Data Use

- I understand that none of my individual information will be disclosed to anyone outside the study team and my name will not be published.
- I understand that the information provided will be used only for this research and publications directly related to this research project.
- I understand that data (consent forms, recordings, interview transcripts) will be retained on the Y-drive of the University of Groningen server for 5 years, in correspondence with the university GDPR legislation.

Future involvement

- I wish to receive a copy of the scientific output of the project.
- I consent to be re-contacted for participating in future studies.

Having read and understood all the above, I agree to participate in the research study: yes / no

Date.....
Signature

.....

To be filled in by the researcher

- I declare that I have thoroughly informed the research participant about the research study and answered any remaining questions to the best of my knowledge.
- I agree that this person participates in the research study.

Date.....
Signature

.....