Government characteristics and policy-making ambitions in Dutch Regional Energy Strategy regions: barrier or opportunity for the energy transition?

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This study will focus on different RES regions in the Netherlands by using a multiple case study. The research can help add to the literature on socio-technical transitions and the multilevel perspective, by looking at a way to structure RES region intercomparison when looking at the energy regime. It was found that of all governance characteristics identified, RES regions have strong differences in their leadership structures and policy-making ambitions. Funding problems together with limitations in capacity, natural resources, elected officials, and problem ownership lead to these differences in leadership structure and policy-making ambitions. In the end, the characteristics, the bias of elected officials, financial limitations, capacity, and problem ownership, were found to be hurdles or strengths depending on the circumstance.

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Acronyms List

RES – Regional energy strategy

MLP – multi-level perspective

STT – Socio-Technical Transitions

ACM – Authority Consumers and Market

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Introduction

Everything began in the 1960s when several scientists started to publish their research on the potential greenhouse effect (Bell, 2021). Since then, scientists have investigated urgently needed new technologies and strategies for weaning humanity off fossil fuels. The majority of people on Earth continue to consume fossil fuels for a variety of reasons even if it has been 60 years (bp, 2021). Alternatives that are sustainable are still uncommon in many places. It serves as a reminder that there is still much work to be done in the energy transition. How the energy transition will happen is greatly influenced by policy.

Governments have acknowledged the need for more strict action with the Paris Agreement (UNFCC, 2015) and the more recent Glasgow Climate Pact (UNFCCC, 2021). The percentage of sustainable energy used in for example the European Union has been going up (European Environment Agency., 2022). A lot of governments act by the subsidising of solar panels (Taylor, 2020). In the Netherlands, in addition to the placement being subsidised, energy surplus can also be returned to the grid for the same cost as the energy can be purchased (Milieu Centraal, n.d.). Action cannot only be taken by practical means such as subsidisation, but it can also focus on different avenues of governance. An example is the shift towards decentralisation of policies and funds.

Governments can and have focused on decentralization of governing the energy transition. There have been multiple studies on decentralisation in the context of the energy transition. An example includes case studies on Germany and Japan, both utilise decentralisation in different ways (Wagner et al., 2020). Especially in the energy transition where solutions are often found locally, thus making local solutions a logical next step. Research has shown that local government in the form of municipalities has a big role, for example in Germany (Berlo et al., 2016).

To govern the energy transition, the Netherlands has opted for a decentralization of the policies and funds regarding the energy transition. To aid with the decentralisation the national government has introduced the Regional Energy Strategy (RES). The Netherlands is divided into multiple regions each comprised of multiple municipalities. Previous research on the RES regions has included a study on the financial decentralization that comes with it (Wang et al., 2023). This study will focus on the governing perspective and how multiple municipalities cooperate inside different RES regions.

1.1 Background on the RES

Since the seventies the Dutch national government had been expanding and changing their policy department on the environment. There has been a general trend towards decentralization and a focus on a local approach for sustainability issues. The Dutch government decided in 2017 that the energy transition should not be led by the national government. Instead, they made new so-called regional energy strategy (RES) bodies that had to submit a plan to the government on how their region would accelerate a regional energy transition. In this program, 30 regions were created based on proximity and existing cooperation structures. This program was part of the Dutch Climate Agreement, the goal of which was to decentralize the energy transition and balance energy production and usage more locally. Cooperation in regions has been ongoing in the Netherlands, now it has taken the form of RES regions. The RES allows participants to share knowledge on new technologies or results from pilot studies with each other so resources can be spared. It also allows everyone to join in on projects, and cooperation on the local scale is encouraged and enabled in RES committees.

The decentralization has a practical side, renewable energy is better used close to its source than transported elsewhere. The Netherlands used to rely on natural gas, which as an energy source could be transported across the country with ease in contrast to renewable energy. So, by decentralizing and now focussing on regional energy transitions a more localized approach is encouraged creating favourable conditions for renewable energy. The local approach is better equipped for balancing supply and demand.

The role of municipalities in the RES is quite big. However, all levels of government can still work together within these RES regions including the Dutch Water Authority. Municipalities are often seen as a bridge between local businesses, advocacy groups and the government. Not every civil servant is a part of the RES often one or two act(s) as delegate(s) of the whole municipality. The RES consist out of civil servants from different municipalities, some business officials, often someone from the province, and from the waterboard authority. Together they form teams that focus on topics within their region, for example on sustainable mobility.

1.2 Research objective and question

The objective of this research is to investigate how municipalities function within Regional Energy Strategy regions. Specifically working together on the energy transition. Some RES regions are advanced and already engaging in pilot studies and cooperating on a broad scale, while others have not yet ventured beyond making the first RES plans. This study will compare municipalities from different RES regions to identify differences in their characteristics. The impact the RES has on a municipality's policies and what the municipalities contribute to the RES will be investigated. The goal is to identify characteristics that influence the impact of the municipalities and the RES regions on the current energy regime, and to make a comparison between these characteristics.

In the centre of the study is the question, how do local governance characteristics influence the impact of the Dutch regional energy strategy on the stability of the energy regime? To answer this two sub-questions have been made:

- What major problems are municipalities facing in fulfilling their role in the energy transition?
- How does the Dutch regional energy strategy have an impact on the current energy regime?

To answer these questions, multiple municipalities civil servants will be approached. Their experience will be analysed through the lens of socio-technical transitions and the multilevel perspective.

The research can help add to the literature on socio-technical transitions, by looking at a way to structure RES region intercomparison. Although this is of academic importance there has not been a lot of research done into the governing within the RES region (Behabtu et al., 2020). Investigating a form of decentralized governance in the Netherlands from the perspective of sociotechnical transitions can add knowledge on how the actors behave within the existing regime and can attribute to the knowledge on transitions in general and specifically with the multilevel perspective in mind. This study can also help gain insight into the energy transition within municipalities. Every municipality has a different point of view and other priorities to consider.

2. Conceptual framework

To frame the research the multilevel perspective on socio-technical transitions will be used. Here the theory behind the socio-technical transition will first be discussed. Then the multilevel perspective and finally how they are combined. It will be explained why this framework was chosen for this research and how it is applicable by showing previous research in this field.

2.1 Socio-technical transitions

Society already has ways to deal with a novel technology before it is ever introduced (Rip & Kemp, 1997). The study of socio-technical transitions (STT) considers the behaviour of society when a new technology is introduced and the transitions and uses of technology in general. This is because there is a current regime. In a certain way, we are set in the ways we deal with technology. Over the years, the industry and policy have grown accustomed to fossil fuel-based energy systems, as mentioned by (Unruh, 2000). Termed by Unruh as the carbon lock-in it states that this co-evolution of technology and institutes has led to persistent failure of policies and inhibits the diffusion of carbon-saving technologies. Therefore, to take both the societal and technical influences into account the theory of socio-technical transitions combines these fields as mentioned by Geels (2002). The socio-technical transitions theory recognizes the co-evolution aspect of technology and society, when seen as two separate entities information is lost since they influence each other.

In the theory of socio-technical transitions, the combination of current practices, and dominant technologies are the regime. We are used to the regime; therefore, certain aspects will be expected because they are embedded in the institutions of our society. This called the regime and due to the embeddedness, there will not be a sudden switch to some completely different technology. The regime is a broad notion, it does not merely describe the current dominant technology. “The regime changes faster than landscape and includes elements such as user practices, markets, technologies, knowledge stock, infrastructure, standards, and regulation.” according to Yang et al., (2022). However, it was defined by Magnani & Cittati (2022) as “The regime consists of the official rules, institutions, and technologies that affect social groups’ activities.”, a slightly different definition. Interesting because both papers were published in the same year, proving this field is still developing and the notion of the regime can be interpreted in multiple ways. In Geels (2002) it was simply put as a “semi-coherent set of rules carried by different social groups". In this study, Geels’s definition will be followed.

Both technological and social limitations are posed on technologies due to the regime. Even more nuanced the regime can exist out of multiple technologies and consists of, as earlier stated, more than just technology, infrastructure, and regulations (Fuenfschilling & Truffer, 2014). There is even a whole field of studies dedicated to the discontinuation of a regime (Stegmaier et al., 2021). A characteristic of the regime is that it protects itself against change (Magnani & Cittati, 2022). National and local governments, embodied by municipalities, shape regulations that can uphold a regime connecting it to the aim of this study.

The landscape is how the regime is embedded in the social and economic systems. The socio-technical landscape contains exogenous factors. The exogenous factors are hard to influence, an example of this is climate change. It can shape trends in society, it is not inert but constantly evolving and adjusting. Although it is more constant, deeper, and acts on a larger scale than a regime (Geels et al., 2017).

For technological niches to be able to be introduced they must be protected (G. Verbong et al., 2008). Without protection, every new technology would fail in the introduction phase because it does not conform to the regime and will therefore not be accepted by society. As a solution, novel technology can be introduced into a protected area, a niche. In the niche, it will be able to develop and become robust and then it should be able to compete with and adjust to the regime (Smith & Raven, 2012). This protection can be given by regulation in the form of policy from municipalities that can aid the niche protection of new technologies in the energy transition because of proximity (Lopolito et al., 2022). An example of a niche transition in the field of energy transition is the niche of wind energy in the Netherlands (G. Verbong & Geels, 2007). This niche is taking decades to diffuse. In comparison to smart meters, which have seen an accelerated diffusion in the Netherlands (Geels et al., 2021). This shows that technologies spend a different amount of as a niche.

A change in the landscape can together with pressure from niches destabilize the regime (Rip & Kemp, 1997). Once the regime is destabilized the niche can diffuse more easily and disrupt the current regime. In the end, once technology and society have adjusted the niche can replace, or add to, what once was there.

2.2 The multilevel perspective

Socio-technical transitions is often used together with the multilevel perspective (MLP) to give it more structure. Here it is split into the levels of niche, regime, and socio-technical landscape (Yang et al., 2022). This division can help with the analysis of the technology and its development. Yang and colleagues (2022) adopted the MLP to analyse the energy transition in the UK and China. The structure the perspective offers can give the opportunity to compare policies as they did, the UKs to China's (Yang et al., 2022). Here it will be used to compare RES regions to each other. The combination of the STT and MLP can best be described graphically.

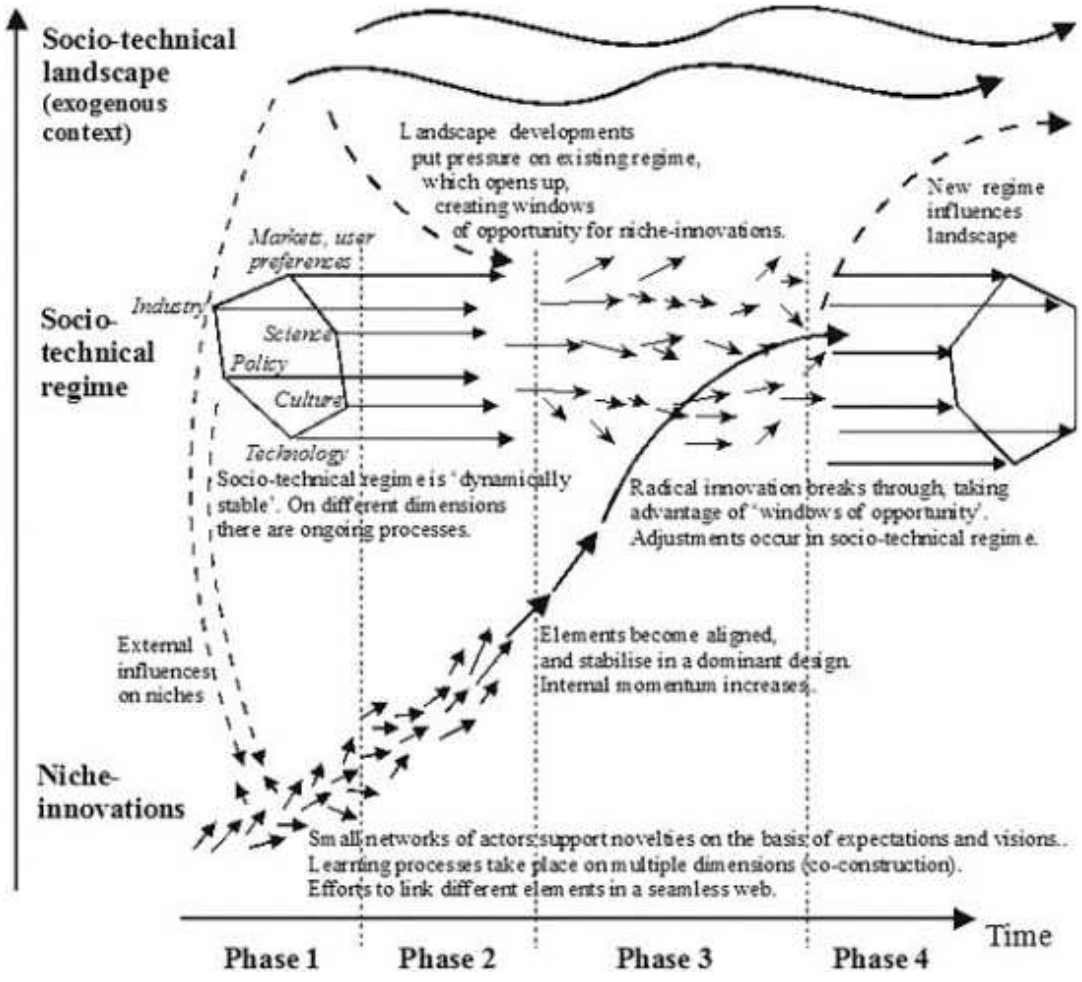

Figure 1 The MLP levels are given on the vertical axis while time is demonstrated on the horizontal axis with the STT process described throughout the figure, Geels et al., 2017.

In Figure 1 the transition process is shown in form of arrows with added descriptions. The MLP division of the three levels in a STT are shown on the vertical axis and on the

horizontal axis are the 4 phases. In this research the phases will not be explicitly used. They can, however, be used to justify certain municipal actions and help with situational comprehension. The first phase is the introduction, the new technology is seen as radical and is introduced into a niche. In the second phase, innovation enters small market niches where it can further develop and stabilize. In the third phase, the niche breaks through due to a regime disruption and the niche becomes institutionalised. In the last and fourth phase, the new regime has an influence on the socio-technical landscape.

The multilevel perspective on socio-technical transitions has been supported by many well-performed case studies (Morone et al., 2016). In the last 18 years, the theory has been expanded on in multiple directions (Geels, 2019). MLP has been used a lot to identify the process of the introduction of new technology. The reason why can be learned from a quote from Geels.

> *'The socio-technical approach to transitions instead highlights co-evolution and multi-dimensional* interactions *between industry, technology, markets, policy, culture and civil society.'* (Geels, 2012)

The broader perspective on all fields (economic, political, cultural etc.) is the strength of STT. This makes it more and more popular among transition studies. While MLP can be used to simply observe the transition during a case study there is also an opportunity to look into deliberate acceleration (Roberts & Geels, 2019). There is a growing field of studies using STT linked to sustainability (Kern, 2012). Moreover, directly linked to this case there is a focus on the energy transition using MLP (Sovacool et al., 2020; G. P. J. Verbong & Geels, 2010). This research can add to that field of study because it focuses on the governing aspect of the energy transition using MLP to make intercomparison of cases possible.

In this research, I will reflect on the current regime, in specific on the way policy is part of the Dutch energy sector. Policy on energy has previously been geared toward the use of natural gas as a source of most energy in the Netherlands. In the last decades climate change has influenced the drivers behind policy. The regime has become more open to change. Locked-in industries are gaining attention from the national government, focused in on specific policies to enable change (Janipour et al., 2020). However, as this is still a developing part of the policy, the regime will be seen as the policy system in place geared toward the use of energy reliant on fossil fuels using the dominant infrastructure. The niche is the new policies that are being made for renewable energy sources. The impact of the RES collaboration on this regime will be

investigated. The RES can be a helpful tool in this transition but there might still be barriers to overcome. Finally this research will map characteristics that influence the RES and the stability of the energy regime to see what impact the RES has on the policy of municipalities.

3.Methods

In this section the methods used to gather and analyze the data will be discussed. Section 3.1 discusses who is chosen to be interviewed and why, the case selection. First, the theory and practicality of choosing cases will be discussed.

A multiple case study was chosen as the method to investigate the view of municipalities on the energy transition in their respective RES regions (Baxter & Jack, 2015). A multiple case study is a research where multiple cases are investigated and then compared. A case is a real-life situation that is clearly constrained by several factors (Macpherson et al., 2000). Here the cases are the municipalities represented by the interviewed civil servants. By looking into similar fields and characteristics the cases can be compared.

In this study, the cases are connected by RES region. With this method, the real-life context can be considered (Flyvbjerg, 2006). By doing a multiple case study even a small sample could result in a broader understanding of a particular topic (Crowe et al., 2011). Therefore, multiple municipalities will be interviewed to gather information. In an interview, questions such as why municipalities prioritize one thing over another can be answered. This adds to the contextualization of the challenges municipalities might face in RES context.

The themes that emerged and that were mentioned among almost all interviewees are collected as will be explained in 3.2. The analysis is done by assigning codes to each quote as will be explained in the data analysis section in 3.3. Figure 2 gives examples of how codes were assigned to quotes and then to themes. Interviews that strayed from a pattern are also mentioned. The findings are organized into themed sections. The division of the findings into themes makes the discussion and comparison possible of each of the RES regions in the later discussion section.

3.1 Case selection

A case study approach is valuable when investigating public policy (Macpherson et al., 2000). An important aspect of using case studies to research a topic is how one selects the cases (Haverland & Yanow, 2012). As was previously mentioned for this research different

municipalities will be selected. Something that more scientists struggle with is going from the research topic to a specific case (Hulst & Zuydam, 2013). To clarify the chosen cases the selection criteria will be explained so no step is taken without deliberation as described in Hulst and Zuydam (2013).

In this study it started with desk research on sustainability projects in the Netherlands lead by municipalities. During desk research on the internet several active municipalities that are already implementing all kinds of new technologies to further the energy transition were found. They were different in size, number of inhabitants, and techniques. As the fourth criterion, the regional energy strategy (RES) regions were applied. Most municipalities mentioned that the decisions were motivated by what was discussed and agreed upon in these groups.

To know what motivates them to make decisions, either in favour of or against applying all kinds of new measures to ensure the energy transition, there also needs to be municipalities interviewed that are not actively applying new measures. They were harder to find because no one advertises what they do not do. So, there was a selection made to find similar municipalities in size and number of inhabitants within the RES regions of active municipalities. These 'inactive' municipalities were also selected based on mentions of pilot studies or projects on their own websites and other digital channels they use[1]. The final group is a relatively small number compared to the number of municipalities in the RES areas to make the case study feasible. However, just because the selection is small does not mean the research cannot contribute to the literature and knowledge of the field (Flyvbjerg, 2006).

In Table 1 shown below, the selected municipalities are shown with some of their characteristics. Their area is a characteristic that can influence their spatial capacity for things such as wind farms. The population density influences available funds leading to more or less capacity for the municipality to deal with sustainability. It also influences decisions on housing-related measures. High population density can indicate a higher degree of urbanization and different needs in the energy transition compared to low population density. However, it is worth noting that low population density could include multiple towns of high population density surrounded by sparsely inhabited countryside. These characteristics are interesting to consider in the intercomparison phase. For example, Oldebroek and Ermelo share the RES region and are of similar size. It is the same case for municipalities Venlo and Venray. For the

[1] https://www.harderwijk.nl/milieu-en-duurzaamheid, https://www.horstaandemaas.nl/wijgaangroen, https://www.bunnik.nl/duurzaamheid, https://www.ermelo.nl/ermelo-duurzamer, https://www.venray.nl/venray-vergroent, and https://www.duurzaamhouten.nl/ all accessed in april 2022.

municipality of Utrecht, there is no similarity within the RES area in terms of size or number of inhabitants. However, as a municipality that has multiple pilot studies, it is an interesting point of view to consider.

Table 1 The municipalities and their characteristics

RES	*Municipality*	*Area*	*Population density*
Noord en Midden Limburg	Venlo	129 km²	831/ km²
Noord en Midden Limburg	Venray	165 km²	273/ km²
Noord en Midden Limburg	Horst aan de Maas	192 km²	231/ km²
Noord-Veluwe	Harderwijk	48 km²	1259/ km²
Noord- Veluwe	Oldebroek	99 km²	248/ km²
Noord-Veluwe	Ermelo	87 km²	321/ km²
U16	Houten	59 km²	921/ km²
U16	Utrecht	99 km²	3922/ km²
U16	Bunnik	38 km²	433/ km²

3.2 Data generation

The first objective was to contact the selected municipalities. The municipalities were chosen after desk research was done on their projects, ambitions, and achievements related to sustainability as described in the case selection. Then the choice was made to only interview one civil servant per municipality due to time constraints and as to not acquire too much data for one individual to process. By talking to municipality officials active in the field of sustainability the intricacies of decision making can be discussed.

The interviews were held with both civil servants actively working on pilot studies and those that were not. This diversity will give insight into how municipalities deal with all the considerations that come with the energy transition and the implementation of new technology and the impact of the RES on this process. By comparing all interviewed municipalities, important themes in these decisions came to light. Besides this, their positions and experiences within their respective RES regions are also considered.

The interviews were done in Dutch which is the first language of the participants and the interviewer. Interviewing in the native language of both speakers helps a freer form of speech (Elhami & Khoshnevisan, 2022). The first interview was done without a set list of questions, this is called a non-directed interview (Elhami & Khoshnevisan, 2022). For the later

interviews broad topics were drawn up beforehand based on the first interview and prior knowledge on projects in the municipality. Examples of topics were current work on projects, policies on sustainability, and cooperation with other municipalities. These topics were developed throughout the interview process leading to a semi-structured interview for the following civil servants. Topics were broad and could lead to questions like, 'what are current projects in the municipality?' or, 'how involved are you with the RES at the moment?'. However, the interviewees were free to stray and talk through their thoughts which helps with contextualization (Jean-Frédéric Morin et al., 2021). These themes were regarded separately from the analysis as to not influence the content analysis process.

3.3 Data analysis

The data gathered from the interviews was analysed using content analysis as a way of doing qualitative research (Erlingsson & Brysiewicz, 2017). The transcripts are uploaded to ATLAS.ti and read and analysed further to read between the lines to see what is implied. It is an alternative to traditional content analysis. Quotes were not seen as separate from their context but the relation between them was considered. In the end, it gave a holistic view of what each interviewee knew and adds to the understanding of how the energy transition is governed from within their respective RESs.

A limitation of traditional content analysis is that it is best done collaboratively (Ahuvia, 2001) however, qualitative content analysis can be done individually. To avoid common mistakes made during qualitative data analysis the practice described in the Qualitative Analysis Guide of Leuven was used (Dierckx de Casterle et al., 2012). In practice, the interviews were transcribed and separated into quotes. It was an iterative process of abstraction and interpretation (Lindgren et al., 2020). Municipalities faced similar problems but still had different views on the solution to those same problems therefore it was possible to categorize quotes from different municipalities into the same themes. The process of assigning quotes to codes and themes will be explained using figure 2.

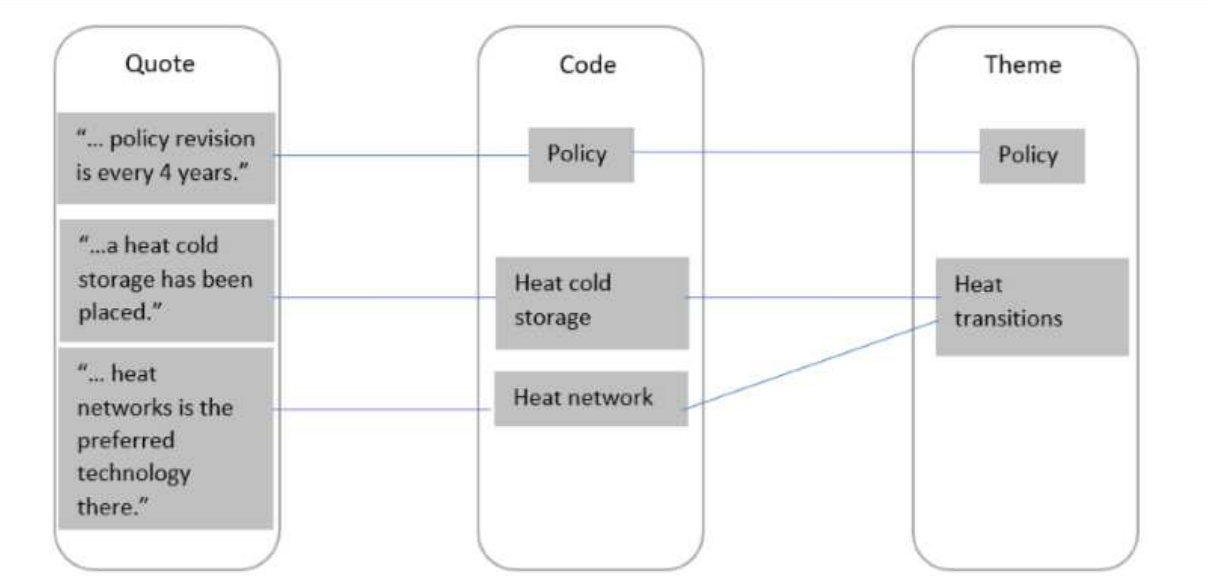

Figure 2: Example analysis of quotes to codes to themes.

Every quote was assigned a code, related codes were gathered into a theme. Figure 2 gives examples of how codes were assigned to quotes and then to themes. The codebook that describes the requirements for a quote to be labelled with a certain code is in Appendix 8.2. The analysis was an iterative process and after almost every interview, there was a new iteration of appropriate themes assigned to the codes and the quotes. Finally, the themes that were mentioned most among all interviewees were further investigated. This was done by individually examining each code to see what was shared and what differed. In the results, the findings are organized in themed sections which were built upon common sentiments or strongly varying opinions within the most reoccurring themes. The division of the findings into themes makes the discussion and comparison possible of each of the RES regions using STT and MLP in the later discussion section.

4. Results

In this section, the outcomes of the nine interviews will be discussed. After the analysis with ATLAS.ti the results are grouped into sections representing governments characteristics that influence the impact of the RES. The characteristics were identified after further analysis of the themes that were mentioned the most by the interviewed civil servants. The interviews formed the basis for answering what the impact is of the identified governing characteristics. On some topics such as grid congestion and how this was announced quite suddenly, the officials agreed. On other topics, such as who can place batteries, the municipalities differed in opinion.

Mentioned in the interviews were the characteristics grid congestion, heat transition, finances, capacity, collaboration, problem ownership, and political ambitions. This came from the coding done with help of ATLAS.ti and the codebook in Appendix 8.2. In the end, they each have either positive or negative influences on the RES and the policy regime.

4.1 Grid congestion

As mentioned in the introduction, grid congestion is a problem in the Netherlands. There was not a single municipality that did not mention having an electricity grid congestion problem. The severity of the situation differs per municipality: some only have congestion problems feeding energy back to the net, and others have no possibility for any new connections as well. In the last case, the whole grid is seen as on lockdown.

However, there was an element of surprise to this problem. The network operators communicated last minute that there would be no more new connections provided to the grid, to not create a rush on the last possible connections. The factor of surprise was mentioned in several interviews as a complicating aspect.

> *'… we ourselves were very surprised by this as well, we had not seen it coming. We are now entering the phase where not only feeding electricity back to the net is a problem but also getting a normal connection.'* (Venlo)

After the initial shock, the net operators have worked together with multiple municipalities to investigate solving the problem. They have all received a broad estimate of when their network will be upgraded. These estimates do differ, but not by much, it will be between 5 and 8 years for these networks to be upgraded. This influences the municipalities' ability to plan for the energy transition since a lot of ambitions depend on electricity, such as electric mobility.

According to the interviewed municipalities and mentioned in the PWC report on rate regulation (2012), grid congestion problems arose from the policy the Authority Consumers and Market (ACM) operated under for the last decades. The guiding policy was the most cost-effective energy transition possible. In 2013 the ministry decided to move that focus from only running it cost-effective to also being durable with a focus on the long term. This was already at a time when researchers began to warn for possible problems down the line due to renewable energy. Municipalities mentioned that in practice the network operators have not been expanding in preparation for the energy transition. There have been only expansions made when

they were assured of immediate income. This meant expansions when companies or housing were already lined up.

In some cases, emergency solutions have been created. These included small expansions so the grid would have room for about 10 more connections. However, these were often spoken for before they were even created. That is why the extra expansions did not relieve the grid congestion. This was for example the experience in Harderwijk, but the municipalities of RES U16 mentioned similar struggles.

> *'They (the grid operators) had thought of an emergency solution. But the emergency solution was already fully taken before it was built.'* Harderwijk

The network was not prepared for the growth the Dutch electricity consumption has undergone in the last few years. Now the grid congestion is limiting that growth which is for example needed when businesses want to expand their operations. As mentioned, the proposed emergency solutions were of very short-term use, and it will take years before the grid is upgraded everywhere.

4.2 Heat transition

When asked about their policy for the coming years all municipalities brought up their heat transition plans. These plans had to be finished in 2021 and contain goals that should turn into new policies quite soon. The heat transition visions are quite detailed as they are turned into plans on the neighbourhood level. The plans on the neighbourhood level detail possible techniques to be used instead of the ones used now that depend on fossil fuels. This is why it is already known which neighbourhoods will probably require heavy network upgrades to become all-electric.

> *'If there is a neighbourhood for which the most desirable solution would be to go all-electric, so with solar panels and individual heat pumps. Then it means that there will also probably be some heavy network upgrades needed.'* Venlo

Besides an all-electric option, which includes individual heat pumps and solar panels, an often-explored option includes heat networks. These collective heat networks can be supplied with warmth in several ways. It takes time and capacity to research all avenues for

every neighbourhood in a municipality. Heat networks for example also depend on the insulation of the housing which depends on the age of housing. Overall civil servants must take a lot into account when reviewing the options. With heat networks sources also have to be found within the borders of the municipality. Options include but are not limited to thermal heat. With thermal heat, the municipalities are dependent on mostly natural sources in their surroundings when heat intensive industry is not available.

> *'You do need the natural source. And well we just do not have one. I can imagine that geothermal heat could be an option but for us, sadly we cannot go into the ground in this area.'* Horst aan de Maas

The lack of natural sources means that in some municipalities almost all or all neighbourhoods need to find an all-electric solution. These all-electric solutions can lead to new problems, such as grid congestion which is already present. Another consideration for municipalities is the investment that is needed from its inhabitants. Some municipalities might also have outdated infrastructure problems and historical buildings that are harder to insulate or refurbish.

> '*There are quite a number of houses that are not realistically or at least not within socially acceptable cost able to be insulated well enough to be heated with a heat pump*.' Utrecht

Due to these different circumstances, the plans are specific to each neighbourhood in each municipality. This shows that there is no possible one-size-fits-all policy for all municipalities during the energy transition. Moreover, Houten mentioned the contrast between two parts within their municipality, one consisting of older housing and another part that exists out of newly built housing. They have concluded that newer builds are easier to switch to a different type of heating. Therefore, they consider and with them many other municipalities to focus on the newly build houses first.

4.3 Problem ownership

A topic that was raised by several interviewees was that perhaps not the municipality was in charge of applying these new techniques, but companies or network operators are. Who takes ownership differs per project and municipality. The municipalities agreed there was no clear

directive from the national government on who is to take the lead and the responsibility. So, this responsibility has become fluid, whoever ends up taking the initiative is responsible. This means that in each instance someone else ends up fulfilling the leadership position. In the case of applying new technology such as energy storage, there are no known practices. This is seen as a hurdle by civil servants.

> '*I think a lot of municipalities… think, what is our responsibility? For example, Liander is of course a network operator in charge of supply & demand, but they are not allowed to place batteries as far as I understood. So, someone else is in charge because as a municipality we say it is not our responsibility it is the network operators. So, there is this grey area where it is unclear who is in charge of those batteries.'* Harderwijk

As mentioned, there is this grey area where what needs to be done is still unknown and especially by whom it must be done. This is a hurdle that was mentioned not only by Harderwijk but also by Venlo. New technologies are unknown territory and have no guidebook. However, multiple civil servants mentioned that businesses do approach them with their own projects. There are known examples of business associations taking the lead and proposing their own measures to make the industry in a municipality more sustainable. The market itself is struggling with grid congestion so they are coming up with their own solutions.

> '*And of course, we do get regularly approached by businesses, right? They offer their own businesses case.'* Venlo

That a business approaches with their own plans makes it for some municipalities easier to deal with for example batteries, they have an example to look at and their role is clear, to either give a permit or not. However, the permit is provided not only by the civil servants in charge of sustainability. For example, a lot of different people/teams need to approve these plans. Venlo mentioned that you need to exercise a certain constraint on your enthusiasm because the case needs to convince a lot of people. All plans civil servants make, needs to pass through the council of elected officials.

Not all municipalities have businesses in town that take ownership and propose their own solutions. This is for example the experience of Ermelo; they have not yet received an actionable initiative although they say this might be due to different types of industry that they have compared to surrounding municipalities. They do point out that a lot of consultancy firms

approach municipalities. When a municipality is not approached one could say leave grid congestion problems to the network providers. However, there are proactive municipalities who take the lead for their town. This can lead to niche protection; newer technologies can be supported by pilot studies.

> *'Our municipality also has the role to provide a location where the new battery can be placed. That one was realized on a square, so it needed to get the proper zoning. And then it also needed a permit, this is the role of the municipality.'* Utrecht

As concluded by Utrecht, all municipalities do have the responsibility to hand out permits. Especially for larger battery projects. Venray and others pointed out that these permits also depend on the business case and the value they add to the municipality for the inhabitants. So, if the municipalities do not take charge of new projects, they do play a big role in facilitating the energy transition.

4.4 Capacity

All investigated municipalities are of different sizes. They differ in physical shape, in the number of inhabitants but also in the number of civil servants they have committed to sustainability goals. Municipality officials mentioned having a portfolio that can cover multiple fields, for example, both housing and sustainability. There is not a standard organizational structure in place, each municipality assigns positions and tasks as they see fit. The number of people assigned to a topic can vary greatly. This can also result in variations over time as more people get hired or let go in accordance with the municipalities plans. This was mentioned by municipality officials in Ermelo.

> *'So, I have 3 colleagues. It was, in the past when the targets were set, it was more people. In that time there were 6 people on sustainability.'* Ermelo

It can be that these 6 people are all assigned to sustainability specifically. Though there are a lot of topics adjacent to sustainability. So, these 6 civil servants can also have responsibilities towards sustainability and something else in combination such as housing. For example, in the municipality of Utrecht, someone oversees electric mobility, and someone else oversees energy-saving measures in housing. All topics are somehow related to sustainability

but then aimed at something specific. In comparison with Ermelo the whole team in charge of sustainability topics is larger in Utrecht, it is comprised of about 45 officials.

Another factor that was mentioned was the new topics. Municipalities have a lot of new responsibilities during the energy transition. Not all municipalities will designate a new subject to a new civil servant. Sometimes existing employees also cover the emerging themes and are put in charge of writing well-thought-out plans and policy for it.

> *'It is because it is again a new topic, … We already don't have a full-time official on the heat transition. While it is a topic where you want someone to really work out detailed plans, where it is thought out how it all is going to work, and who is going to pay for it all, especially as a smaller municipality.'* Bunnik

There is one advantage for smaller municipalities with a smaller team. Often one civil servant joins the RES for their municipality. They are the connection between the team (if there is a team) and the other municipalities. This is also the most direct line of communication to share information with others. If there is a team this also means not every civil servant is as active in the RES context. Because of this information might not reach everyone as became clear in multiple interviews.

In conclusion, the capacity of a municipality was mentioned as a limiting and unpredictable factor for some but also a strength for others. The impact of capacity differs per municipality and the division of sustainability themes is also not set in stone.

4.5 Finances

Since the energy transition is a developing topic, multiple municipalities mentioned the need for pilot studies and experiments to figure out what is needed. Here the budget comes into play. Some municipalities have more room for investments to research new technology than others. This was attributed to the size and number of inhabitants a municipality has and elected politicians. Examining the budgets of prior projects and the input and ambitions of the municipality's elected council helps define the funding. The willingness of elected officials to invest can vary, this also means plans can change rapidly after elections. The influence of elected officials will be further explored in section 4.7.

> *'However, we as a municipality are not going to finance that, we can facilitate it.'* Ermelo

If not funding a project, facilitating can take shape in several ways. A municipality can facilitate the permit process as was mentioned in section 4.3. Although this is only one option and other municipalities such as Harderwijk have done even more. They have for example been the party to vouch for loans for community projects to banks. Their community project made it possible to support inhabitants in the collective purchase of solar panels, making them more affordable.

Other ways of financing are subsidies from the province, national government or even from European funds. Some officials were more proactive in engaging with and advising others in the use of these funds than others relating this to funding rather than capacity. These funds aren't necessarily for the municipality themselves but also for pilot projects that businesses would want to run that could benefit the community. In the interviews, the enthusiasm of civil servants towards business projects was often related to the need for them based on the municipality's own budget and ambitions.

> *'Until there is of course a subsidy from the national government on energy storage techniques, you see that it is being applied more and more.'* Horst aan de Maas

The national netting arrangement has been a big driver for people to purchase solar panels. As a follow-up to that subsidy, both industry and civil servants expect that the national government will include something like home batteries in the next round of energy transition subsidies. This is currently not the case and municipalities mention this as a limiting factor to introduce batteries in their new plans because it is harder to make a solid business case for them. With the help of subsidies, people are more open to adopting new technologies noticed some civil servants.

4.6 Cooperation between municipalities

As was mentioned before in section 1.3, the RES regions were founded by the Dutch government. All municipalities were offered a chance to give perspective on the cooperative nature of the RES structure.

Here, it is interesting to split the data per RES region since the municipalities cooperate within the RES. These findings per RES can point to different collaborative practices and philosophies among RES regions. The municipalities were all part of one of three RES regions.

Either U16, Noord & Midden Limburg or Noord Veluwe. Noord Veluwe consists out of 7 municipalities in total, Noord en Midden Limburg out of 15 and U16 out of 16.

Every municipality has one goal: do what is best for its inhabitants. So, in the case of the RES offer, this motivated the decision of civil servants to offer solar energy, wind, or another type of sustainable energy within their municipality. RES 1.0, the first offer that municipalities made on how to get 35TW of renewable energy in 2030, is taking shape. RES 2.0 is still in the planning stage and is meant as a progress report on RES 1.0. However, with grid congestion taking over another offer that exceeds the previous one might not be possible if it depends on electrification.

U16

Utrecht is both the largest municipality in this region and the largest municipality that is part of this case study. It has the largest staff of civil servants and supports and does a lot of research on pilot studies into sustainability. When it comes to the RES, Utrecht says it takes a leading role and supplies a lot of knowledge to the group. Other municipalities support this claim and recognize what they get out of the RES.

In this RES they actively share information in different subgroups. For example, there is a specific group that discusses solar power. Each commission formed around a theme forms plans, and the province provides a large chunk of the financing for the final developed plans that cover multiple municipalities.

> *'We hear from each other what is going on and the province also participates, so they can then say if there is a new idea, 'Who wants to join?'* Bunnik

Although cooperation within the RES works well, Houten mentioned there is more intensive cooperation with directly neighbouring municipalities. These are not necessarily part of RES U16. Geographically this makes sense, a lot of plans depend mostly on infrastructure. This is why there is a certain dependence on neighbouring municipalities that share for example grid connections. Due to this, the civil servants have mentioned that the RES regions are not necessarily the most interesting collaboration partners. This does not imply that there is no cooperation within RES regions; rather, there is considerable cooperation outside the RES too.

Noord & Midden Limburg

This RES region is part of the province of Limburg. As the name suggests, it consists of the municipalities located in the North and Middle of Limburg. However, the province itself also includes the southern part. This is a different RES region. This fact was brought up when the topic of finances arose. For projects, RES regions can approach the province to see if they can contribute financially to the project.

> *'The province oversees more budget. (…) You could work together with the RES and the province. However, the province covers two RES regions, us, and the south. So, it makes sense that they say you can inform us of what comes out of the RES, both.'* Venray

The civil servants questioned in Noord en Midden Limburg believe the RES is valuable for discussing plans with neighbouring municipalities. However, they do mention that most funding decisions are made on the provincial level. Therefore, making plans in the RES context does not always work out when the budget is discussed at the provincial level. The province must weigh the interests of both RES regions, meaning some proposed projects from Noord en Midden Limburg have not acquired funding.

The RES is useful said civil servants when large-scale renewable projects are built on or over the border of municipalities. There are plans for wind farms on the edge of municipalities influencing inhabitants living on the other side of the border in a different municipality. The collaboration between municipalities is not new per se but is being done on a larger scale than it was before due to these topics such as wind farms. Civil servants mentioned it is something they are still getting used to.

Noord Veluwe

This region was already cooperating with each other before the RES regions were created. Due to their history, they were already comfortable working together. This natural cooperation is very different from the other two RES regions. There is a different structure in their collaboration as a result.

> *'My colleague is still at the RES table (…) We offered to realize all Sun energy needed to achieve the 2030 goals in our industrial area. (…) So, we are definitely still cooperating.'* Harderwijk

This RES region made large collective plans, and each municipality contributes what they can. Their starting point is, what can we achieve together? They know each other, and their strengths, and are easily in contact with each other. There are already known practices as far as collaboration on projects goes which simplifies this process in the RES.

This region also has a large percentage of protected nature areas. This minimizes options for large-scale renewables, there are not a lot of locations where windmills would be allowed for example. Where it is allowed wind and solar farms have already been placed. This is enough for the energy needs of RES 1.0 but for RES 2.0 there rests a large and difficult task of finding other options that can be implemented locally.

They can cooperate well together in their RES region. Although for grid congestion other neighbouring municipalities are also of interest. For example, the grids substation is not in each municipality, but also not inside the RES region per se. So newly built solar farms are dependent on the upgrade of the substation in a neighbouring municipality. This forces municipalities to look beyond the RES region.

4.7 Influence of Elected officials

Elected officials, campaign with certain promises. Their plans make that each council will decide on a different allocation of funds available to the municipality. While some might give priority to sustainability efforts and support that with funding, the budget can also quickly be cut by the next council. Elected politicians are chosen every 4 years and it could be the case that a municipality switches political parties and politicians every 4 years. The budget and capacity are therefore quite inconsistent and do not necessarily meet the required effort to reach the heat transition and 2030 goals.

Harderwijk mentioned that another struggle is that other departments within the municipality will need structurally more money to operate more sustainably. Now, most funding is focused on short-term initiatives that quickly reach a goal. However, to really operate more sustainably there might be switches necessary that will be more expensive throughout the year.

> *'Yes well, they (the department of transport) said, we cannot always change, our budget does not increase. This is something that is an obstacle right now. We have a lot of money for one-time. Structurally for, for example biofuels, which is more expensive, there needs to be more budget and the question is if it is there.'* Harderwijk

Another aspect that the politics within the municipality have influence over are the plans that the council gets a vote on. This includes even small-scale efforts that need municipal funding. Once the plans have been green-lighted there is still a chance that the next politician halts the execution when elections happen during the process.

> *'For my program, it is quite nice that all plans that have been made and were established, we are going to execute them all. There are no extra ambitions, for the upcoming 4 years. Nevertheless, we are executing all previously made plans.'* Houten

In Houten, they were lucky enough to have already gotten approval for the ambitious plans before the 'new' politicians were elected, and the new ones even promised not to backtrack that decision. They did however decide not to put effort into any new plans.

Elected politicians also cover multiple topics. A sustainability official might cover economics and sustainability which means there is a certain bias from this official. Since this politician is responsible for economic growth, they might have different motivations for certain decisions regarding sustainability. They do operate in the best interest of the municipality, supporting for example businesses with their decisions. Although this might lead to short-term solutions that work for a few years and are not sustainable in the long run. This makes the policy plans depend a lot on the elected official's ambitions.

5. Discussion

First the identified problems from the result section will be used to answer the sub-question: what major problems are municipalities facing in fulfilling their role in the energy transition? Here the findings will be placed in the context of the STT and MLP. Then the impact of the RES as described by the interviewees will be discussed. By relating it back to the theory, the position of the current regime and its openness to change will be described. This will answer the second sub-question: how does the Dutch regional energy strategy have an impact on the current energy regime? While answering both questions there will be attention to the impact on the current energy regime in order to draw a conclusion on the main research question.

5.1.1 Identified hurdles

In this section I will try to answer the question: what major problems are municipalities facing in fulfilling their role in the energy transition? I will also reflect what impact the identified problems and governance characteristics have on the existing energy regime.

An identified hurdle was the bias of elected officials as mentioned in section 4.7. They can have mixed interests when they for example represent both economic and climate portfolios. The same elected official must weigh the pros and cons of each policy proposition made by the civil servants in light of two important policy fields. Making it harder to build a case for new projects for civil servants focused on sustainability and leading to tension. Elected officials also set the goals for their legislative terms which has a large impact on how ambitious sustainability plans will be. Political interest can interfere with long-term planning done by civil servants. Politicians can either be an asset to the regime by upholding the practices that are already in place, or they can promote openness to niches. Because there are also examples where civil servants receive a lot of support from elected politicians. Some make space for ambitious plans destabilizing the regime in this context.

The heat transition has been the focus point for municipalities in 2021-2022. Differences in capacity mean that, where one municipality had to focus almost all manhours on this one specific task, others like Utrecht have had the possibility to venture out and run pilot projects at the same time. The written-up plans for the heat transition are based on current technologies and practices as mentioned in section 4.2. However, the field of sustainable energy sources is

quickly developing and by the time the plans will be implemented better options might become available. Meaning that even though the plans have been written the work is not done. Too little capacity can see municipalities holding on to existing technologies and proven practices, supporting the regime.

Another obstacle the civil servants reported was the financial side. From section 4.5 finances, one can learn that the funding policy in municipalities has not (yet) adapted to the new niche. A hurdle for new policy is that there is little precedent on how to tackle sustainability projects. Without clear policy, officials lacked the structural funds necessary to enact lasting change. Civil servants, therefore, turn towards project-based funding. Moreover, the sustainability departments are relatively new and touch on a lot of subjects which is often not reflected in the funding. Funding is also not divided among RESs. Especially the region Noord en Midden Limburg leans on the province for funding for projects spanning multiple municipalities. Some municipalities have more room for investments to research new technology than others. This is where the personal budget of municipalities also dictates some interactions in the RES. The budget can dictate the openness and willingness of civil servants to investigate niches.

5.1.2 Impact of the RES

In this section I will try to answer the question: How does the Dutch regional energy strategy have an impact on the current energy regime?

One of the goals of the RES is to share knowledge, for example on pilot studies. This furthers the goal of the RES since it prevents towns from duplicating pilot studies, saving money and resources. However, each municipality is dependent on what its natural environment and existing infrastructure in the built environment can offer. This is where municipalities within RES regions differ the most. This can imply that information exchange inside a particular RES region is not always the most effective, which is best described by giving an example. Specific knowledge acquired from pilot studies on for example wastewater treatment generated heat could be used in Houten. Although this same technique cannot be used in Bunnik, from the same RES, because there is no wastewater treatment there. However, outside the RES U16 region, there are other municipalities that do have wastewater treatment and could benefit from the acquired knowledge from Houten. Sharing information outside the RES regions, therefore, holds potential benefits. U16 interviewees acknowledged the potential and feasibility, but no specific example was provided. If pilot projects are applicable across municipalities the

grouping in the RES does benefit other municipalities in the same region because the knowledge is shared. In the end, knowledge sharing within a RES region is beneficial but is not where civil servants can get all the necessary knowledge to help their specific municipality meet its goals.

Another goal of the RES is to put more focus on sustainable energy production policies in collaboration with multiple partners, municipalities, and waterboards for example. One could say the RES is there to encourage policy making outside of the regime. Of all the municipalities contacted, Utrecht's policy is the one that places the most emphasis on niches, as was mentioned in section 4.3. In literature strategic niche management is described as the process where change is facilitated by creating protected spaces for niche technologies to develop further by experimentation (Schot & Geels, 2008). Municipalities can facilitate regulatory space for this by for example, giving permits. For Utrecht the municipality's size, which affects both their financing and capacity, allows them to be proactive in developing policy in this area. Limitations in both faced by other municipalities were frequently noted. These limitations were often said to be the cause of apprehension to novel technologies by other municipalities. This lack of openness leads to pushback on niches by not always giving them space to develop. Therefore, there is a significant difference between municipalities in the way they approach this topic.

In the context of niche management, there are municipalities that seek out cooperation with nearby companies in the case of the sustainability transition like Harderwijk and Utrecht. While others take on a more facilitating role, such as Venray and Venlo, there are others that admittedly do not have the budget and capacity to really invest in anything outside the current policies like Ermelo. Using the perspective of MLP here, Utrecht and Harderwijk are actively engaging with actors outside of the regime. Venray and Venlo have a more nuanced role but are no longer locked-in in terms of energy policy. In contrast to Ermelo, who mentions that due to capacity constraints, they still act within the regime. Considering the RES region Noord Veluwe which includes both Harderwijk and Ermelo there is not one position the RES region takes in regard to the regime.

5.2 Collaboration and leadership structures in RESs

The two sub-questions were answered by describing the relation of each governance characteristics to have either a positive or negative impact. Of all characteristics, two stood out in particular in this research. The researched RES regions differed mostly in how they collaborate and in how leadership is given within the RES. Therefore these characteristics are

highlighted in this part of the discussion and typologies were created to structure the comparison.

Though there are some differences between municipalities within RES regions there are shared characteristics. Based on the findings from sections 4.3 *problem ownership* and 4.6 *cooperation between municipalities* one could categorize the 3 RES regions as reactive, active, and proactive. These categories provide a simplification of the complex situation of RES regions. Here Noord en Midden Limburg is reactive, Noord Veluwe is active and the U16 region is proactive. They are based on how policy is made, by proactively engaging with others to avoid problems or by reacting to problems as they arise. These types come into play due to multiple circumstances such as capacity.

Identifying elements of the categories are the number of policies and the number of pilot studies the municipalities and RES regions were working on. Another aspect mentioned that led to these categories was the anticipation of problems in the foreseeable future. As mentioned in section 4.2 new policies can lead to new problems, such as more electrification due to the heat transition measures in combination with the already existing grid congestion. Measures taken in anticipation of these new grid problems varied in scale per municipality as was described in section 4.1. This leads to a potential distinction between the regions based on their mindset and ambitions. One can look at how the policy was made in regard to niches and compare the RESs attitudes and goals to each other.

On top of that, each group was also showing a different form of cooperation. In U16 there is a large difference in size of municipalities, so it feels natural for Utrecht to take charge. In the region of Noord Veluwe, they have been accustomed to working together so long that they really act as a group. Lastly, Noord en Midden Limburg are more used to working in the provincial context, and are getting used to the RES. These results lead to Figure 3 where both, the nature of policy writing within the RES and their leadership structure are graphically shown by a use of a crosstab.

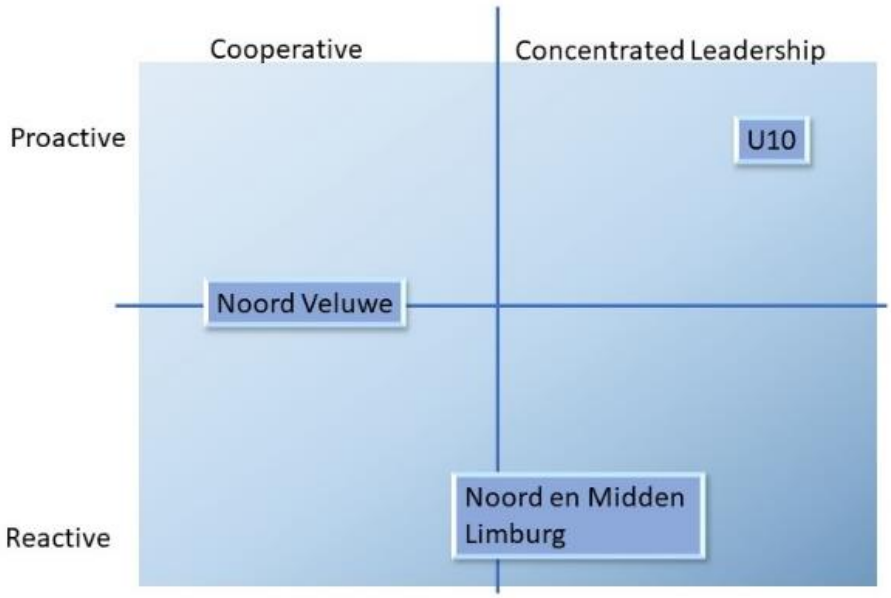

Figure 3: A cross tab where each RES region was placed according to their leadership structure and their policy writing strategy.

Categorizing RES regions based on these new characteristics can be a useful addition to the literature on sociotechnical transitions as it can help to identify patterns and similarities across different regions or contexts. Similar types based on policy-making have been made before for small to medium sized municipalities (Boehnke et al., 2019). In the literature, there is a discussion on ways that policy-making in local government can be used as indicators in terms of best practices in sustainability (Boehnke et al., 2019). One could see these new types in the same light. A difference is that the typology introduced here considers the context of the RES, where municipalities work together instead of as single agents. On top of that, the study did not focus on the outcomes of policies connected to each typology; it merely described the situation as it is right now. Therefore, as it stands it cannot add to the literature on best practices as further research into the effects of each type would need to be known. Eventually, they could form a foundation for other intercomparisons and research into their influences on the policy-making process.

5.3 Limitations

While categorizing RES regions based on their sociotechnical characteristics can be a useful approach for understanding sociotechnical transitions, there are several limitations to this method that should be acknowledged. One is that, even though it simplifies the situation, this also means that it does not have to work on every occasion. The characteristics that are

important for every RES region may vary depending on the local context, such as the political, social, and economic conditions.

One cannot connect the proposed typology to every aspect that makes a RES unique. Therefore, there is no direct link between certain characteristics of a RES region to the typology. To develop the link further, research can include a detailed analysis of the characteristics and how this links to certain RES behaviour and types.

Another limitation of this study is that the making of categories is a subjective process. Every researcher is in principle subjective. Besides the researcher, the cases of the case study also introduce a bias. One reason is that the number of cases is limited, another is because the selection of cases cannot be done entirely objectively. Therefore, the categories do not offer a generalization to other cases. This does leave an opportunity for further research to see if the typology put forward here can be generalized and applied in other cases.

In summary, while categorization can be a useful approach for understanding sociotechnical transitions, it is important to consider its limitations and complement it with other analytical methods to provide a more comprehensive understanding of the factors supporting the typology.

6. Conclusion

This research took an in-depth look at how the sustainability transition is governed from the perspective of civil servants within nine municipalities. These nine civil servants from different municipalities were interviewed, and the results were interpreted using the social-technical transitions theory with the multilevel perspective.

The results and analysis showed where municipalities depend on known practices and in principle the regime. They also showed where some municipalities are shifting toward an active niche protection policy showing deviance from the incumbent regime by giving space to novel technologies. In answer to the first sub-question inhibitors were identified. These problems are holding municipalities back from shifting their policy, and from destabilising the regime. The hurdles are, the bias of elected officials , financial limitations, capacity and problem ownership. However, they were all also identified as possible strengths when done right.

In order to answer the second research question the impact of the RES on municipality's policies was discussed. Two main different characteristics were found, the way collaboration is organized and ambitions are set within each RES. Where in one region size and capacity of one municipality lead to a clear leader, in another region an old collaboration leads to a cooperative work environment. Funding problems together with limitations in capacity, natural resources, set by elected officials, and problem ownership lead to these differences in leadership structure and policy-making ambitions. Categorizing RES regions based on characteristics related to sociotechnical transitions can be a useful addition to the literature as it can help to identify patterns and similarities across different regions or contexts. The findings from the limited case study provided a foundation for these categories which could be further expanded upon.

To answer the main question: how do local governance characteristics influence the impact of the Dutch regional energy strategy on the stability of the energy regime? Most limit the impact of the RES on the stability of the energy regime as mentioned before. However, the findings suggest that, even though there are problems, the RES does support municipalities' roles in governing the energy transition and has a destabilizing impact on the current energy regime. Evidence for this is the impact of knowledge sharing, and all previously mentioned characteristics, the bias of elected officials, financial limitations, capacity, and problem ownership. These characteristics can be hurdles or strengths depending on circumstance.

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8. Appendix

8.1 Informed consent form

Informatieblad voor onderzoek 'Lokale energie opslag'

Doel van het onderzoek
Dit onderzoek wordt geleid door Merel van Helten.
Het doel van dit onderzoek is het in kaart brengen hoe en waarom gemeentes lokale energie opslag technieken toepassen. Deze gegevens zullen worden verwerkt in mijn master scriptie.

Hoe gaan we te werk?
U neemt deel aan een onderzoek waarbij we informatie zullen vergaren door:
U te interviewen en uw antwoorden te noteren/op te nemen via een audio-opname/video- opname. Er zal ook een transcript worden uitgewerkt van het interview.

Potentiële risico's en ongemakken

- Er zijn geen fysieke, juridische of economische risico's verbonden aan uw deelname aan deze studie. U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt uw deelname op elk gewenst moment stoppen.

Vergoeding
U ontvangt voor deelname aan dit onderzoek geen vergoeding.

Vertrouwelijkheid van gegevens
Wij doen er alles aan uw privacy zo goed mogelijk te beschermen. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen.
Voordat onze onderzoeksgegevens naar buiten gebracht worden, worden uw gegevens zoveel mogelijk geanonimiseerd, tenzij u in ons toestemmingsformulier expliciet toestemming heeft gegeven voor het vermelden van uw naam, bijvoorbeeld bij een quote.

In een publicatie zullen anonieme gegevens worden gebruikt. De audio-opnamen, formulieren en andere documenten die in het kader van deze studie worden gemaakt of verzameld, worden opgeslagen op een beveiligde locatie bij de Universiteit Twente en op de beveiligde (versleutelde) gegevensdragers van de onderzoekers.
De onderzoeksgegevens worden bewaard voor een periode van 6 maanden Uiterlijk na het verstrijken van deze termijn zullen de gegevens worden verwijderd of worden geanonimiseerd zodat ze niet meer te herleiden zijn tot een persoon.
De onderzoeksgegevens worden indien nodig (bijvoorbeeld voor een controle op wetenschappelijke integriteit) en alleen in anonieme vorm ter beschikking gesteld aan personen buiten de onderzoeksgroep.

Tot slot is dit onderzoek beoordeeld en goedgekeurd door de ethische commissie van de faculteit BMS (domain Humanities & Social Sciences).

Vrijwilligheid
Deelname aan dit onderzoek is geheel vrijwillig. U kunt als deelnemer uw medewerking aan het onderzoek te allen tijde stoppen, of weigeren dat uw gegevens voor het onderzoek mogen worden gebruikt, zonder opgaaf van redenen. Het stopzetten van deelname heeft geen nadelige gevolgen voor u of de eventueel reeds ontvangen vergoeding.
Als u tijdens het onderzoek besluit om uw medewerking te staken, zullen de gegevens die u reeds hebt verstrekt tot het moment van intrekking van de toestemming in het onderzoek gebruikt worden.
Wilt u stoppen met het onderzoek, of heeft u vragen en/of klachten? Neem dan contact op met de onderzoeksleider.

Merel van Helten
m.r.vanhelten@student.utwente.nl

Voor bezwaren met betrekking tot de opzet en of uitvoering van het onderzoek kunt u zich ook wenden tot de Secretaris van de Ethische Commissie / domein Humanities & Social Sciences van de faculteit Behavioural, Management and Social Sciences op de Universiteit Twente via ethicscommittee-hss@utwente.nl. Dit onderzoek wordt uitgevoerd vanuit de Universiteit Twente, faculteit Behavioural, Management and Social Sciences. Indien u specifieke vragen hebt over de omgang met persoonsgegevens kun u deze ook richten aan de Functionaris Gegevensbescherming van de UT door een mail te sturen naar dpo@utwente.nl.

Tot slot heeft u het recht een verzoek tot inzage, wijziging, verwijdering of aanpassing van uw gegevens te doen bij de Onderzoeksleider.

Door dit toestemmingsformulier te ondertekenen erken ik het volgende:

1. Ik ben voldoende geïnformeerd over het onderzoek door middel van een separaat informatieblad. Ik heb het informatieblad gelezen en heb daarna de mogelijkheid gehad vragen te kunnen stellen. Deze vragen zijn voldoende beantwoord.
2. Ik neem vrijwillig deel aan dit onderzoek. Er is geen expliciete of impliciete dwang voor mij om aan dit onderzoek deel te nemen. Het is mij duidelijk dat ik deelname aan het onder- zoek op elk moment, zonder opgaaf van reden, kan beëindigen. Ik hoef een vraag niet te beantwoorden als ik dat niet wil.

Naast het bovenstaande is het hieronder mogelijk voor verschillende onderdelen van het onderzoek specifiek toestemming te geven. U kunt er per onderdeel voor kiezen wel of geen toestemming te geven. Indien u voor alles toestemming wil geven, is dat mogelijk via de aanvinkbox onderaan de stellingen.

3. Ik geef toestemming om de gegevens die gedurende het onderzoek bij mij worden verzameld te verwerken zoals is opgenomen in het bijgevoegde informatieblad. Deze toestemming ziet dus ook op het verwerken van gegevens betreffende mijn functie binnen de gemeente Bunnik.	JA ☐	NEE ☐
4. Ik geef toestemming om tijdens het interview opnames (geluid / beeld) te maken en mijn antwoorden uit te werken in een transcript.	☐	☐
5. Ik geef toestemming om mijn antwoorden te gebruiken voor quotes in de onderzoek publicaties.	☐	☐
6. Ik geef toestemming om de gemeenten Utrecht en mijn functie te vermelden bij de hierboven bedoelde quotes.	☐	☐
8. Ik geef toestemming om de bij mij verzamelde onderzoek data te bewaren en te gebruiken voor toekomstig onderzoek en voor onderwijsdoeleinden.	☐	☐
Ik geef toestemming voor alles dat hierboven beschreven staat.	☐	

Naam Deelnemer: Naam Onderzoeker:

Handtekening: Handtekening:

Datum: Datum:

8.2 Codebook

Code	Description
Citizen involvement	mention of how citizens are involved with the energy transition within the municipality
Cable pooling	mention of the application, discussion, or use of cable pooling
Capacity	mention of the number of civil servants working on a topic, mention of manpower of hours on a project or anything in that direction.
Direct energy transfer	mentions of one party connected to another party suppling them with heat electricity or another form of energy
Financial	mention of funds, money, or anything else related to the financial aspect
Usual behaviour	mention of known practices related to the energy transition
Funds	mention of sources of funds outside the municipality
Grid congestion	mention of grid congestion, of upgrading the grid, or even pilot studies related to this problem
Problem ownership	mention of who takes initiative, who takes the lead or any general mention of leading in projects
Energy storage	mention of energy storage in general, either applied, planned, or discussed in any way
Energy generation	mention of any type of renewable energy generation
Politics	mention of political parties, motives or the political process involved in energy transition policies
Projects	mention of projects related to energy transition that do not fall under a more specific code
Regime	mention of usual practices and hurdles
RES	mention of the Regional Energy strategy in any way shape or form
Cooperation	mention of cooperation outside the RES regions with businesses or municipalities
Heat storage	mention of heat storage either discussed, applied, or planned in a municipality

Heat transition	mention of the heat transition in the form of plans policies or results coming from this
Hydrogen	mention of hydrogen either being applied or discussed