

Regional Energy Strategies for Local Energy Initiatives

“How can regional energy strategies contribute to the emergence and success of local energy initiatives in the Netherlands?”



**university of
 groningen**

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Colophon

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Author: Jesse Burgler – S3426912

Contact: j.e.burgler@student.rug.nl

Master: Environmental and Infrastructure Planning

University: Rijksuniversiteit Groningen

Faculty: Faculty of Spatial Sciences

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Supervisor: Dr. F.M.G. van Kann

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Abstract

In order to make the transition from a fossil fuel-based energy system towards an energy system based on renewable sources of energy, the Dutch government developed the Regional Energy Strategy programme (RES). This regional approach divides the country into 30 energy regions that collectively need to produce 35 TWh of renewable electricity from onshore energy. To make this transition, local energy initiatives (LEIs) are of great importance. These are initiatives such as small wind and solar parks which are developed by groups of citizens. LEIs represent a new type of actor that creates co-provision and enters the policy domain of energy in a way ('bottom-up') that challenges conventional institutional arrangements.

This research investigates how the Dutch Regional Energy Strategy programme contributes to the emergence and success of local energy initiatives. It does this by conducting case studies on three Dutch energy regions which can be considered front-running when it comes to LEIs. These are Groningen, Noord-Holland Zuid, and Friesland. Data on the cases is collected by means of semi-structured interviews and retrieving RES-related policy documents. Through a literature study on regional energy governance and LEIs, a framework is developed to analyse the data. This includes possible types of support from the RES towards LEIs. These are related to the regional approach of the RES, how it can provide institutional support, and how the RES can participate in several networking activities in favour of LEIs.

After applying this framework to the collected empirical data, the results show that the authority of the RES to stimulate LEIs is limited. The RES does for example not have the ability to change policy and regulations in favour of LEIs. Furthermore, most of the stimulants that are provided towards LEIs are indirect and aimed at other organisations so that they can help the initiatives. These mainly include municipalities and umbrella organisations. Rather, the RES functions as a means to put LEIs on the agenda and enhance the collaboration between LEIs and other organisations.

Keywords: energy transition, regional energy strategy, local energy initiatives, niches, governance, decentralization, institutional change, multi-level transitions

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List of abbreviations

CBS	Centraal Bureau Statistiek
IPCC	International Panel on Climate Change
LEIs	Local energy initiatives
NDCs	Nationally determined contributions
PBL	Planbureau voor de Leefomgeving
RES	Regional Energy Strategy
NP RES	Nationaal Programma RES
SNM	Strategic niche management
Solar PV	Solar photovoltaics
TWh	Terawatt-hour

1. Background and scientific relevance

1.1 Background

Climate change is happening, and the human influence on it cannot be denied any longer. The most cautious models of the International Panel on Climate Change (IPCC) predict that global warming is likely to reach 1.5 °C between 2030 and 2052 if it continues to increase at the current rate (IPCC, 2018). This phenomenon is to a large extent the result of the burning of fossil fuels, which has become a prerequisite for the functioning of our daily modern lives. To be exact, fossil fuel combustion contributes to more than 50% of the anthropogenic greenhouse gasses (Höök et al., 2010). Next to causing climate change, these fossil fuels are also considered unsustainable due to the fact that they are finite, and will in the near future not be able to respond to our rising energy demand anymore (Zuidema & de Boer, 2013). Therefore, in the quest for a sustainable future, one of the crucial elements is the transition from a fossil fuel-based energy system towards an energy system based on renewable sources of energy. The use of these may include generating energy from e.g. solar-, wind-, or hydro-based sources.

To address this tremendous challenge, the Paris agreement was signed in 2015 by 196 countries which collectively agreed to limit the rise in temperature by a maximum of 2 degrees Celsius as compared to pre-industrial levels. To achieve this, the agreement obliges countries to develop so-called nationally determined contributions (NDCs), including long-term low greenhouse gas emission development strategies (United Nations, 2015). While being an important step forward, the level of progress towards the Paris agreement turned out to be insufficient to meet our goals. Therefore, after the 2021 climate summit in Glasgow, countries were demanded to bring their climate plans in line again with the goals of the Paris Agreement (UNFCCC, 2021).

The Netherlands is one of the countries that signed the Paris agreement (United Nations, 2015) and translated it into their Climate Act which was presented in 2019 (Rijksoverheid, 2019a). The Climate Act contains more than 600 agreements to counteract the Dutch greenhouse gas emissions, eventually aiming at a reduction of 49% by 2030 and 95% by 2050. Furthermore, an important sub-goal is to develop 35 TWh of renewable weather-dependent electricity on land (Rijksoverheid, 2019b). The urgency to move to such renewable sources of energy became gained attention recently when the prices of natural gas significantly increased, nearly doubling energy bills (NOS, 2022).

In order to move towards renewable sources of energy and achieve the goals of the Climate Act, the Dutch government formulated policy arrangements that contribute to the reduction of greenhouse gas emissions. As the climate act stresses, these goals are only to be completed when the challenge to battle climate change is perceived as a complete social transition (Rijksoverheid, 2019b). The implementation of the Dutch Climate Act is executed in a programme called Regional Energy Strategies (RES). This programme is aimed at governing the energy transition in a more decentralized, network-based way where the region is selected as the most suitable level. In total, 30 energy regions collectively need to produce 35 TWh of renewable electricity from onshore energy. In the RES, multiple governance levels (municipality, province, and energy distributors) collectively set out the regional choices for renewable energy implementation (Rijksoverheid, 2019b; Technopolis, 2022). In the end, every region develops its own unique strategy for renewable energy production (RES, 2021).

1.2 Problem statement

In order to make the transition towards renewable sources of energy and ensure a fair distribution of benefits and burdens, the climate act included the pursuit that 50% of the generated renewable energy should be owned by local citizens. This allows citizens to profit from the energy transition and participate in renewable energy projects instead of perceiving them as a threat to their environment (Rijksoverheid, 2019b). Important contributors to achieve this goal are so-called local energy initiatives (LEIs). These are small energy initiatives, like wind or solar PV parks, that are set up and owned by local citizens (Warbroek et al., 2019). Next to contributing to the 35 TWh goal, these local initiatives can play important roles in the energy transition. First, following transition theory (e.g. van der Brugge et al., 2005; Rotmans et al., 2000), they distinguish alternative practices and ideas through innovation and experimentation. When several initiatives successfully take place together, variations to and deviations from the status quo occur as a result (Kemp et al., 1998). Secondly, from an institutionalist perspective (e.g. Beunen & Patterson, 2019), they represent a new type of actor that allows people to participate in the energy transition in a way that challenges the institutions of the old centralized energy system.

Therefore, in making the transition from a fossil-fuel based energy system towards an energy system based on renewable sources of energy, governments have an interest in stimulating and facilitating LEIs. To do this, there is an important role for subnational governments, for example in providing institutional support to the initiatives when there is a lack of institutional fit at the national level (Oteman et al, 2017). Furthermore, subnational governments are commonly the first venue for LEIs to resort to for support (e.g., seeking assistance in permit procedures, financial support, or capacity building) as they are better attuned to local needs than national-level actors (Warbroek & Hoppe, 2017 p.2).

While the role of local governments in stimulating LEIs has received wide scholarly attention, little attention has been paid thus far to regional governments, as applied in the Dutch Regional Energy Strategies (RES) programme (Hoicka et al., 2021; Hoppe & Miedema, 2020). Furthermore, most studies ignore the relationships that emerge between different levels in the energy transition, something which is inherent in regional approaches (Balta-Ozkan et al., 2015). This research will tap into this gap by focusing on the role of the RES programme in supporting LEIs. The Netherlands is an interesting case as it holds a total of 623 energy cooperatives at the local level by March 2021 (HIER, 2021), while also being one of the EU countries that is lacking behind in terms of share of energy from renewable sources in their gross final consumption of energy (EEA, 2022; Soares da Silva & Horlings, 2019 p. 364).

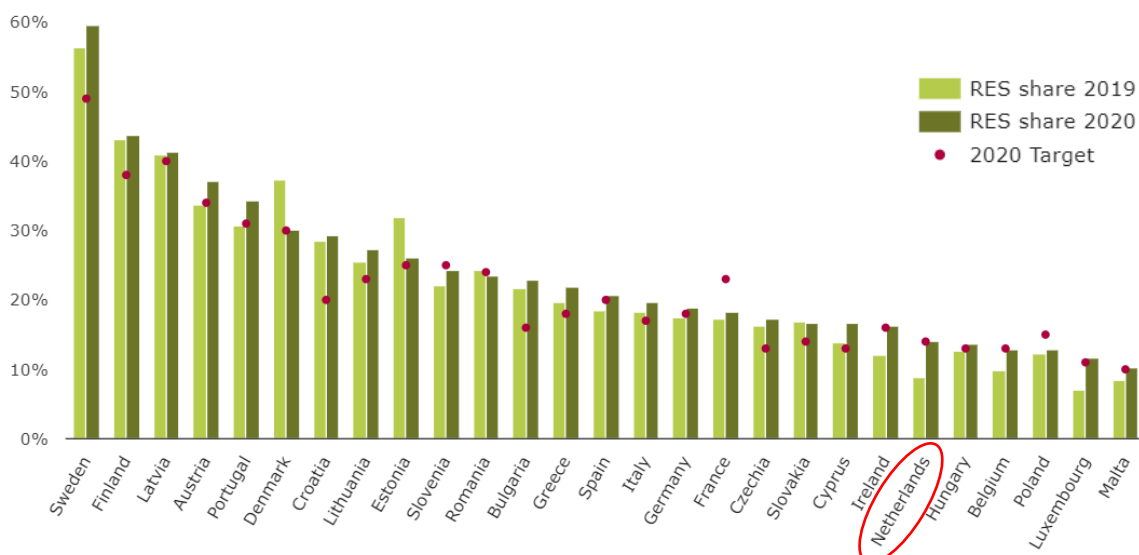


Figure 1. Share of energy from renewable energy sources in EU member states (EEA, 2022). Edited by author.

1.3 Research framework and outline

Following the problem statement, this research aims to explore how the Regional Energy Strategies Programme contributes to the emergence and success of local energy initiatives. Emergence and success are considered to be two phases. The first phase includes if citizens actually start an LEI and whether the initiative gets off the ground. Once an initiative has found a solid base, it enters the second phase defined as 'success'. This concerns whether the initiative is able to grow, diffuse its ideas, aggregate learning experiences, and ultimately influence the current energy regime towards an energy transition.

To investigate this, the following research question is formulated:

- *How can regional energy strategies contribute to the emergence and success of local energy initiatives in the Netherlands?*

To answer this question, the following sub-questions need to be studied:

1. *How can local energy initiatives be defined?*
2. *What is the role of local energy initiatives in the energy transition?*
3. *Does the governance structure of the RES contribute to the emergence and success of LEIs?*
4. *What stimulants are used by the RES to contribute to the emergence and success of LEIs?*

In order to accomplish this and answer the main research question and the associated sub-questions, two phases of research are conducted: a literature study (1) and an empirical study (2).

1.3.1 Research phase 1: literature study

Within the literature study, academic articles on LEIs are analysed first. LEIs are defined and the ways in which they can be stimulated and facilitated through governance are explored. Together with literature on institutional change and transition theory, the importance of the initiatives in the energy transition is explained after this. The institutionalist perspective focuses on the ability of LEIs to challenge the structures of the conventional energy system and open up new pathways. The transition perspective is used to position LEIs within a three-level simplification of reality, influencing and interacting with one another towards a transition. Furthermore, in the section on strategic niche management (SNM), transition theory provides possible types of support that can contribute to the success of LEIs. Finally, literature on decentralization is studied to portray ways in which the RES can contribute to the emergence and success of LEIs by being a decentralized unit. For example, this may include the ability to accommodate tailor-made approaches based on local circumstances, or promote higher participation and accountability due to communicative approaches (Zuidema, 2016).

Throughout the literature study, various possible ways in which the RES can contribute to the emergence and success of LEIs are identified. This led to the development of table 6 which is used as the framework to analyse the data collected from the empirical study.

1.3.2 Research phase 2: empirical study

To see whether the types of support for LEIs as described in table 6 are applicable for the RES, a comparative case study is conducted on three RES regions that can be considered front-running when it comes to LEIs. These are Groningen, Noord-Holland Zuid, and Friesland (see section 3.2 for more information). The empirical study consists of two parts: a policy document analysis of RES-related

policy documents and semi-structured interviews with key actors involved in the RES and LEIs. More on the empirical study can be found in chapter 3.

1.4 Academic and societal Relevance

From an academic point of view, this research will fill up the gap between the national and local level, on which their role in supporting LEIs have been frequently studied in the past (e.g. Balta-Ozkan et al., 2015; Hoicka et al., 2021; Hoppe & Miedema, 2020). In this way, this research can add insights into academic debates on the role of sub-national governments, LEIs, and different governance instruments in the energy transition. Furthermore, it will elaborate upon the importance of local developments (niches) as discussed in transition theory.

Discovering whether the RES is successful in contributing to the emergence and success of LEIs can be valuable for identifying best practices in the governance of the energy transition worldwide. Dependent on the results, other nations may or may not be advised to implement a regional approach, or other regions can learn from governance instruments applied in the selected regions.

1.5 Reading guide

This research is structured as follows. First, chapter 2 will provide a theoretical framework, exploring and discussing literature and concepts related to LEIs and regional governance. From this, a conceptual model (figure 6) is developed with ways in which the RES can support LEIs (table 6). Furthermore, chapter 2 will analyse the role of LEIs in the energy transition from an institutionalist and transition perspective. After this, chapter 3 will explain the strategy and methods used for the empirical study. The results of the empirical study are presented in chapter 4. Chapter 5 will interpret the results and give additional meaning to them by reviewing these in relation to the literature. Chapter 6 will provide the conclusions of the research. Finally, chapter 7 will reflect on the research outcomes and provide some recommendations for further research.

2. Theoretical framework

2.1 LEIs

This section will discuss literature on local energy initiatives (LEIs). First, LEIs are defined. Second, the motives for their emergence are discussed. After this, the most common ways in which LEIs appear are stated. Finally, the ways in which LEIs can be supported by governments are discussed.

2.1.1 Defining LEIs

Although climate agreements are made on international and national levels, the implementation of such agreements in the context of the energy system is regularly carried out at a local or regional level (Germes et al., 2021). Here, citizens are not only affected by the implementation of renewable sources of energy but are also asked to engage in the energy transition themselves. While some take measures to reduce their energy demand, others go a step further by setting up so-called local energy initiatives (LEIs) (Oteman et al., 2017). In the literature, LEIs have been defined in several ways throughout the years, creating a lot of closely related concepts. Examples include *community energy initiatives*, focusing upon energy communities as interlinked social networks (van der Schoor & Scholtens, 2015); *grassroot innovations*, framing the energy initiatives as a ‘movement’ with characteristics of activism (Oteman et al., 2017); and *bottom-up energy initiatives*, emphasizing that bottom-up innovation dynamics have developed in response to top-down failure (Arentsen & Bellekom, 2014).

In general, three main similarities can be identified when analyzing the numerous concepts related to LEIs: (1) the initiatives take place at the local level, restricting to a particular area; (2) they are aimed at developing onshore renewable energy projects; (3) the initiatives are innovative in the sense that they are largely set-up and owned by citizens or actors from civil society, instead of being top-down government-led projects. Considering these characteristics, this research will follow the definition of LEIs from Warbroek et al. (2019 p.3) as it includes all three aspects in a complete but coherent way. The article defines LEIs as follows: “the bottom-up initiating and managing of a project, or series of projects, involving the generation, stimulation, and/or facilitation of low-carbon energy and/or energy efficiency by citizens/actors from civil society on a local level”. ‘Local’ here will be referred to as low-carbon energy projects at the municipal level or provincial level that are collectively set up and owned by citizens, being mostly solar PV and wind energy projects in the form of cooperatives.

Technology being implemented at individual households (e.g. a few roof-based solar panels or energy-saving measures) will not be included in this research. Next to this, initiatives related to warmth will also be left out. Furthermore, this research won’t make use of the term ‘community energy’ as it tends to ‘conflate the project itself with the community it is embedded in’ and ignores interscalar interactions, spatial configurations, and politics involved (Warbroek & Hoppe, 2017 p.3).

2.1.2 Motives for the emergence of LEIs

To investigate how the RES can contribute to the emergence and success of LEIs, it is important to know why and how LEIs emerge. Following Arentsen & Bellekom (2014), motives for the emergence of LEIs mainly include social-, environmental-, and economic motives, but also motives related to dissatisfaction with the government, such as displeasure with inconsistent energy policies. Hoppe et al. (2015) state that such motives are not isolated but are interrelated. Initiatives may, for example, emerge due to a mixture of ecological motives (e.g. mitigating climate change, nature conservation)

combined with economic and social motives (e.g. high natural gas prices, adding local value, making places/communities more attractive). Arentsen & Bellekom (2014) also state that the closed character of the energy sector plays a role. While this may function as an obstacle to the emergence of LEIs, in many cases it is actually a driver. For example, when groups wish to be independent of the existing energy companies and exporting countries. Next to this, benefits such as a green image and the social acceptance of renewable energy seem to play a prominent role in the appearance of LEIs. Finally, it is also important to note that technological improvements have made energy technology available that is reliable, visible, proven, and has an acceptable payback time (Arentsen & Bellekom, 2014 p.3). An overview of the motives to start a local energy initiative can be found in table 1 below.

Table 1. Motives to start a local energy initiative (Germes et al., 2021).

Category	Motives
Environmental motives	<ul style="list-style-type: none"> • Be more sustainable • Concerns about future planet • Preserve environment for future generations • Conserve and produce energy • Become independent of natural gas
Economic motives	<ul style="list-style-type: none"> • Save money • Strengthen local economy • Benefit from producing energy • Generate income for local community • Increase the liveability of the community
Social motives	<ul style="list-style-type: none"> • Increase social cohesion • Take collective action • Increase awareness in community

2.1.3 The appearance of LEIs

Cooperatives are the most well-known organisational form in which LEIs emerge, regularly steered by a small group of citizens (Oteman et al. 2017; Walker & Devine-wright, 2008). Although LEIs are considered local phenomena, they are active on different institutional levels of engagement. Germes et al. (2021 p.3) identify three levels: the local level; the community level; and the public-private level of the municipality, province, and private companies. At the local level, the group of citizens who steer the initiatives is key. The skills included in this steering group are of great importance in the implementation of the projects (Germes et al., 2021). At the community level, engagement by other citizens is an important factor in the realization. They can for example become a shareholder in a community-owned wind or solar park (Seyfang et al., 2013; Warbroek et al., 2018). At the third ‘public-private’ level, building and participating in networks is convenient. New collaborations can emerge and information and knowledge can be shared, contributing to joint learning. The social network of an LEI can include different actors such as local governments, umbrella organisations, and other LEIs (Germes et al., 2021 p.3; Oteman et al., 2017; Parag et al., 2013). This network is of great importance for LEIs to grow, defined as our ‘success’ stage as explained in section 1.3.

In the Netherlands, there are roughly two types of LEIs (Hoppe et al., 2015). These are the classic wind cooperatives, which have their background in the anti-nuclear and pro-environmental movements, and the so-called ‘new style’ LEIs. Members of the first type of initiative, which are usually situated in rural areas, collectively own and exploit one or more wind turbines. The ‘new style’ local initiatives typically involve renewable energy projects in residential, urban, and rural areas of which the majority

are solar PV projects. These are also mostly organized in cooperatives and mainly aim to facilitate collective renewable energy production (Hoppe et al., 2015). According to the Lokale Energie Monitor (HIER, 2021), about 70% of the energy cooperatives are focusing on solar PV projects and 19% on wind energy. Currently, 95% of the inhabitants of the Netherlands live in a municipality where an energy cooperative is active. Furthermore, these cooperatives themselves are also increasingly collaborating, both with the market and governmental parties, taking a more prominent role in the RES (HIER, 2021).

2.1.4 Governing LEIs

Next to having motivated groups of citizens to set up and steer LEIs, gaining governmental support is important for their emergence and success (Warbroek & Hoppe, 2017). Through for example providing stimulants or favourable conditions, governments can play a prominent role in stimulating and supporting LEIs. This section will go into the role of governments in stimulating LEIs.

The most straightforward and obvious way through which governments can influence the development of LEIs is by providing funding. This can act as an incentive for citizens to generate their own renewable energy, helping the government in the energy transition. Currently, a great share of the initiatives has to deal with financial challenges and fail to grow due to the absence of long-term funding (Hoppe et al., 2015). According to van der Schoor & Scholtens (2015), the Dutch fiscal incentives that are provided towards small-scale renewable energy producers are insufficient, being one of the major barriers to the national energy policy for change. Especially for the emergence, LEIs need “seed” money for building their organisation and starting projects. The assumption is that after the initial phase a large share of initiatives should be able to earn their own money via a viable business case and become independent of external funding (Germes et al., 2021 p.11). However, some cases have proven that there is a need for long-term subsidies (Hoppe et al., 2015). An important note here is that governments are not the only providers of financial support as subsidies could, for example, also be provided by private parties (Warbroek et al., 2019). Another difficult aspect of gaining financial support is that when funding schemes are available, they are often difficult to access for LEIs as they require complicated bureaucratic procedures for which the resources (e.g. time, knowledge) are often lacking (Warbroek et al., 2019). Besides, the structure and characteristics of the funding schemes often fail to meet the aspirations of plans by individuals to set up their LEI (Oteman et al., 2017). An example of a Dutch financial supportive policy towards LEIs is the so-called ‘postcoderegeling’ (zip code regulation). This policy allows communities to have reduced energy taxes on the basis of the amount of renewable energy generated by their LEI, thus coupling financial incentives to the performance and participation of an initiative (HIER, 2021).

Financial support is only a part of the governance framework which largely shapes the opportunities for the emergence and success of LEIs. Several authors have discussed governance arrangements that support local initiatives (e.g. Evans et al., 2006; Hajer, 2011; Hawkins & Wang, 2012). Providing funding schemes is part of an ‘enabling mode of governance’. This refers to the ability of governments to govern through various forms of partnerships and community engagement by means of employing ‘soft’ promotional, facilitative, coordinative, and encouraging governing activities to spur climate change action by other actors (Bulkeley & Kern, 2006; Warbroek & Hoppe, 2017 p.5). Such enabling measures can be important for both the emergence and success of LEIs. However, further innovation remains a necessity when aiming for socially innovative and self-organizing initiatives and extended civic/end-user involvement in energy systems (Warbroek & Hoppe, 2017). Next to providing funding schemes, an enabling type of governance also includes providing physical space, administrative support, services, knowledge transfers, and assistance in permit procedures for LEIs. Governments can

also enter partnerships with LEIs to support them (Warbroek & Hoppe, 2017). However, according to Oteman et al. (2017), such collaborations are scarce as the Dutch government mainly engages in partnerships with the traditional energy sector, neglecting local citizen-led projects. It will be interesting to see whether this has changed with the appearance of the RES.

In contrast to the ‘softer’ instruments in an enabling mode of governance just described, an authoritative mode of governance is characterized by instruments such as regulations, rules, permitting, planning requirements, and compulsory economic instruments (Wade et al., 2013; Walker, 2008). Although these appear to be much more static, innovations within these instruments may occur in response to the emergence of LEIs, for example by changing existing planning regulations. Unfortunately, these instruments often form barriers and hinder both the emergence and success of LEIs through poor legislation, inconsistency, and frequent policy changes (Germes et al., 2021).

An overview of the governmental support towards LEIs as described above can be found in table 2 below.

Table 2. Governance support towards LEIs.

Type of support	Contribution to emergence	Contribution to success
Funding	Short-term funding: e.g. starting capital	Long-term funding, e.g. subsidies
Providing physical space	Appoint space in zoning plan for LEIs	If needed, arrange extra space for growth
Administrative support	Assisting in permit procedures and other legal processes	Assisting in permit procedures and other legal processes
Knowledge transfers	Knowledge for starting an LEI: e.g. platforms, handbooks, toolkits	Knowledge for growing LEIs: e.g. mentoring, training, workshops
Entering partnerships	Collaborate with citizens to start up an LEI	Enter a partnership with an existing LEI to actively support it and help it grow
Favourable regulations (e.g. permitting procedures)	Make the regulations for setting up an LEI flexible	Make the regulations for growing an LEI flexible

As LEIs often lack political support, networking activities and building connections with subnational governments and umbrella organisations appear to be essential for their success (Warbroek et al., 2019 p.10). For example, as soon as an LEI requires changes to the zoning plan, a connection to the grid, or a spatial permit, governmental actors become important allies (Warbroek et al., 2019 p.10). A lack of network or problematic interactions with governmental bodies may therefore impede LEIs success (Oteman et al., 2017). Umbrella organisations are actors that are closer to the LEIs and function as boundary organisations to spur local community initiatives (Warbroek & Hoppe, 2017). According to Hargreaves et al. (2013), umbrella organisations are in a good position to distribute technical and institutional resources, provide skills and knowledge, and facilitate information flows and networking channels between LEIs to share experiences. Furthermore, umbrella organisations have the ability to aggregate experiences and lessons learned in formats such as toolkits, handbooks, or common templates for subsidy application (Bird & Barnes, 2014; Hargreaves et al., 2013). This can have a significant contribution to the emergence and success of LEIs. The particular interesting question that arises for this research is whether the RES is better able to provide LEI-supporting policy frameworks compared to local and national governance and whether it is able to stimulate umbrella organisations, or even act as an umbrella organisation itself.

2.2 The roles of LEIs in the energy transition

As reasoned in the problem statement (section 1.2), LEIs can play important roles in the transition to a low-carbon energy system. In this section, the roles of LEIs in the energy transition are described from an institutionalist perspective. These mainly revolve around their potential to open up spaces for institutional change and create new paths.

2.2.1 The inflexible institutions of the conventional energy system

The energy transition can be categorized as what Rittel and Webber (1974) call a wicked problem: ill-structured problems in which complex societal interactions, highly uncertain physical processes, and management dilemmas are present (van der Brugge et al., 2005 p.3). Therefore, there is a need for governance systems that are able to cope with change and uncertainty. Changing power structures is however hard as they often claim to be able to control uncertainty to underpin the securing of authority, justification, legitimacy, trust, and wider public acceptance (Scoones & Stirling, 2020). This is also the case with the Dutch energy system, which for years continued on its historical path by exploiting natural gas as the main source of energy. This system can be characterized as inflexible, old-fashioned, and not being adaptive towards renewable sources of energy (Mulder & Perey, 2018). Following Oteman et al. (2017), such a system can be viewed as an institutional system, with institutions defined as ‘the formal and informal rules of the game which provide a degree of stability and predictability in our social interactions’ (Beunen & Patterson, 2019).

The institutions related to the energy system are difficult to influence as they are deeply rooted in society and the result of historical pathways which are hard to change, a phenomenon referred to as ‘path dependency’ (Salet, 2018). In the Dutch case, it is for example difficult to deviate from the historical path of natural gas extraction as it has yielded about 288 billion euros for the government’s finances, making it a crucial source of income for the country (Mulder & Perey, 2018). Even when the connection between the gas extraction and local earthquakes was made and gained attention, the government continued with the activities for an extensive period (Mulder & Perey, 2018). Partly, this has to do with the fact that the sacrifice costs of changing to renewable sources of energy are enormous. The pipeline structure below the ground for transporting the gas would for example be abandoned and big gas mining companies, which are historically important in the Dutch economy, might collapse (CBS, 2018; Van der Schoor & Scholtens, 2015). These examples illustrate why institutions are often analysed as fixed and stable with patterns of reproduction and inertia (Beunen & Patterson, 2019). The traditional actors, the so-called ‘incumbents’, typically dominate the existing playing field, preferring ownership and centralized large-scale energy generation leading to a ‘carbon lock-in’ (Unruh, 2000; Warbroek & Hoppe, 2017 p.4).

2.2.2 LEIs as driver for institutional change

In order to deviate from the historical path that the energy system has followed and escape from lock-in situations, institutional change is needed. Following Beunen & Patterson (2019), disrupting existing institutions depends on sustained human endeavour and effort and is a long-term gradual process. This is where the LEIs come in. Warbroek & Hoppe (2017 p.6) state that LEIs represent a new type of actor that creates co-provision and enters the policy domain of energy in a way (‘bottom-up’) that challenges conventional institutional arrangements and questions the early modern liberal-democratic separation between civil-society, market, and state. In other words, by challenging the existing institutions, LEIs are the first step towards institutional change. Van der Schoor & Scholtens (2014)

illustrate this by stating that LEIs stimulate the local governance of energy, counteracting the much more centralized current energy system. Due to the increased availability of renewable energy technology, small-scale generation and the individual choice for green energy allow consumers to be producers by starting their own renewable energy projects. From these economic activities, the development of social networks that relate to energy can be witnessed (Van der Schoor & Scholtens). At the local level, this process aids in people changing their everyday practices together, strengthening their joint capacity to change societal structures (Hielscher et al., 2011). As such, LEIs challenge existing and prevalent practices, social relations, and regulations geared to the archaic energy regime (Warbroek et al., 2018 p.2). In this sense, LEIs can be seen as entrepreneurs that come up with new combinations of knowledge and resources related to the electricity supply (Hoppe et al., 2015). Following Warbroek & Hoppe (2017 p.4), these new strategies and practices meet our social goals in the long term and have the potential to change the organisational arrangements and socio-technical structure of the energy system in favor of extended end-user involvement. Arentsen & Bellekom (2014) state that the initiatives are still part of the dominant system but at the same time are rather different in their coordination, organisation, technology, and performance. Therefore, the initiatives could be considered as ‘seedbeds of innovation’, possibly influencing or even overtaking the dominant energy system in the long term (Arentsen & Bellekom, 2014 p.7). It is important to note that this is a gradual process. Although it might not lead to satisfactory and visible outcomes in the short term, it can lead to broader transformative change over time (Streck & Thelen, 2005). The RES as a new level of governance within the system can have an important role in stimulating these initiatives.

2.2.3 Further roles of LEIs

Besides having the potential to enforce institutional change, two other important roles of LEIs in the energy transition can be identified. First, LEIs have the potential to implement distributed generation of renewable energy. Distributed generation holds the promise of a lower need for investments in expensive transportation and distribution infrastructures (Warbroek & Hoppe, 2017 p.3). Secondly, the initiatives can also raise awareness among citizens about renewables, set up consumer boycotts of outdated ‘dirty’ modes of energy consumption, and create lobbies for progressive innovation-oriented regulations (Smith, 2012). Warbroek and Hoppe (2017) add to this by stating that LEIs enable the involvement of the local public which positively affects the acceptance of energy projects. Furthermore, it leads to positive attitudes of citizens towards renewables. In contrast, a focus on top-down centralized energy provision does not facilitate a role for individual homeowners and energy consumers (Oteman et al., 2017). The roles of LEIs discussed in this section are listed in table 3 below.

Table 3. Roles of LEIs in the energy transition.

Role in the energy transition	Contribution of LEIs
Challenge conventional institutional arrangements	<ul style="list-style-type: none"> • Small scale generation allowing consumers to be producers • Development of social energy networks • People jointly changing their everyday practices • Challenging existing and prevalent practices • Counteracting the centralized energy system
Implement distributed generation	<ul style="list-style-type: none"> • Create a lower need for investments in expensive transportation and distribution infrastructures
Develop a positive attitude towards renewables	<ul style="list-style-type: none"> • Raise awareness about renewables • Create boycotts of ‘dirty’ modes of energy • Create lobbies for progressive regulations

2.2.4 The importance of a transition perspective

Within the literature on LEIs (e.g. Hoppe et al., 2015; Warbroek et al., 2018; Hielscher et al., 2011), the initiatives are regularly framed as niches, referring to transition theory. Transition theory literature describes niches as innovative spaces where experimentation takes place and which are a valuable testing ground for technological change and governance innovations (Oteman et al., 2017). Here, practices that differ from dominant regimes and mainstream markets arise. In other words, there is a focus on ‘learning our way out’ of the energy transition. Studying the role of LEIs in the energy transition from a transition theory perspective shows us how several levels of society interact and influence each other towards institutional change. Therefore, the next section will dive into the role of LEIs from a transition theory perspective.

2.3 Transition theory

Transition theory interprets complex transition processes by simplifying them into four transition phases (figure 2) and three levels of society influencing each other (figure 3). A transition is a process of societal change in which the way society or an important subsystem of society operates structurally changes. It is a long-term process resulting from a co-evolution of cultural, institutional, economical, ecological, and technological processes and developments on various levels (Rotmans et al. 2000 p.19). The timespan of a transition is indicated in the literature as a period between 20 and 50 years (Kemp & Loorbach, 2003), while the RES aims to fulfil its 95% greenhouse gas reduction goal within 30 years. A prerequisite for transitions to happen is that several developments in different domains interact in such a way that they positively reinforce each other (van der Brugge et al. 2005 p. 166). This process is non-linear: gradual change is followed by rapid change when things reinforce each other, which again is followed by a gradual change in the stabilization phase. One of the central problems transition theory seeks to address is breaking out of a ‘lock-in’, as is the case with the transition towards renewable sources of energy (Kemp & Loorbach, 2003).

Transitions are complex to interpret and can be described in numerous different stages. To bring order within the chaos, transition theory simplifies this process into four phases in which the nature and speed of the transition change each phase (Kemp & Loorbach, 2003):

- In the *pre-development phase*, there is little change visible on the societal level: the status quo does not visibly change but changes take place under the surface by means of small-scale experimentation and bottom-up innovation.
- In the *take-off phase*, the process of change gets underway and the state of the system begins to shift.
- In the *acceleration phase*, visible structural changes take place through an accumulation of socio-cultural, economic, ecological, and institutional changes that reinforce each other.
- In the *stabilization phase*, the speed of social change decreases, and a new dynamic equilibrium is reached.

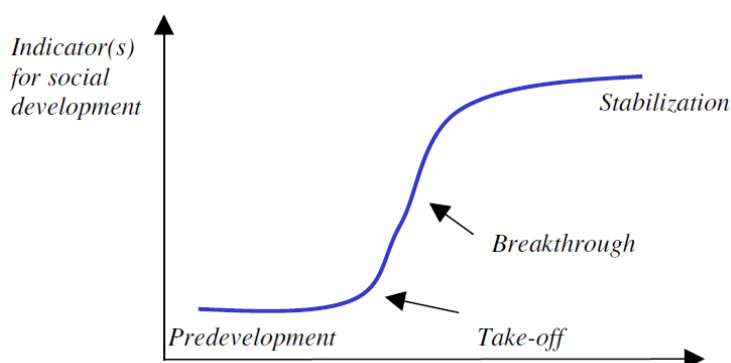


Figure 2. Four phases of transition (Rotmans et al., 2000).

To go through the four phases just described, developments at different levels of society need to positively influence each other. Again, this is a complex phenomenon to describe, including interactions between all kinds of scales and levels. Transition theory uses its multi-level transition framework to interpret this process. This is a simplified model of reality describing how transition processes take place at three levels, interacting and influencing one another.

- At the *landscape level*, changes in macro-economy, politics, population dynamics, natural- and built environment, culture, and worldviews are considered important (van der Brugge et al., 2005). This level is interpreted as the overall societal setting where processes of change occur (Kemp & Loorbach, 2003).
- The *regime level* is seen as the level where patterns of institutions, rules, and norms are assembled and maintained. Here, strategies of companies, organisations, institutions, and policies are situated which are often geared towards preserving the status quo and protecting investments, usually preventing system innovations from altering the structure fundamentally (Loorbach, 2007). This is considered to be the level where the Dutch energy system is mainly rooted. This fossil-based regime emerged in the 20th century and remained stable due to feedback loops (Loorbach et al., 2008).
- The *niche level* is described as the level where alternative technologies and local practices are distinguished. At this level, variations to and deviations from the status quo occur as a result of new ideas and new initiatives, and innovations (van der Brugge et al., 2005). This is the level where the LEIs emerge and deviate from the traditional structure of the conventional energy system. Whether LEIs can actually be seen as niches is however questionable, and will be addressed later in this section.

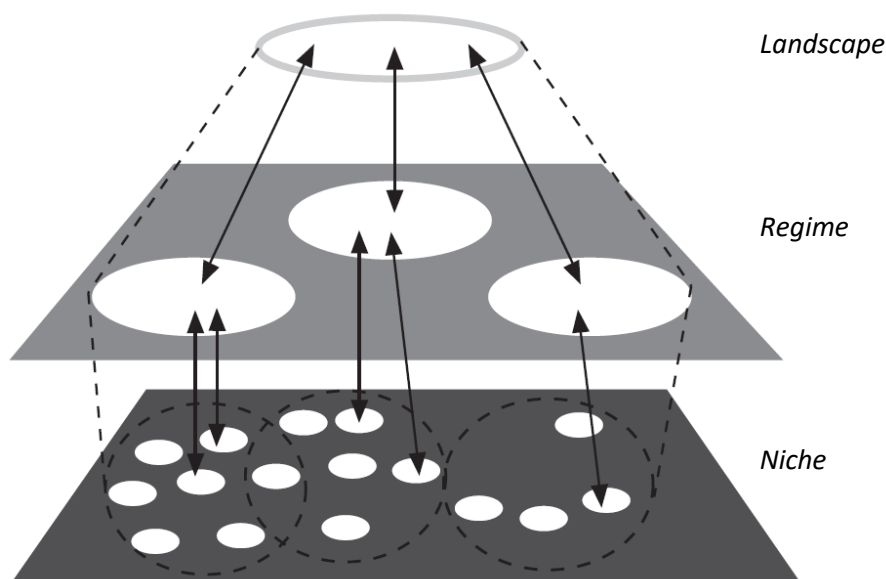


Figure 3. The multi-level transition model (Geels & Kemp, 2000).

When the multi-level and multi-stage transition models are combined, this leads to the following transition pattern. In the pre-development phase, the regime (the fossil-based energy system), often acts as a constraining factor as it will typically seek to maintain social norms and belief systems and improve existing practices (van der Brugge et al., 2005). Therefore, in order to influence the regime and reach the take-off phase, a modulation of developments will have to take place at both the niche- and landscape level. This means that certain innovations at the niche level, like the emergence (stage 1) and success (stage 2) of LEIs as deviating practices, are reinforced by changes at the landscape level,

like the new climate policy including the RES. It can go either way: breakouts at the niche level find fertile soil at the landscape level, or changes at the landscape level can be accompanied by suitable initiatives at the niche level (van der Brugge et al., 2005 p.7). If ideas or perspectives from different fields converge into one consistent paradigm, the take-off phase might be reached where the dynamics of the dominant regime increasingly modulate with innovative experiments at the niche level. This is a phase where results are needed to push the regime over the 'edge' and prevent a drawback to the old lock-in situation. When the acceleration phase is successfully reached, the regime has an enabling role, through the application of large amounts of capital, technology, and knowledge. The regime changes as a result of self-examination, in response to 'bottom-up' pressures from the niche level and to 'top-down' pressures from the landscape level. Through the reinforcement of developments at the three different levels, dominant practices change rapidly and irreversibly. In the stabilization phase, the acceleration slows down, due to a new regime that has been built up, again resisting new developments. The stabilisation phase represents another (relative) equilibrium, which could accommodate the seeds of change for another transition (van der Brugge et al., 2005 p.7).

2.3.1 LEIs as Niches

As stated before, several authors conceive LEIs as niches (illustrated in figure 4) that can contribute to the energy transition as they are different from the business-as-usual conventional ways of operating energy systems (e.g. Arentsen & Bellekom, 2014; Hoppe et al., 2015; Oteman et al. 2017; Warbroek et al., 2018). Following Hielscher et al. (2011), viewing these initiatives as niches allows us to draw on the role of niches in the energy transition by learning how they might grow, diffuse their ideas, and ultimately affect the regime. What should be noted however is that the article does not perceive LEIs as separate niches, but rather views the total of the initiatives as a (potential) coherent niche. Raven et al. (2010) describe the process of how such a number of local initiatives, at first without any progress, gradually develop into a niche. This starts with networking activities and the exchange of knowledge between LEIs which then begin to develop a range of niche activities such as standardization, shared learning, conferences, and so on. This makes it easier to set up consecutive initiatives, thereby growing the niche. Initiatives will then increasingly aggregate learning processes and share rules and expectations, gradually forming a coherent niche. This allows citizens involved in LEIs to learn from one another, make demands for facilitating policy and market reforms on the basis of those lessons, help to mobilize resources for future initiatives through their networking activities, and shaping expectations about the initiatives' role in wider transition in energy systems in the future (Hielscher et al., 2011 p.13). Nonetheless, a niche is not an entity that is 'out there' to be discovered but rather provides a way of thinking through regime and niche interaction and internal processes of niche developments (Hielscher et al., 2011 p.11).

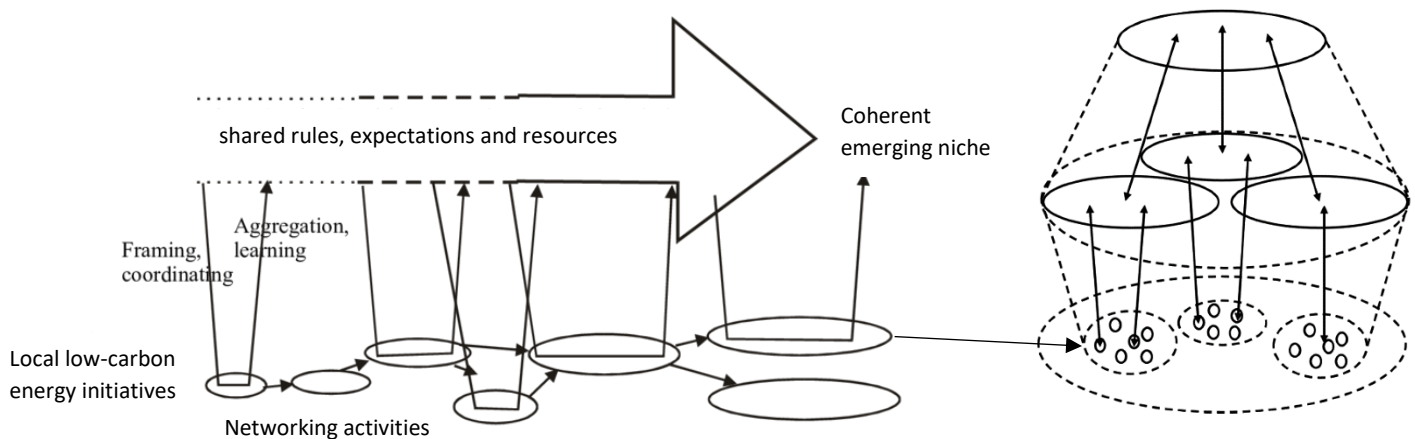


Figure 4. The growth of LEIs into a niche (Geels & Raven, 2006). Edited by author.

The intriguing question now is: where could the niche lead to? In other words, what does the innovative capacity of the LEIs imply for the future development of the electricity system? (Arentsen & Bellekom, 2014). The niche could for example be considered as an incubation to develop from a niche into a dominant energy regime (Aitken, 2010; Loorbach, 2007). Furthermore, the niche could also have the potential to affect the future developments of the old energy regime, leading to the hybridization of energy supply with both LEIs and incumbents as collaborating partners. A step in this direction is emerging under the label smart energy systems where old and new forms of energy will meet. This is predominantly caused by the large-scale integration of intermittent renewable-based energy production like wind and solar PV (Arentsen & Bellekom, 2014 p. 9).

Unfortunately, after the initial phase (emergence), LEIs experience difficulties in opening up the regime for their uptake, acceptance, or breakthrough (success) (Warbroek et al., 2018 p.2). This relationship between niche and regime is addressed by literature on Strategic Niche Management (SNM). For this research, it is useful to see the growth of LEIs through the lens of SNM, as it addresses issues related to alleviating barriers and opening up regimes for LEIs (Kemp et al., 1998; Warbroek et al., 2018).

2.3.2 Strategic Niche Management

SNM is a theory that focuses on how innovative niches, like an accumulation of related LEIs, further develop in a way that they are able to influence or even replace the existing regime. SNM specifically focuses on how such processes can be managed strategically (Hargreaves et al. 2013). The theory states that many innovative and sustainable practices never leave the 'showrooms'. Guided dispersion and upscaling are therefore important since prevailing regimes would otherwise reject those innovations and prevent them from becoming mature (Raven, 2010). Within SNM literature, the notion of 'scaling-up' is frequently mentioned. This refers to moving sustainable practices from experimentation to mainstream (van den Bosch and Rotmans, 2008 p.34), or the process where sustainable practices developed in niches are translated into the regime (Smith, 2007). Following Warbroek et al. (2018), the scaling-up and diffusion depend on the social acceptance of important stakeholders related to the current energy system. Such acceptance is encouraged by strong institutional capacity, political commitment, favourable legal and regulatory frameworks, competitiveness, mechanisms for information and feedback, and access to financing (Sovacool & Ratan, 2012). The question that arises here is how the process of scaling-up and diffusion can be managed. Next to emphasizing the importance of the robustness and quality of the niche itself, the literature suggests that a big part of the answer has to do with the niche's relational network.

First, to manage the scaling-up and acceptance of niches, they need to collect an effective group of actors who actively interact with each other. Important actors include innovative firms, supporting actors such as researchers, technical advisers, consultants, and unions (Caniëls and Romijn, 2008). This should mobilize resources and learning processes that contribute to knowledge and expertise on how to improve innovations as well as second-order learning in which actors critically reflect on the assumptions of regime systems (Kemp et al. 1998). Although this sounds promising, niches are seldom capable to diffuse and scale up by themselves in a way that may affect the regime (Hargreaves et al., 2013). It are the umbrella organisations, already discussed in section 2.1.4, that play a crucial role in helping to generate a shared institutional infrastructure and to support the development of the niche in question (Hargreaves et al., 2013). Umbrella organisations are in a good position to create a relational framework by connecting innovative local projects with one another. Through this they are able to identify common issues and problems encountered across multiple local projects and support niche development and diffusion by sharing this knowledge more widely, helping subsequent projects

to benefit from the accumulated experience (Hargreaves et al. 2013 p.1). Warbroek et al. (2018 p.8, 9) discuss two other important activities that umbrella organisations fulfill in further developing a niche. First, brokering activities involve bringing relevant actors into the innovation network; maintaining their commitment and interest; and safeguarding a degree of openness of the innovation network to other interests. Second, configuring activities are about prioritizing the expectations, goals, and form of the project itself as well as those of other stakeholders (Stewart & Hyysalo, 2008). Besides, to increase the acceptance of LEI niches and expand the impact beyond their local context, umbrella organisations may engage in framing and coordinating. This includes influencing decision-making arenas in favour of LEIs and the provision of guidance, advice, and templates (Warbroek et al. 2018 p.9). Furthermore, Hargreaves et al. (2013) argue that in this role, umbrella organisations provide face-to-face mentoring and training workshops to build capabilities and confidence. An overview of the roles of umbrella organisations in SNM can be found in table 4 below.

Table 4. The roles of umbrella organisations in strategic niche management (Warbroek et al, 2018).

Relevant support required by LEIs	Associated roles from literature	Activities
Building capacities and embedding into community	Facilitating	Distributing financial, technical, institutional, knowledge resources, providing advice, building capacity, and skills.
	Aggregation of knowledge	Developing toolkits, handbooks, and templates, and distributing these.
Alleviating barriers within the status quo	Brokering	Advocacy, negotiation with other parties, lobbying, engaging with policy makers, introducing new actor configurations, and embedding in current policy frameworks. Identifying and challenging institutionalized practices.
	Creating institutional infrastructure	Setting up a supportive environment in which local initiatives are embedded and integrated, and which governs interactions and activities.
Opening up the system for the uptake, acceptance or breakthrough of LEIs	Configuring	Prioritizing or shaping certain uses of the technology, developing new (business) models, and engaging in pilots.
	Framing and coordinating	Framing discourses and debates, and coordinating between actors in decision-making processes.

The question is whether the RES programme is able to fulfill some of these roles assigned to umbrella organisations in the literature. Is the RES for example able to provide financial, technical, institutional, and knowledge resources towards LEIs, or can it function as a bridge between levels, alleviating barriers towards other parties and policymakers? In the end, from a transition perspective, it is important whether the RES is able to open up the current energy regime towards the uptake, acceptance, or breakthroughs of LEIs. However, there is also the possibility that the RES itself is not in place to fulfill such roles, but is rather able to create a supportive environment to stimulate and help umbrella organisations to be able to perform these important roles in strategic niche management. Before investigating these questions, it is important to understand the RES and position it within a governance perspective.

2.4 Understanding the RES from a governance perspective

The Regional Energy Strategies of the 30 Dutch energy regions act as a guide for the spatial implementation of renewable sources of energy. Through the RES, local authorities, in close collaboration with citizens, should be better able to distinguish potential sites for such energy initiatives. Next to involving citizens, the strategies are developed together with municipalities, provinces, water boards, and organisations from the energy sector (Rijksoverheid, 2019b). Every region has its own unique RES, essentially consisting of the current, future, and potential renewable energy projects of the region. Offshore renewable energy projects are not included in the RES. Following research and analyses from HIER (2021), it turned out that almost all RES regions strive towards 50% local ownership of the production of energy and aim to further elaborate this in the updated version of the RES. Furthermore, the number of citizens from LEIs who are involved in the RES by means of having a seat in RES-related meetings and councils is rising.

The RES programme is divided into several stages. The concept RES, submitted in 2020, mainly served as a draft and included the provisional strategies of the 30 regions. The RES 1.0, submitted in 2021, expanded and elaborated the concept RES into a binding document between the region and the central government, obliging local authorities to implement the agreements into their local policy and spatial planning. In March 2023, the RES 1.0 needs to be further elaborated into the RES 2.0, including new insights and developments.

Following literature on regional governance, a region can be defined as an intermediate tier of government between the lowest, local tier, and national government, or like is the case with most of the Dutch RES regions, in between the local and provincial government levels (Hooghe et al. 2016). Andersen and Pierre (2010) and Jacobsen (2015) speak of regions in terms of deliberately designed and intentional structures as a means for collective actions to solve problems individual actors (in particular municipalities) cannot solve on their own (Hoppe & Miedema, 2020 p.6). Within academic literature, the desirability of regional governance as a separate level between the local and provincial levels is being discussed regularly. The main arguments in favor of regional governance revolve around the statement that they are good instruments to strengthen inter-municipal collaboration (Hoppe & Miedema, 2020). Following this line of thought, the RES regions are an example of so-called functional regions, implying obligatory collaboration between municipalities in a certain domain, in this case, energy policy (Boogers et al. 2016). Despite these advantages, regional governance is also being criticized for creating redundant difficult structures in which it is unclear who is actually responsible for which task, creating 'administrative fuss'. In the case of the RES, the division of responsibilities between municipalities, the RES region, and provinces might for example be blurred. Furthermore, regional approaches are being blamed for 'hollowing out' local governments, particularly in relation to democratic control of the executive power (Hoppe & Miedema, 2020).

Hoppe and Miedema (2020) state that a regional approach is particularly important in the energy transition, as wind and solar parks have implications for space and the environment that go beyond single municipal jurisdictions. This requires inter-municipal decision-making in order to prevent situations in which one municipality will obtain the benefits while the other suffers from unfair sharing of costs and benefits. Following this explanation, you could state that this role can also be taken by provinces. However, as Dobravec et al. (2021) state, provincial energy policy is often still too generic and overlooks the unique needs and differences between municipalities. Furthermore, provinces do not always have positive attitudes towards local civic carbon actions, such as LEIs, something which a functional region for renewable energy can support (Hoppe & Miedema, 2020).

2.4.1 Decentralization

Applying a regional strategy towards renewable energy, like the RES, may potentially benefit from the advantages related to decentralization. Decentralizing energy governance and policy has become a popular strategy as it has the potential to respond to the limitations of a central top-down regulated governance model. Decentralization, defined as the devolution of power and authority away from the center towards the locality, is supported by the assumption that local authorities are at an advantage in comparison to the central state when it comes to developing and delivering more proactive, integrated, and tailor-made approaches (Zuidema, 2016 p. 33).

Decentralization is considered to be an approach for problems with high complexity (e.g. the energy transition) recognized by interrelatedness between issues, power dispersal, and social fragmentation. Furthermore, there are uncertainties over how causes and effects relate to one another. In contrast, problems with limited complexity and a high degree of certainty benefit from a more central instrumental approach, as this is all about fulfilling predefined objectives as effectively and efficiently as possible (Zuidema, 2016 p.36).

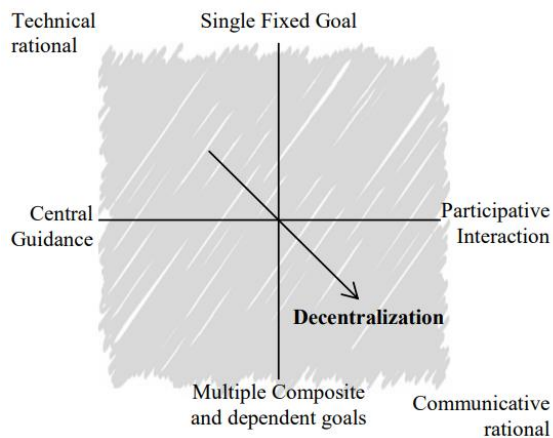


Figure 5. Decentralization visualized (Zuidema, 2016).

The idea of the RES is that it can implement a place-based strategy that is more tailored to the local circumstances. It can help decision-makers take advantage of more precise time- and place-specific knowledge about natural resources, something which is useful in stimulating local projects such as LEIs. Furthermore, The region should be in a good position to identify and respond to local relations between different policy issues and objectives and take account of the related interests and perspectives of the stakeholders involved, something which is problematic for central states. Besides, as the RES is closer to those affected by governance, it should promote higher participation and accountability, also potentially stimulating LEIs (Lemos & Agrawal 2006; Zuidema, 2016).

In order to harvest these advantages related to decentralization, skills in bargaining and communicating with key local stakeholders are important. It requires a different skillset, as it remains to be seen whether local authorities are willing and able to collaborate. The role of the central government is also important here, as it can provide financial tools and contracts, covenants, or voluntary agreements in order to exercise influence on the willingness to act and counteract possible local power imbalances (Zuidema, 2016).

All possible advantages of a regional (decentralized) approach towards LEIs discussed in this section can be found in table 5 on the next page.

Table 5. Advantages of a regional (decentralized) approach towards LEIs.

Argument for a (decentralized) regional approach	Advantage for LEIs
Being closer to local circumstances	Better able to distinguish potential sites for LEIs.
	Increase participation and accountability, and overcome social resistance through a bottom-up approach.
	Take advantage of more precise time- and place-specific knowledge about natural resources.
Being a deliberately designed functional structure	Better able to take account of the interests and perspectives of the local stakeholders involved.
	Having a specific energy policy, instead of being just a part of a generic policy framework.
Allow for inter-municipal collaboration	Actively increase collective action to solve problems individual municipalities cannot solve on their own.
	Sharing resources (e.g. knowledge, money).

2.4 Conceptual Framework

Figure 6 below shows the conceptual framework that will be used in this research. It shows us the relationship between the Dutch RES and LEIs. Hypothetically, the model assumes an influence from the RES on the emergence and success of LEIs. The ways in which the RES can facilitate this influence are identified from the literature and are categorized into three categories of activities, with each several types of support towards LEIs. The first category ‘regional governance’ includes the influence and activities that a functional region as applied in the RES can have on LEIs by being a decentralized unit, and therefore closer to the local context. The second category ‘institutional support’ includes promotional, facilitative, coordinative, and encouraging activities to stimulate LEIs which Warbroek & Hoppe (2017) categorize as an ‘enabling mode of governance’, but also regulations and policies related to an ‘authoritative mode of governance’ (Wade et al., 2013). Finally, the third category ‘networking activities’ includes stimulating the relational network between all stakeholders that relate to LEIs, including other similar initiatives. An overview of each category and an explanation of each type of support can be found in table 6. This table will be used as a tool of research to analyse the empirical data.

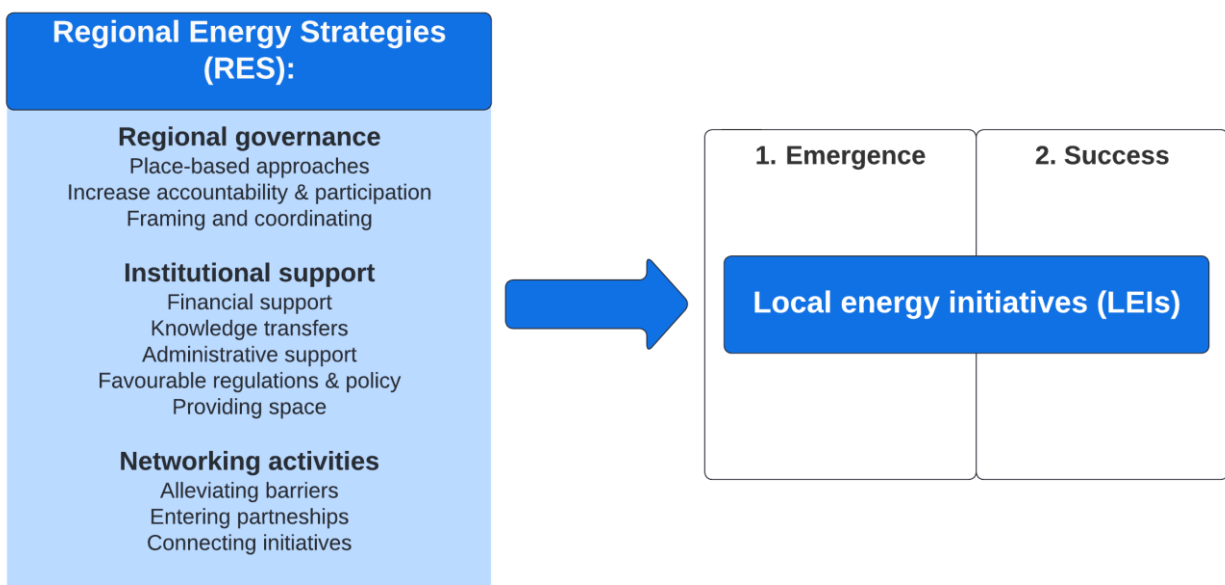


Figure 6. Conceptual model. Developed by author.

Table 6. Types of support from the RES towards LEIs identified from the literature.

Category	Type of support	Explanation
Regional governance	Place-based approaches	Accommodate tailor-made approaches based on local circumstances.
	Increase accountability & participation	Being closer to those affected by governance, therefore promoting higher participation and accountability, potentially stimulating LEIs.
	Framing and coordinating	Shaping expectations about the role of LEIs in the wider energy transition and having LEIs as a policy goal. Furthermore, influencing decision-making arenas in favour of LEIs.
Institutional support	Financial support	E.g. subsidies, tax advantages, starting capital.
	Knowledge transfers	Aggregate experiences and lessons learned in formats such as handbooks, toolkits, platforms, guidelines, or common templates (e.g. for subsidy application). Furthermore, provide skills through training workshops, meetings, and face-to-face mentoring.
	Administrative support	Providing support in administrative tasks such as assisting in permit procedures and other legal processes.
	Favourable regulations & policy	Provide favourable and flexible permitting towards LEIs. Furthermore, policy should be consistent and accessible, preventing administrative fuzz.
	Providing space	Provide space in the zoning plan or RES for LEIs.
Networking activities	Alleviating barriers	Alleviating barriers towards other parties and policymakers. This should create a relational framework, enhancing collaboration between LEIs, governments, umbrella organisations, and other organisations.
	Entering partnerships	Entering partnerships with LEIs to support them and enable joint learning.
	Connecting initiatives	Connecting LEIs, creating knowledge spill overs and networking channels to help subsequent projects to benefit from accumulated experience.

3. Methods

3.1 Research Design

In order to identify how the RES can contribute to the emergence and success of LEIs, this research uses a qualitative approach. Qualitative research can be defined as the type of research that finds out about people's experiences (Silverman, 2020). Among others, qualitative research includes analysing data from interviews and written documents (Patton, 2005). Through this, one of its major strengths is to identify the underlying processes by which events and actions take place. Furthermore, it allows the researcher to study and understand the particular context in which participants act and how this has influenced their actions (Maxwell, 2008). These are two strengths that are useful to discover how the RES can contribute to the emergence and success of LEIs. First, the RES is a relatively new phenomenon consisting of a lot of complex patterns, procedures, and processes that are behind reaching the 35 TWh goal. To understand these, the experiences of the people involved are crucial. As they are interacting with the context on a daily basis, they have a good view on what stimulants towards LEIs there are, how they work, and whether they contribute to the emergence and success of the initiatives. Second, the RES-related policy documents are full of ambitions and positivism related to stimulating and facilitating LEIs. However, they do remain abstract on the implementation of this. Observations and opinions of key actors involved are therefore useful to see if and how this works in practice.

This qualitative research approach consists of two aspects: a policy document analysis (see 3.3.1) and semi-structured interviews with key actors involved (see 3.3.2). The analysis of RES-related policy documents aims to identify how the RES aims to contribute to the emergence and success of LEIs. After this, semi-structured interviews are conducted with key actors involved in both the RES and LEIs to see how this is reflected in practice. By using multiple data collection methods, the research results are strengthened and more in-depth insights can be provided (Clifford, et al., 2016). This leads to triangulation of the data, referring to the use of multiple methods in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999).

The empirical study is executed on three RES regions that can be considered frontrunning in relation to LEIs. These form the basis of a comparative case study. The regions are Friesland, Groningen and Noord-Holland Zuid. The choice for these regions is based on data from the Lokale Energie Monitor 2021, which will be discussed further in the next section. A comparative case study allows us to identify patterns in the energy strategies. Through this, policy and governance arrangements that contribute to the emergence and success of LEIs can be identified. This is in line with literature on comparative case studies, which state that it is particularly useful for understanding which factors influence the success of a programme, and how better to tailor these to the specific context to achieve the intended outcomes (Goodrick, 2014).

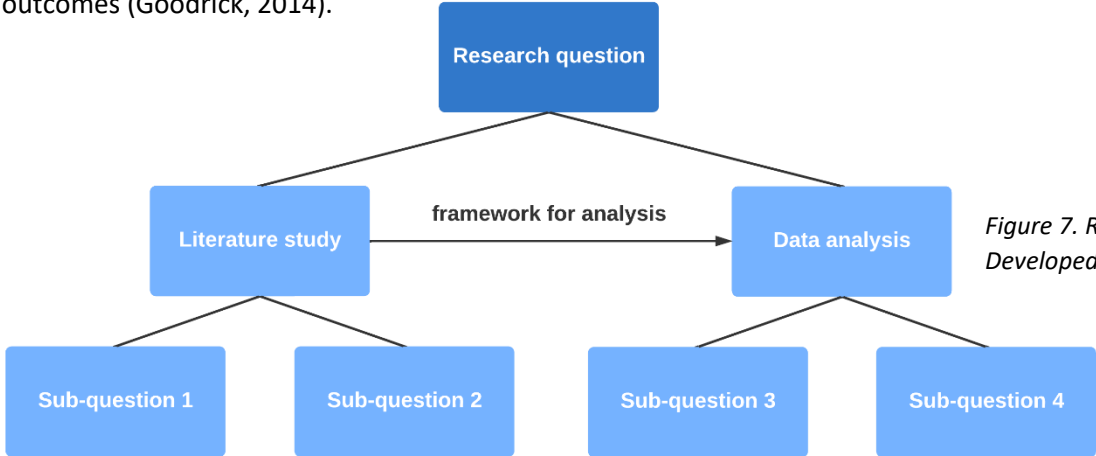


Figure 7. Research outline. Developed by author.

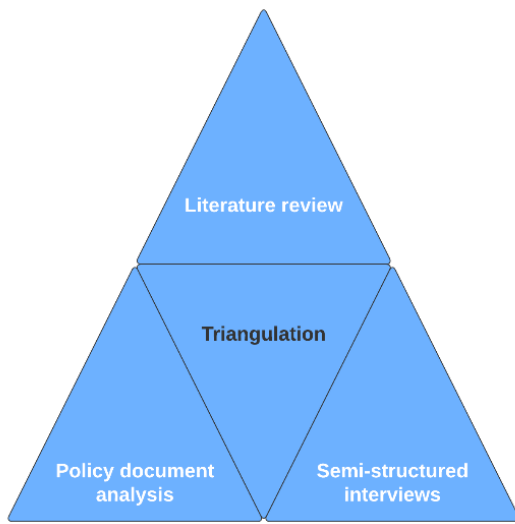


Figure 8. Triangulation in the research. Developed by author.

3.2 Case selection

The Netherlands holds a total of 30 energy regions with each their own regional energy strategy. In order to select three regions that are front-running when it comes to LEIs, this research used data from the Lokale Energie Monitor 2021 (Local Energy Monitor). This is a report which monitors the number of LEIs, their appearance, and their activities. It is a collaboration between the climate foundation HIER and the government (Hier, 2021).

First, to select three regions, the number of LEIs in each region was looked at (figure 9). The data shows that the RES regions Friesland (73), Noord-Holland Zuid (61), and Groningen (54) have the most initiatives situated in their region. Although the number of initiatives in a region does give us some information on whether regions are front-running when it comes to LEIS, the number of citizens within each region significantly differs from one another. This is important, as citizens are the ones who can start an initiative. Therefore, the number of initiatives within each region is corrected for their number of inhabitants. This resulted in figure 10, which shows us the number of LEIs per million inhabitants. When analysing this figure, it shows again that Friesland (113), Noord-Holland Zuid (92), and Groningen (68) have the highest number of LEIs. Therefore, the choice was made to proceed with the RES regions Friesland, Noord-Holland Zuid, and Groningen as cases.

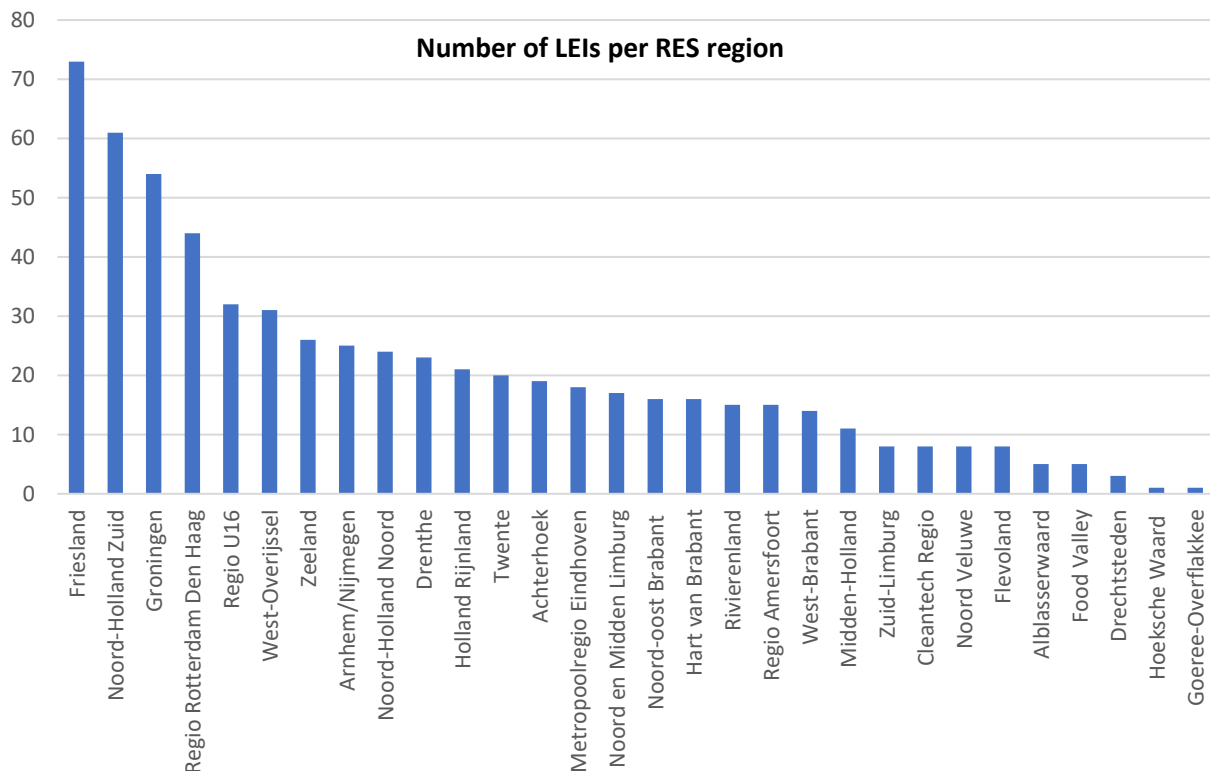


Figure 9. Number of LEIs per RES region (HIER, 2021). Edited by author.

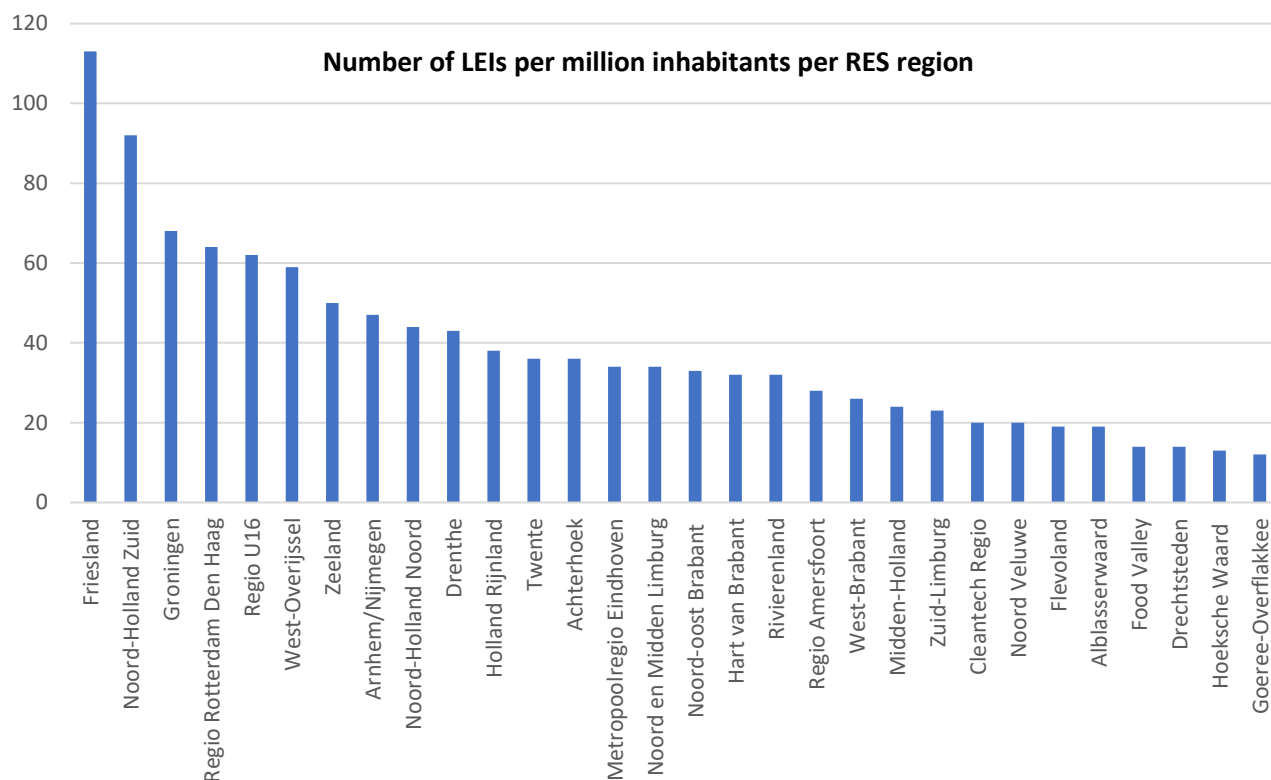


Figure 10. Number of LEIs per million inhabitants per RES region (HIER, 2021). Edited by author.

3.2.1 RES region Groningen

Geographically, the RES region Groningen corresponds with the border of the Province of Groningen. Next to the province, the region includes 10 municipalities and 2 water boards. The region has quite a history when it comes to (renewable) energy. It is home to the biggest natural gas field in Europe, which produces a lot of controversy due to the local earthquakes it causes. In the early nineties, the first wind big turbines already emerged, after which several areas were appointed for wind energy. Recently, the number of solar PV initiatives also increased significantly over a short period of time. Within their RES 1.0, local ownership and LEIs are listed as one of their main themes under the title 'Further Together' (RES Groningen, 2021).

3.2.2 RES region Noord-Holland Zuid

The RES region Noord-Holland Zuid is the most densely populated region of the Netherlands, with the capital Amsterdam as the central point. The region is divided into six sub-regions, each with its own plan for the generation of renewable energy. Although space is scarce in the region, Noord-Holland Zuid appointed 32 potential areas for the generation of wind and solar PV energy. Next to this, the region states in their RES 1.0 that all stakeholders will commit themselves to strive for 50% local ownership of energy initiatives. Noord-Holland Zuid believes that LEIs are crucial in the energy transition, for example by increasing awareness and support among society and communities (RES Noord-Holland Zuid).

3.2.3 RES region Friesland

Similar to the Groningen region, RES region Friesland corresponds with its provincial borders. The region holds the highest number of LEIs and performs well when it comes to renewable energy generation. The region for example has an above-average installed capacity of solar PV energy when compared to other regions. Friesland has rather favourable conditions for the empowerment of LEIs. The province sees LEIs as one way to spur regional development and augment liveability. Moreover, Fryslân has a long cultural tradition of (endogenous) local community empowerment and entrepreneurship (which favours the establishment and presence of LEIs) (Warbroek et al. 2018 p.11).

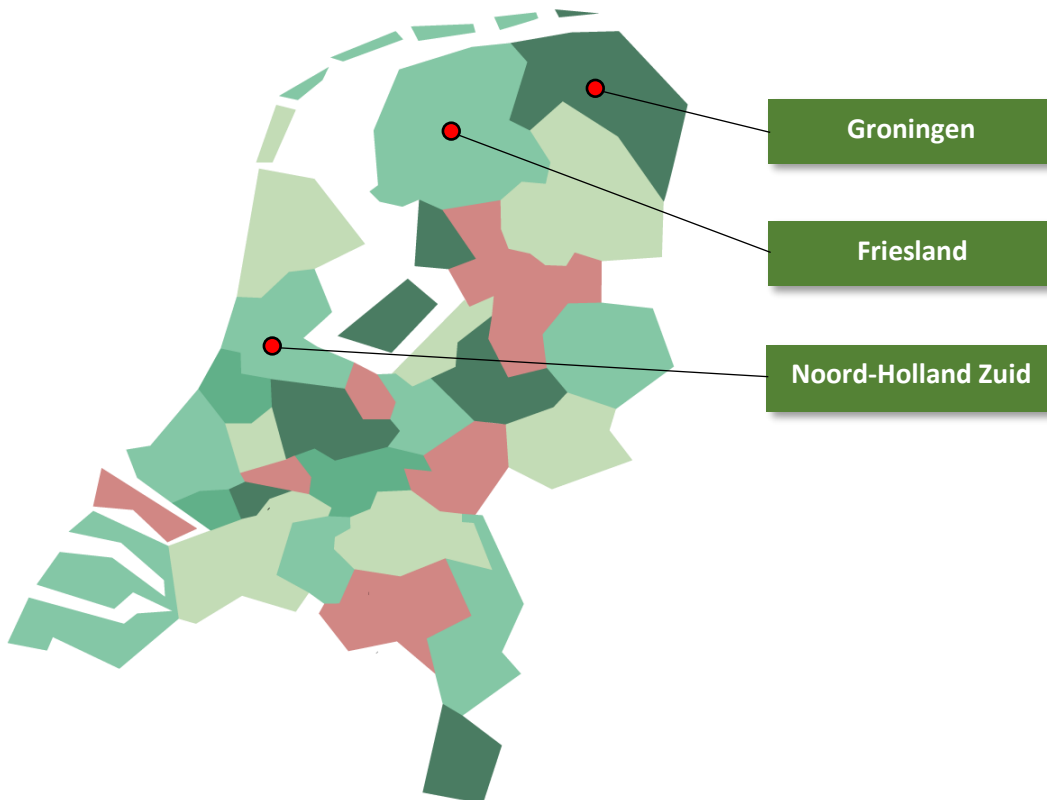


Figure 11. The Dutch RES regions (RES, 2021). Edited by author.

3.3 Methods of data collection

As stated in section 3.1, multiple data collection methods are applied to conduct the empirical study. This includes the analysis of grey literature in the form of RES-related policy documents and semi-structured interviews held with key actors involved in the RES programme and LEIs. Both will be discussed here, after which the methods that were used to analyse the data will be explained.

3.3.1 Policy documents

First, as secondary data, the RES 1.0 of the three regions will be analysed. These are the most up-to-date versions of the region's strategies towards renewable energy production and include new insights and developments from the first RES versions. These documents will be used to learn about the strategies, but more importantly, to identify to what degree the RES aims to contribute to the emergence and success of LEIs on forehand. Secondly, the monitor RES 1.0 will be analysed. This document gives insights into the current situation and the progress and developments of the RES as a

whole. Third, the Handreiking RES 2.0 will be researched which provides guidelines and goals for the RES 2.0 in 2023. This document comes with several worksheets that are provided with the goal to provide tools and knowledge on certain subjects. The worksheets ‘Werkblad Participatie’ and ‘Werkblad Lokaal Eigendom’ that are included will also be analysed to identify if there are any guidelines developed in relation to LEIs. Finally, the RES Groningen and Noord-Holland Zuid provided similar worksheets in addition to their RES, which are also investigated.

As a research method, policy document analysis is considered a useful technique as it is efficient, cost-effective, and manageable. Furthermore, policy documents are generally reliable, accurate, and factual (Cardno, 2018). All policy documents are obtained via the official website of the RES. The author is aware of the possibility that the RES 1.0 and the other RES-related documents might be biased. Each region wants to have a positive image towards the other regions and the outside world. Therefore, their efforts towards developing renewable energy as described in the RES might not fully correspond with reality. Furthermore, aspects in which the regions are lacking in relation to the energy transition might be avoided in the documents. All documents and their purpose can be found below.

Table 7. Analysed policy documents

Document title	Publishing date	Author	Purpose
1. RES 1.0 Groningen	01-07-2021	Stuurgroep RES Groningen	Providing a strategy for renewable energy production for the region.
2. RES 1.0 Friesland	01-07-2021	Regiegroep RES Fryslân	Providing a strategy for renewable energy production for the region.
3. RES 1.0 Noord-Holland Zuid	01-07-2021	Stuurgroep RES Noord-Holland Zuid	Providing a strategy for renewable energy production for the region.
4. Monitor RES 1.0	09-12-2021	Planbureau voor de Leefomgeving	Monitoring the current state of affairs and progress of the RES 1.0.
5. Handreiking RES 2.0	01-10-2021	Nationaal Programma Regionale Energiestrategie	Providing guidelines and structure for the development of the RES 2.0.
6. Werkblad Participatie	01-10-2021	Nationaal Programma Regionale Energiestrategie	Providing guidelines to increase public participation in the RES.
7. Werkblad Lokaal Eigendom	01-10-2021	Nationaal Programma Regionale Energiestrategie	Providing guidelines to increase local ownership in the RES.
8. Methodeboek Lokaal Eigendom	12-02-2021	RES Groningen	Providing guidelines to increase local ownership in the RES Groningen.
9. Lokaal eigendom in de praktijk	01-02-2021	Participatiecoalitie Noord-Holland	Providing guidelines to increase local ownership in the RES Noord-Holland Noord and Zuid

3.3.2 Semi-structured interviews

Primary data is collected by means of semi-structured interviews. These are held with both key actors involved in the RES and LEIs. The latter mostly includes people from energy cooperatives or umbrella organisations. By interviewing people from public and private sides, both perspectives are covered which prevents the data from being one-sided. Next to this, an interview was conducted with a researcher from the Dutch Environmental Assessment Agency (PBL) who is responsible for monitoring the RES. All interviewees can be found in table 8 below.

Key actors in this research are considered to be people in leading roles within either the RES or related to LEIs. The participants were searched for via the social platform LinkedIn and selected based on their occupation. Through this, a shortlist was developed with potential participants who were then also contacted via LinkedIn. If someone was willing to participate, an appointment for the interview was made. This included both interviews in-person and online, depending on the preference of the interviewee. All interviews took approximately one hour. The interview questions were asked in Dutch and can be found in appendix 1.

Although a list of predetermined questions is prepared, semi-structured interviews allow interviews in a conversational manner, offering participants the chance to explore issues they feel are important (Clifford, et al., 2016). These interviewee-specific views on the cases are important for this research since the interviewees have different functions, with each different opinions, emotions, and insights. Therefore, the interviews need to be flexible. Every interview was recorded and transcribed afterward using the Trint transcribing software. After this, the transcript was adjusted into logical sentences and unnecessary parts like small talk and introductions were removed.

Table 8. List of interviewees

Interviewee	Organisation(s)	Occupation(s)	Date of interview
1. Respondent G-1	Zon op alle Zaken	Director	27-05-2022
	RES Groningen (advisory)	Advisor local ownership	
2. Respondent G-2	Grunneger Power	Director, lead link, project development & management	30-05-2022
3. Respondent F-1	Fries Sociaal Planbureau	Director	25-05-2022
	Friese Energie Koepel	Chairman	
4. Respondent F-2	Doarpswurk	Coordinator sustainable villages	02-06-2022
5. Respondent NHZ-1	Energie Samen	Director	24-05-2022
	RES Noord-Holland Zuid	Representative of energy cooperatives	
6. Respondent NHZ-2	Amsterdam Wind	Project manager	02-06-2022
	Amsterdam Energie	Developer	
7. Respondent PBL	Planbureau voor de Leefomgeving	Senior researcher	20-05-2022

* G= Groningen F= Friesland NHZ= Noord-Holland Zuid PBL= Planbureau voor de Leefomgeving

3.4 Methods of data analysis

The RES-related policy documents and transcripts of the interviews are analysed using Atlas.ti coding software. This is done on the basis of the types of support from the RES towards LEIs as described in table 6. Each category and sub-category from this table is imported into Atlas.ti as a code label. This resulted in the coding tree below.

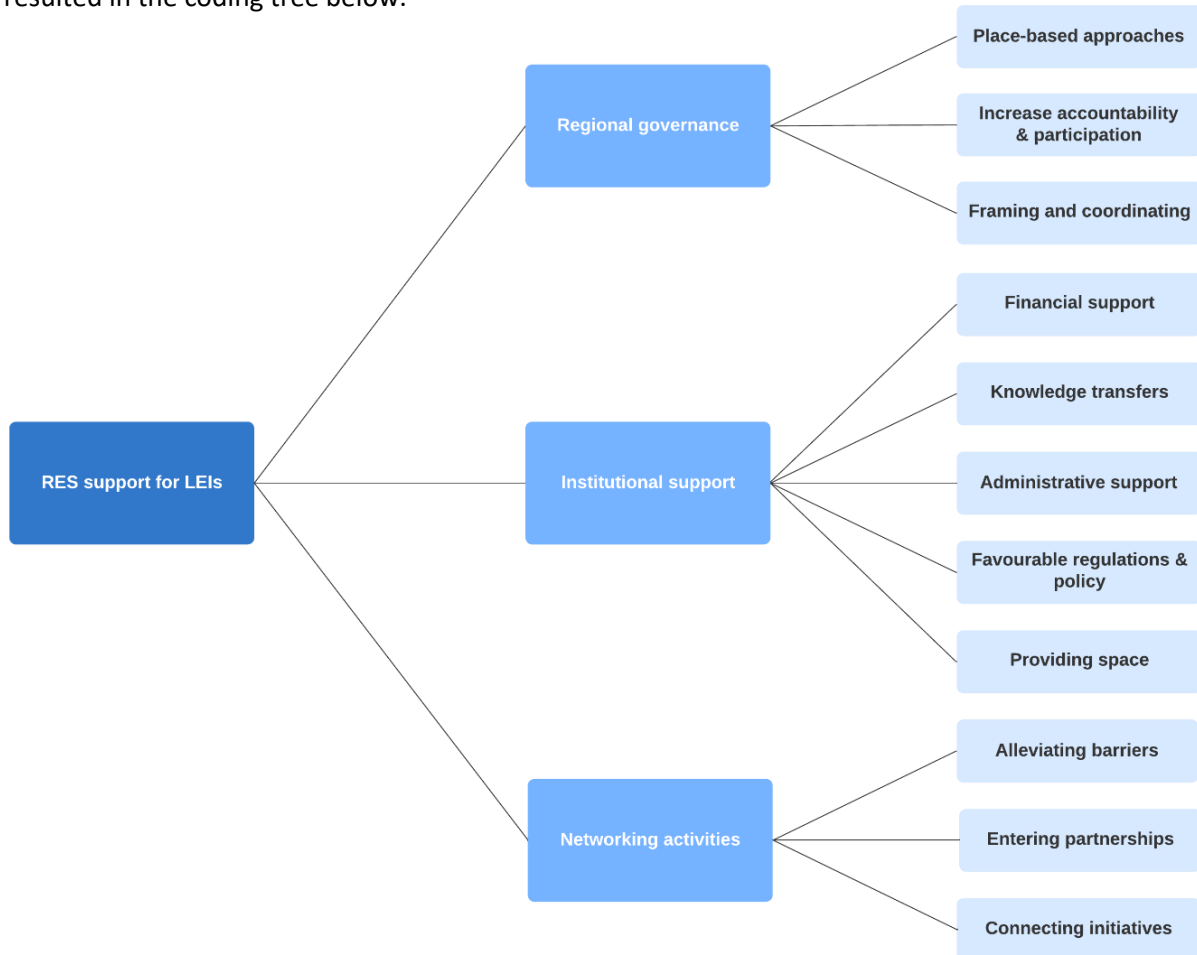


Figure 12. Coding tree. Developed by author.

A code label was assigned to the text when a type of support from the RES towards LEIs was identified and corresponded with a code from the coding tree and the associated description in table 6. For example, the screenshot below shows an interviewee answering a question about whether the RES plays a role in connecting LEIs with one another. The answer, stating that umbrella organisations are important here, is then coded with the code label 'connect initiatives'. When all documents are coded, each type of support can then systematically be analysed and compared to see whether there are patterns, differences, or other interesting observations. This was done per document type. First, the policy documents to analyse how the RES aims to contribute to the emergence and success of LEIs, then the interview transcripts to see how the RES contributes to the emergence and success of LEIs in practice.

Jesse	Speelt de RES Noord-Holland Zuid ook een rol in het verbinden van lokale initiatieven met elkaar?	
Q	Energie Samen, wat eigenlijk meer een cooperatie van coöperaties is speelt daar een grote rol in, de RES zelf niet zo. Coöperaties weten elkaar over het algemeen ook wel goed te vinden. Die hebben dat eigenlijk niet nodig, daar nog in gefaciliteerd te worden.	<div style="border: 1px solid #ccc; padding: 2px; background-color: #f0f0f0;"> 16:15 E... Connect initiatives </div>

Figure 13. Coding in Atlas.ti. Developed by author.

Finally, after the analysis was conducted and the results were complete, every category and the corresponding types of support as listed in table 6 were rated by the degree to which the RES provides this type of support to LEIs. The scoring is done on the basis of four categories:

1. None: when the RES does not provide this type of support towards LEIs
2. Some: when the RES does provide some of this type of support towards LEIs
3. Reasonable: when the RES provides a reasonable amount of this type of support towards LEIs
4. High: when the RES provides a high amount of this type of support towards LEIs

These categories are translated into the colour scheme below, which is applied to the types of support at the end of each section.

Table 9. Grading system by colour (developed by author).

Legend			
None of this support is provided	Some of this support is provided	A reasonable amount of this support is provided	A high amount of this support is provided

3.5 Ethical considerations

In order to act ethically, the participants were informed in advance about the intentions, objectives, and the data processing of this research. Next to this, they were formally asked if the interviews could be recorded. Afterward, every interviewee signed a document confirming they are aware of the use of the interview and the data processing. The elaborated transcripts were sent back to the respondents so that they could review their given answers in order to make sure no harm is done. They were informed about their rights to change factual inaccuracies and remain anonymous.

Some ethical considerations about the quality of the data include that the participants were possibly not willing to share everything due to political interests or answers that could lead to disagreements between involved stakeholders. Next to this, the respondents could have an interest to promote the sustainable character of the region to the outside world. This may have led to biased responses concerning the quality of the RES.

4. Results

In this chapter, the results are presented from applying the framework for analysis of table 6 on the RES-related policy documents and the transcripts of the semi-structured interviews. The results will be presented per category and sub-category as listed in table 6. The main categories are regional governance, institutional support, and networking activities. For each category, the results on how the RES can contribute to the emergence and success of LEIs are discussed.

4.1 Regional governance

The category regional governance is about how a functional region as applied in the RES can contribute to the emergence and success of LEIs. For example, by being a decentralized unit and therefore closer situated to the local context. Before the results on the sub-categories *place-based approaches*, *increase accountability & participation*, and *framing and coordinating* will be presented, this section will go into some results on the RES as a mode of governance that came to the surface during the semi-structured interviews. These include reflections from experts on what the RES is in practice and what it can and can't do. These reflections are important for interpreting the rest of the results.

First, it is important to note that all interviewees mention the lacking authoritative power of the RES and the absence of a formal governance structure. Respondent G-1 for example states:

“The RES is not binding and also not an executive governmental organisation. It is more like a framework of agreements in which every region shows to the government: we are doing our part of the assignment. All municipalities, in turn, need to adjust their own policy to bring the RES agreements into practice.”

Respondent NHZ-2 also observes that the RES regions are an abstract phenomenon with little direct influence. She states that when implementing RES plans, you will encounter the same frameworks that were already there. Therefore, the RES won't solve everything (Respondent NHZ-2). Respondent F-1 would have preferred that the RES 1.0 came with an executive agency consisting of a team of experts who started to implement the RES agreements in a programmatic way:

“Now you have some civil servants working out small RES assignments, but the rest of the people just continue to work on the energy transition in a way they already did. The implementation of the RES is not that big.”

Respondent G-1 on the other hand prefers the RES the way it is. He states that you have to leave the implementation with the institutions in place that have always done it. Furthermore, there are already a lot of organisations whereby there is no need for another layer of governance (Respondent G-1).

Despite the criticism, the majority of the interviewees do think that the regional approach from the RES is a good way to approach the energy transition. Respondent PBL who monitored the RES 1.0 from every region for example states that most regions are positive about the approach. He states that the RES puts a lot of effort into bringing governments and other organisations together, creating some breathing space in the process. Respondent G-1 also thinks that the region is a suitable scale for collaborating:

“The implementation of the energy transition remains the responsibility of municipalities. However, the transition goes beyond municipal borders and can't be solved when we treat these as separate islands. Some municipalities have little space and a large challenge generating renewables, while some municipalities face exactly the opposite. Therefore you have to approach this from a higher level. Then the regional scale is suitable to delineate the collaboration.”

Respondent G-2 agrees with this and states that the RES forces people to think about the total challenge of the energy transition and make them aware of their responsibilities. In addition, Respondent F-2 states that the RES Friesland tries to facilitate municipalities in implementing RES agreements, for example, when it comes to stimulating LEIs:

“We don’t directly help these initiatives, but create the context through which municipalities can do this.”

4.1.1 Place-based approaches

As stated in section 2.4, the RES may potentially benefit from the advantages related to decentralization. These for example include the ability to accommodate tailor-made approaches based on local circumstances (Zuidema, 2016). However, the previous section showed that the RES regions lack authoritative power when it comes to implementing the strategies. Despite this, the rationale of being able to apply place-based approaches is frequently present in the RES-related policy documents. The RES 1.0 Friesland for example states that the search for suitable locations for renewable energy projects is based on the qualities of an area, also taking into account the possibilities for bottom-up initiatives such as LEIs. Similarly, the RES 1.0 Noord-Holland Zuid makes use of a so-called area passport in which an area and its potential for renewable energy generation are described. This also includes a description of the potential for participation and LEIs in the area.

Respondent PBL states that the RES with the region as scale is better able to make tailor-made approaches based on local circumstances. According to him, this is part of the rationale of the RES as every region has specific knowledge about its own area. He adds that the National Programme RES has left the creation of the regions and their boundaries to the decentralized governments themselves so that they were given the opportunity to determine what geographical delineation is suitable in their own context. Respondent F-1 likes the idea that every region can make its own bid based on the possibilities in the region:

“I don’t think it would have been a good idea when the national government would have demanded a certain amount of renewable generation from every region”.

She does however state that the RES tends to focus on large generation projects too much, while small initiatives such as LEIs make it possible for people to get involved in an abstract phenomenon. Finally, Respondent G-1 states that he thinks that the RES region is in theory better able to create place-based approaches compared to the national or provincial level. However, when it comes to participation in local initiatives, the region is not local enough and too abstract for the average citizen he states.

4.1.2 Increase accountability & participation

In section 2.4 it is also stated that the region should be in a good position to increase the participation of citizens in LEIs as it is closely situated to those affected by governance. However, as the implementation of the RES agreements is a responsibility of municipalities, the RES regions mainly stimulate these to increase the participation of citizens in LEIs. Following Respondent F-1, municipalities are also better able to stimulate the participation of citizens in local initiatives as they are the government body that is closest to the citizens and also have responsibility for the permit processes. Respondent G-1 adds to this by stating that the municipality is around the corner for most people, while the region is too abstract for citizens. Respondent NHZ-2 provides an example of this in the Noord-Holland Zuid region:

“When plans to develop wind turbines in an area became specific and reached the citizens, they were startled that such processes were already going on for several years. They never heard of the RES. So that the RES region would be closer to the citizen is not valid if you ask me.”

Respondent F-2 does state that the RES can force municipalities to arrange the participation of citizens in local initiatives in a better way and improve the context for participation. Following his line of thought, the most important thing that the RES can do is to lower the obstacles for citizens to participate in LEIs. However, he also states that in the end municipalities remain sovereign:

“We now have the situation where four municipalities determined that solar parks are not allowed anymore. Then there is little to participate in. As RES region you have little influence on this.”

Respondent NHZ-1 states that the participation of citizens in LEIs in Noord-Holland Zuid works out quite well. The fact that this is embedded in the RES has an enormous positive impact on the creation of energy cooperatives and their collaboration, he states. This shows that, although not binding, the agreements in the RES can certainly have an impact. Respondent NHZ-2 confirms this and states that although being reliant on municipal policy, the agreements in the RES certainly have political meaning.

Respondent G-1 would like to see that the RES regions elaborate their parts on the participation of citizens in initiatives more thoroughly, instead of just including an open-ended chapter. He observes several municipalities which experienced resistance from citizens because they were not actively included in the energy transition. Respondent G-2 does think that the RES stimulates municipalities to elaborate the participation of citizens in energy projects indirectly because it forces them to enter the dialogue with citizens. On the other hand, he also observes regularly that a lot of citizens are not willing to participate in energy initiatives at all.

The RES-related policy documents mainly just underline the importance of participation in LEIs. The worksheet ‘Werkblad Lokaal Eigendom’ for example states that participation in initiatives is not a goal in itself, but rather a way to create social acceptance and give people the chance to participate in the energy transition. However, detailed explanations on how the RES could stimulate participation are missing.

4.1.3 Framing and coordinating

When it comes to framing, the RES regions do a good job shaping expectations about the role of LEIs in the wider energy transition. Almost all analysed RES-related policy documents repeatedly mention the importance of local initiatives, local ownership, and participation. The RES 1.0 Noord-Holland Zuid for example states that local ownership and the participation of citizens in initiatives are crucial for creating societal awareness and acceptance, and lead to innovative forms of collaboration. Furthermore, the ‘Methodeboek Lokaal Eigendom’ developed for the RES Groningen sums up that participation of local citizens in initiatives is important because it: leads to a fair distribution of benefits and burdens (1), strengthens the local economy (2), lowers energy bills (3), stimulates other local initiatives (4), and increases liveability by investing the yields in the local environment (5). Finally, the ‘Leidraad Lokaal Eigendom’ from the RES Noord-Holland Zuid states that by participating in LEIs, the energy transition becomes an opportunity instead of a thread. It becomes something of the people instead of the government. Furthermore, people involved get more aware of their own energy consumption, wanting to do even more to mitigate it (Methodeboek Lokaal Eigendom).

Respondent G-2 reasons that the RES has put the importance of local ownership and participating in LEIs on the agenda. Similarly, Respondent F-1 sees that the thought of being responsible together for the energy transition has penetrated people’s minds through the RES. However, she still misses the

practical implementation. Respondent F-2 also observes that the RES increased attention to the importance of LEIs. He states that local initiatives are now really getting to be part of the policy framework, which is a recognition for people who are working on it for ten years. Finally, Respondent PBL believes that now the importance of LEIs is stressed, more clarity on how to organize this in policies should be created.

Naturally, the framing mentioned above also largely contributes to coordinating activities which include influencing decision-making arenas in favour of LEIs. Influencing decision-making arenas is an indirect influence for which the RES is a suitable structure. As described in section 4.1 on regional governance, the RES doesn't have much legal status or authoritative power. Therefore, the RES actively tries to influence municipalities and provinces to adapt LEIs into their policy frameworks. According to Respondent NHZ-1, the RES for example influences decision-making arenas through its steering committee. Here, they outline the main points and shape the collaboration between all the parties with the aim to influence municipal and provincial policy. Respondent F-2 states that the RES provides context and brings parties together, after which it is up to the individual parties to implement this.

The table below rates the types of support in this category.

Table 10. The extent to which the RES provides support towards LEIs related to regional governance.

Type of support	Explanation
Place-based approaches	The RES regions provide some descriptions of the potential for LEIs in the area.
Increase accountability & participation	The RES regions provide support to municipalities, as they are better in place to increase accountability and participation.
Framing and coordinating	The RES regions do a good job putting LEIs on the agenda and influencing decision-making arenas in favour of them.

Legend			
None of this support is provided	Some of this support is provided	A reasonable amount of this support is provided	A high amount of this support is provided

4.2 Institutional support

The second type of support included in the conceptual model and the framework for analysis that is applied to the data is institutional support. This category goes into several forms of institutional support that LEIs can receive from the RES. This includes *financial support, knowledge transfers, administrative support, favourable regulations & policy, and providing space.*

4.2.1 Financial support

When analysing the code labels '*Financial support*' that are applied on the RES 1.0 of the three case regions, the ambition to stimulate LEIs financially is frequently present. However, almost none of the financial stimulants are currently provided by the RES itself. Instead, the RES 1.0 documents are mainly referring to national, provincial, and municipal funds. The RES 1.0 Groningen for example states that

local initiatives can make use of the SDE subsidy, a subsidy fund of about 13 billion euros provided by the national government for the generation of renewable energy. Furthermore, it states that financial incentives are available through the municipalities in the region, but that these struggle with the related processes due to a shortage of labour force. The RES 1.0 Noord-Holland Zuid also puts the responsibility for financial support with the national government. They even make a call to the government to adjust policy in a way that sustainable initiatives can actually be realised and receive support from appropriate financial measures. The actual financial incentives that are listed within the RES 1.0 of Noord-Holland Zuid are loans from the municipality of Amsterdam to people that want to set up an LEI. At the end of the document, the Noord-Holland Zuid region states that they are developing an implementation plan for the RES 2.0. An important subject within this plan will be an analysis of the opportunities to support LEIs financially through the RES. The RES 1.0 of Friesland does not really say something about supporting LEIs financially.

When looking at the other policy documents apart from the RES 1.0, similar results can be observed. The worksheets 'Werkblad Lokaal Eigendom', 'Werkblad Participatie', and 'Leidraad Lokaal Eigendom' mainly emphasize that financial support should be provided by provinces and municipalities. For example, the 'Werkblad Lokaal Eigendom' does come with an implementation strategy for stimulating LEIs. Here it stimulates provinces and municipalities to support LEIs financially, but direct financial stimulants from the RES are not discussed. Similarly, the 'Leidraad Lokaal Eigendom' from the RES Noord-Holland Zuid asks provinces and municipalities to give money to LEIs for the professionalization of their organisation. The same goes for the 'Methodeboek Lokaal Eigendom' from RES region Groningen, although this document does state that there is a need for a revolving fund for the pre-financing of LEIs at the regional level to relieve the pressure on municipalities. The Monitor RES 1.0 also observes little financial support from the RES itself but does state that the RES can have an influence on financial arrangements provided by other governments. For example, the old 'postcoderoosregeling' in which citizens could financially participate in LEIs is now replaced with the 'Subsidieregeling Cooperatieve Energieopwekking'. While the essence of this new subsidy is the same, it is a lot more flexible and easy to access, making it more attractive for citizens to participate in LEIs. This is an arrangement that is supported and discussed by the RES. Next to this, the monitor does say that in the future, there are some regions that want to grant financial support to LEIs.

Respondent PBL states that stimulating LEIs financially remains a difficult process:

"A wind turbine can easily cost a couple of million euros which are enormous amounts of money for citizens. Putting in five thousand euros is already a big deal to them."

Respondent G-2 adds to this by stating that LEIs, just like commercial developers, need to obtain a loan from the bank for the development of a small solar park, even if subsidies are available. He believes that this system only stimulates big commercial developers as the bank asks for certainties that can be guaranteed by large developers but not by local initiatives. Therefore, Respondent NHZ-1 and Respondent F-1 rather see that the RES provides financial means for LEIs to professionalize themselves and pay volunteers a salary. Respondent NHZ-1 adds that you can't ask local citizens to be responsible for million euro projects on a voluntary basis.

All interviewees do underline the fact that most financial support is provided at the municipal and provincial levels. Respondent NHZ-1 does however state that there is some money available from the National Programme RES to stimulate umbrella organisations to support LEIs. Next to this, Respondent F-2 states that in Friesland financial means themselves are not provided through the RES region, but

that it tries to invent certain instruments when financial gaps are observed. Besides, financial support towards LEIs from provinces and municipalities is actively stimulated by the RES Friesland.

Finally, all interviewees underline that subsidy schemes and financial incentives differ significantly across provinces, regions, and municipalities. This makes it confusing and inefficient. Respondent NHZ-2, therefore, thinks that it would be a good idea to get more financial means available through the RES regions:

“If you have a municipality that has fewer subsidies available for local initiatives, initiating one will get difficult. If the RES region would provide this, initiatives will be less dependent on municipalities.”

Respondent G-2 also finds the idea of financial support from the RES regions interesting:

“It is a little bit of putting your money where your mouth is.”

However, he also states that the RES could make sure that the institutions that are already in place for this can be better utilized and provide better coordination instead of starting another point for funding.

4.2.2 Knowledge transfers

When analysing the code labels containing ‘*knowledge transfers*’, it could be stated that the RES regions do a good job when it comes to providing these towards LEIs. The monitor RES 1.0 for example observes that a lot of RES regions developed instruments like handbooks, toolkits, or guidelines. However, the majority of these are not direct knowledge transfers towards citizens who are participating or want to participate in an LEI but are rather knowledge transfers towards municipalities on how to organize and facilitate LEIs. It is up to the municipalities to bring this into practice and process it into their policy.

The RES 1.0 Groningen for example developed the worksheet ‘Methodeboek Lokaal Eigendom en Participatie’. This worksheet aims to provide tools for local and regional directors, policymakers, and local initiatives. It for example provides methods for municipalities on how local initiatives can be supported and facilitated. Next to this, the worksheet also contains some useful information for starting an LEI. Especially the last chapter ‘developing for beginners’ provides some basic knowledge on several possible forms of LEIs, investment, risk, subsidies, land prices, and project cycles. The worksheet also repeatedly encourages municipalities to collaborate with umbrella organisations and stimulate these to provide direct knowledge and support to LEIs.

Similar to the worksheet of RES Groningen, the RES Noord-Holland Zuid developed the ‘Leidraad Lokaal Eigendom’. Again, this document focuses on municipalities and which roles they can perform to facilitate LEIs. An example is the role of the ‘stimulating municipality’, which should focus on the active sharing of knowledge by using experts who can help LEIs to develop their organisation or help with legal processes. In response to this document, some municipalities within the region even developed their own worksheet on local initiatives, which is more attuned to the local context of the municipality. Other knowledge transfers in the region Noord-Holland Zuid are executed through workshops and brainstorm sessions, ateliers, and the use of a community manager (RES Noord-Holland Zuid).

RES region Friesland is working on a programme to support LEIs. According to Respondent F-2 who is working on the programme, this mainly focuses on providing instruments that ensure that initiatives are owned and set up by local citizens. This resulted in a ten-step structure for organizing this process.

If you go through steps one to ten, the process should work out well. If you start at step seven and want to go to step one, you will have a problem. Then they will explain what is needed to proceed (Respondent F-2). Another part of the programme is the development of guidelines for facilitating LEIs. This part does explicitly aim to support facilitating organisations such as umbrella organisations or energy cooperatives:

“Train the trainer, that is what we do. We help them so that they can help the initiatives.”

Respondent PBL also underlines that when it comes to direct knowledge transfers towards LEIs, umbrella organisations play a big role:

“The RES regions focus on municipalities to embed it in their policy, but umbrella organisations like HIER opgewekt received money to focus on the local initiatives directly. These are really talking with citizen cooperatives.”

Next to the knowledge provided by the RES regions, knowledge is also provided via the National Program RES. For example through the worksheets ‘Werkblad Lokaal Eigendom’ and ‘Werkblad Participatie’ that came with the ‘Handreiking RES 2.0’. These worksheets mainly focus on how the participation of citizens in LEIs can be embedded in municipal and provincial policy. The ‘Werkblad Lokaal Eigendom’ for example contains a structured roadmap consisting of five main steps for developing a strategy in relation to LEIs: defining ambition (1), choosing a role (2), embedding in policy (3), implementation strategy (4), and the development of projects (5). To help provinces and municipalities in making choices on the different options within each step, the document also provides several decision trees. Furthermore, the worksheet refers to a lot of other websites, guidelines, and platforms where knowledge is situated.

Not all interviewees are satisfied with the fact that so much information is provided through a lot of different channels. Respondent NHZ-1 for example states that the fragmentation of knowledge is enormous. According to him, there are a lot of guidelines, worksheets, and the like which practically do the same. He also believes that providing direct knowledge towards LEIs is not always the way to go:

“People who want to set up an initiative are stubborn by definition, they want to do it in their own way anyway. Every initiative has its own level of expertise and its own dynamics. You have to let them invent the wheel themselves.”

Respondent G-2 adds to this by stating that we are currently drowning in toolkits and guidelines. He believes that it is good that the knowledge is being provided, but thinks that the idea that every citizen wants to develop an LEI is an illusion. Finally, Respondent F-1 emphasizes that the RES could play an important role in coordinating all the streams of information.

Besides guidelines, templates, worksheets, and toolkits, the RES also provides important knowledge by providing a holistic insight into all sorts of challenges and aspects of the energy transition. Respondent G-2 for example states that the RES does a great job in mapping the entire assignment, including warmth, solar, wind, gas, networks, supply, and demand. He states that:

“The RES might not have the authority but does have the knowledge and ability to make things insightful, that’s very important.”

Furthermore, when talking about knowledge transfers, he underlines the value of the creative and visual meetings organized by the RES. These help people from all sorts of organisations to be on the

same page and see the bigger picture. Next to providing such knowledge, the RES also works as a learning experience itself according to Respondent G-1:

“Within the RES region, there are municipalities that already know how to organize local ownership of energy projects but also municipalities who have no idea and the province is mostly somewhere in between. With the RES you combine all the knowledge and the frontrunners can take the stragglers with it.”

4.2.3 Administrative support

A large share of the administrative support that LEIs can receive from the RES regions is embedded into the structures and instruments discussed in the previous section on knowledge transfers. Again, this is mainly focused on stimulating municipalities to assist LEIs instead of assistance from the RES itself. For example in the ‘Werkblad Lokaal Eigendom’, where municipalities are stimulated to help local initiatives with administrative tasks. Similarly, the ‘Methodeboek Lokaal Eigendom’ from RES Groningen mentions the opportunity for municipalities to set up a service point to which LEIs can reach. Furthermore, the ‘Leidraad Lokaal Eigendom’ from RES region Noord-Holland Zuid states that municipalities should hire experts which can assist citizens that want to set up an LEI in for example setting up their legal structure, make their articles of association, or permit processes. From these policy documents, it could be stated that the RES stimulates administrative support but municipalities are completely free to implement it the way they want.

Interviewee Respondent NHZ-1 thinks that administrative support for local initiatives is still lacking. On the other hand, he does like that there are funds provided towards umbrella organisations to do this:

“Actually I prefer this instead of governmental assistance. By organising things from within the energy movement, you strengthen it and ensure that it learns and improves.”

Respondent G-1 confirms that this also happened in Groningen where umbrella organisation Grunneger Power received means from the municipality to assist LEIs. Respondent G-2 who is working at Grunneger Power states that such funds to do this are essential:

“Legal processes for a solar park can easily take half a year which quickly costs 40.000 euros.”

He also thinks that governments are not the ones who should provide assistance in permit procedures but should rather just monitor the process. They could however make the process easier for LEIs. Respondent F-2 states that the RES Friesland tries to centralize all the administrative support there is from for example umbrella organisations and attempts to align this with the legal processes. Respondent F-1 would like to see that the RES organizes some accelerators so that initiatives can get off the ground. She thinks that the RES should remove barriers that are faced by local initiatives as permit procedures are for example still not tuned to local initiatives.

4.2.4 Favourable regulations & policy

As the RES is no authority and has no ability to change regulations and policy directly, it can practically only stimulate other governments to do this. Both the RES 1.0 Friesland and RES 1.0 Noord-Holland Zuid for example ask the national government to change policy and regulations in a way that sustainable local initiatives can be realized more easily. Furthermore, all worksheets and guideline policy documents try to stimulate provinces and municipalities by describing several ways in which LEIs

could be facilitated through regulations and policy. The 'Werkblad Lokaal Eigendom' for example states that it is important for municipalities and provinces to use social procurement. With this governments actively take control by selecting developers through an assessment of which local ownership could be a criterion. Case law shows us that municipalities and provinces can include local ownership and participation in the assessment of the acceptability of a renewable energy project. If the initiators deliver insufficient effort on these criteria, it can be a reason to refuse permission (Werkblad Lokaal Eigendom). The municipality of Groningen for example chose to exclude commercial developers which are not willing to develop Solar PV parks with 100% local ownership (Respondent G-1).

Respondent PBL states that on the RES-level ideas on how to stimulate LEIs like pursuing 50% local ownership as assessment criteria are frequently discussed, and also elaborated by several workgroups. However, despite some exceptions, this is mostly left to municipalities to elaborate on this themselves. Respondent F-1 confirms this by stating that when it comes to facilitating favourable regulations and policy through the RES, administrative power is missing. Respondent G-2 would like to see that the RES actually has the power to pursue more favourable policies for local initiatives. He thinks that without including citizens, the government is not going to be able to manage the energy transition. Despite the absence of administrative power to change policy and regulations, Respondent NHZ-1 does believe that the RES has created momentum for the energy cooperatives:

"I must say, we have the wind at our backs."

Respondent F-2 states that it is important to create a balance between developers and citizens. With the RES Friesland, they try to create this through 'public-civil arrangements' in which citizen initiatives will be facilitated better:

"A local initiative that has to demonstrate that they have a private equity of 40 million euros before they can get a permit is not working. Therefore, we try to come up with public-civil arrangements and want to change policy."

Again, you need a municipality that will include this into their policy, the RES itself won't be enough.

Finally, respondent NHZ-2 does state that through the RES, cooperative Amsterdam Wind could develop a wind park. Because the RES appointed so-called 'search areas' for wind energy, the provincial and municipal policy changed:

"The RES was important for us because they provided a policy framework. In response, the municipality gave us a go to develop there."

4.2.5 Providing space

In the Netherlands, the municipality gives land-use permits for the development of renewable energy projects. Therefore, the RES itself cannot directly provide space for LEIs to develop. However, it can exert influence on municipalities to reserve space for LEIs. As stated in the previous section on favourable regulations and policy, the RES 1.0 appoints 'search areas' in which the opportunities for the generation of solar and wind energy are investigated. These areas are not binding, but provide a policy framework for municipalities to develop renewable energy here. Furthermore, these areas are not the result of top-down analysis, but of an extensive participation process (RES 1.0 Noord-Holland Zuid). To make sure that space within these search areas is utilized for LEIs, the 'Werkblad Lokaal Eigendom' advises municipalities to run a tight ship when developers want to create a larger solar or wind park, and just take a facilitative and flexible role when local citizens want to set up an LEI. Next

to this, the document also repeatedly stimulates municipalities to make their own space available for LEIs as this is an easy way in which local ownership can be created. Respondent NHZ-1 for example states that in their region the municipality of Hilversum provided a lot of space for local initiatives to develop.

Several interviewees give examples of municipalities where space is only provided when the project is owned by local citizens. Respondent G-1, for example, states that in the municipality of Groningen space for solar parks is only provided when the initiative is fully owned by local citizens. Similarly, Respondent F-2 states that in Friesland the spatial regulation has obliged 50% local ownership of initiatives before they can get the permit to develop there. Furthermore, respondent NHZ-2 states that the municipality of Amsterdam to a large extent only invites local initiators when it comes to the development of renewable energy projects on their self-owned space. These are good examples of municipalities that give substance to the policy ideas of the RES. Respondent NHZ-2 illustrates this by stating the following:

“The RES region said: we want to develop this amount of megawatt in these areas, subsequently this is executed via municipal trajectories such as the zoning plan.”

The table below rates the types of support in this category.

Table 11. The extent to which the RES provides support towards LEIs related to institutional support.

Type of support	Explanation
Financial support	The RES regions mainly refer to other funds for LEIs.
Knowledge transfers	The RES regions provide a lot of knowledge to other governments to stimulate LEIs. Furthermore, the RES itself works as a learning experience.
Administrative support	No administrative support is provided by the RES regions for LEIs. Municipalities and umbrella organizations are in place for this.
Favourable regulations & policy	The RES regions do not have the ability to change regulations & policies in favour of LEIs. However, they actively stimulate other organisations to do this.
Providing space	The RES regions cannot provide direct space towards LEIs. However, their search areas can work through in municipal plans. Furthermore, they stimulate municipalities to provide space.

Legend			
None of this support is provided	Some of this support is provided	A reasonable amount of this support is provided	A high amount of this support is provided

4.3 Networking activities

Networking activities are about connecting or partnering LEIs with governments, private parties, and other similar energy initiatives. This should create relational networks through which knowledge spillovers are created and mutual benefits can emerge due to co-production. This category includes *alleviating barriers, entering partnerships, and connecting initiatives*.

4.3.1 Alleviating barriers

Alleviating the barriers of LEIs towards other parties such as governments, umbrella organisations, and other organisations is an aspect on which the RES regions perform good. The RES for example hosts meetings in which provinces, municipalities, energy cooperatives, private companies, and citizens have a seat (RES Noord-Holland Zuid). Following the ‘Werkblad Lokaal Eigendom’ from the RES Groningen, such meetings are a good way to identify local opportunities together and start collaborations. Furthermore, umbrella organisations are actively stimulated to support local initiatives and advise citizens in managing their LEI.

Respondent NHZ-1 has a seat on the steering committee of the RES Noord-Holland Zuid on behalf of the energy cooperatives. Therefore, he also stands up for the interests of LEIs in the meetings. He believes that the RES contributes to connecting LEIs with other parties:

“This morning I attended a RES session where all stakeholders were present. It’s good to see that we’ve reached a point where the energy transition is discussed in an integrated way.”

Respondent F-1 reasons that the RES ensured that different parties are brought together, increasing the idea of being responsible for the energy transition together. Through this, municipalities actively started to embed the idea of local ownership. Furthermore, she states that ideas on developing a collaborative organisation are being developed which will be supported by the RES. This will stimulate collaboration between municipalities and citizen initiatives, she states.

Respondent G-2 thinks that the RES has the potential to ‘level the playing field’ between different parties:

“The RES can play a connecting role. I’ve attended a couple of sessions which were very interesting”

However, he also likes to see more direct involvement of energy cooperatives in the RES steering groups as they are currently only involved indirectly through umbrella organisations. Respondent F-2 states that the RES Friesland alleviates barriers for LEIs to collaborate with municipalities by creating the context to start this collaboration. Furthermore, he says that there is a working group for participation and local ownership in which umbrella organisations, municipalities, and energy cooperatives are included.

4.3.2 Entering partnerships

Direct partnerships between RES regions and LEIs are not observed. Probably this is due to the fact that the RES is little of an executive agency. Instead, the RES tries to stimulate other governments to enter partnerships with LEIs. The RES Noord-Holland Zuid for example states that for stimulating local initiatives, collaborating with energy cooperatives is essential. Furthermore, the Leidraad Lokaal

Eigendom from the RES Noord-Holland Zuid states that a close partnership between local initiatives and municipalities can lead to beautiful outcomes. This document formulates the following advice for partnerships with local initiatives:

“It is important for the municipality to have close contact with the initiative. Therefore, we advice to install an point of contact within the municipality which is also accessible for new initiatives. By having short lines of communication, initiatives and municipalities can strengthen each other.”

Finally, the ‘Werkblad Lokaal Eigendom’ describes the ‘developing role’ for municipalities in which it realizes local energy projects in collaboration with citizens.

Next to stimulating municipalities to enter partnerships with LEIs, the RES itself is actively collaborating with umbrella organisations that stand up for the interests of LEIs. In Friesland, the RES for example collaborates with umbrella organisation Ús Koöperaasje. Following Respondent F-1, this organisation has a lot of knowledge of LEIs and is involved in a plan from the RES Friesland about local ownership. Similarly, in Groningen, the ‘Groninger Energiekoepel’ is involved in the RES. Respondent G-1 states that if we want to facilitate LEIs, we can arrange this beautifully through the Groninger Energiekoepel:

“You just have to support them and all the energy cooperatives will benefit from this.”

Respondent NHZ-1 does not prefer direct partnerships between the RES and LEIs. He states that he rather wants to build structures in a bottom-up way, without too much governmental interference. He rather prefers a facilitative government with favourable policy frameworks for local initiatives.

4.3.3 Connecting initiatives

When analysing the data, it could be stated that the RES does play a role when it comes to connecting LEIs with each other. Respondent NHZ-1 for example states that the National Programme RES has given funds to stimulate collaboration between cooperatives. Respondent G-2 points to the fact that initiatives are often busy with their own project but will increasingly see what others do through the RES. Respondent F-2 also thinks that the RES has a role in connecting initiatives. He states that in Friesland initiatives are brought together by the RES and knowledge exchange is facilitated. However, he also underlines the importance of umbrella organisations in this process. Respondent PBL adds to this by stating that umbrella organisation HIER Opgewekt plays a prominent role in connecting LEIs. Finally, Respondent NHZ-2 states that already existing cooperatives are well able to connect to other cooperatives themselves, and don’t really need to be facilitated in this process.

The table below rates the types of support in this category.

Table 11. The extent to which the RES provides support towards LEIs related to networking activities.

Type of support	Explanation
Alleviating barriers	The RES regions bring LEIs, governments, and private parties together and remove obstacles to collaboration.
Entering partnerships	Partnerships between RES regions and LEIs are not observed.
Connecting initiatives	The RES provides means for umbrella organisations to do this.

Legend			
None of this support is provided	Some of this support is provided	A reasonable amount of this support is provided	A high amount of this support is provided

5. Discussion

This chapter will discuss the results that are presented in the previous chapter. The goal of this chapter is to interpret and explain the most important results, give them additional meaning, and link them to the literature. The discussion will be divided into four parts. First, the results of the RES as a governance model including its regional approach will be discussed. After this, we will go into the stimulants provided by the RES for LEIs. Third, results on the networking ability of the RES will be debated. Finally, we will interpret the results in relation to transition theory and strategic niche management specifically.

5.1 The RES as a Governance model

In the section on regional governance (4.1), the results show repeatedly critical notes from the interviewees on the lack of authoritative power from the RES. The RES has no legislative power to change policy and regulations and its content is not binding for other governments like provinces or municipalities. The implementation of the ambitions and agreements that are stated in the RES 1.0 documents therefore remain fully dependent on what provinces and municipalities are willing to do with it. In many instances, this leads to gap a between the ambition of the National Programme RES and the RES regions on the one hand, and the implementation of it by those who have the legislative authority for it on the other hand. This is perhaps mostly illustrated by the word ‘striving’ within the RES-related policy documents. The sentence ‘within the region, we are striving for 50% local ownership of renewable energy initiatives’ does for example leave a lot of space for municipalities in translating it into implementation. Considering this, it could be stated that the Dutch approach to the energy transition did not change that much with the appearance of the RES and that, as Respondent NHZ-2 stated, it still rests on the frameworks it already did. Besides, the amount of TWh of renewable generation that is offered by each region is largely the result of policy on wind and sun from years ago (Respondent G-2). While partly being true, the results however do show that the RES does certainly make an impact, with this research especially focusing on the emergence and success of LEIs.

If the RES is not a formal governance model, what is it then? Results on regional governance (section 4.1) and networking activities (4.3) show that the RES is more a means to bring governments, private organisations, and citizens together to collectively make agreements on how to approach the energy transition. By creating ‘a framework of agreements’ (Respondent G-1), the context will be established through which the implementation can take place. Naturally, this implementation largely depends on municipalities and provinces, but experience teaches us that the agreements made on the RES level are taken seriously and certainly have political weight (Respondent NHZ-2). Furthermore, the RES as an intentional structure to battle climate change forces governments and other organisations to think about the total challenge of the energy transition, and make them aware of their responsibilities (Respondent G-2). According to the literature, provinces for example often have a too generic policy to do this (Dobravec et al. 2021). Furthermore, the RES provides an overview of the total assignment for all those involved and makes the generation of renewable energy insightful. This helps people from all sorts of organisations to be on the same page and see the bigger picture, increasing the idea of being responsible for the energy transition together (Respondent F-1). This corresponds with literature from Hoppe & Miedema (2020 p.6) which states that a functional region is able to create positive attitudes towards renewable energy generation and solve problems that individual actors cannot solve on their own.

5.2 A regional approach

When it comes to the regional approach applied by the RES, the results are quite positive. The main argument provided by the interviewees in favour of the regional approach includes the collaboration between municipalities it results in. Following Respondent G-1, this is important as the energy transition goes beyond municipal borders and the assignment for generating renewables differs significantly between municipalities. This is in line with the article from Hoppe and Miedema (2020) who state that regional governance is a good instrument to strengthen inter-municipal collaboration and that for example wind and solar parks have spatial implications that go beyond municipal jurisdictions.

Besides the advantage of stimulating collaboration between municipalities, the literature also criticizes regional governance for creating difficult structures in which it is unclear who is actually responsible for which task (Hoppe and Miedema, 2020). This is also something shown in the results (e.g. section 4.1), where a large share of the respondents found it difficult to put a finger on what the direct tasks of the RES region are in the energy transition and which abilities it has. Furthermore, they are critical of the 'administrative fuzz' the RES sometimes creates.

Finally, following literature on decentralization (Zuidema, 2016), regional governance should lead to place-based approaches because it is closely situated to the local context. Observing the results, it can be stated that this is not entirely true for the RES regions. While it does show us that the RES regions develop region-specific analyses of their qualities and potential for renewable energy generation, the implementation of it remains a responsibility of the municipality. The same accounts for increasing the participation of citizens in LEIs. The RES region is too abstract for citizens to achieve this and most ordinary citizens probably never heard of the RES (Respondent NHZ-2).

5.3 The RES as a stimulator of LEIs

When it comes to stimulants from the RES towards LEIs, the results show that these are mostly indirect and aimed at other organisations. However, the results also show that the RES regions do provide some stimulants that directly contribute to the emergence and success of LEIs. Both will be discussed in this section.

Looking at the financial stimulants, the results show that the RES Regions mainly refer to other national, provincial and municipal funds, or stimulate these instances to provide means. The money that is provided from the RES towards LEIs comes from the National Programme RES and is aimed at umbrella organisations to support LEIs (Respondent NHZ-1). Most of the interviewees would however like to see direct funds towards LEIs provided through the RES regions. The main reason for this is that not all municipalities have the same amount of subsidies available (Respondent NHZ-2). In municipalities where little money is available for the emergence and success of LEIs things therefore can get difficult. This is in agreement with van der Schoor & Scholtens (2015) who state that insufficient funding is one of the major barriers for LEIs to get off the ground. Furthermore, they state that LEIs need 'seed' money for building their organisation. This is a need that can also be observed from the results where Respondent NHZ-1 would like to see means from the RES for LEIs to professionalize themselves and pay volunteers a salary.

The direct knowledge transfers from the RES towards LEIs mainly include some basic information for setting up an initiative. The majority of the knowledge transfers instead include handbooks, guidelines,

and worksheets for municipalities on how to organize and facilitate LEIs. Furthermore, the RES regions closely collaborate with umbrella organisations as these are good instruments to provide knowledge for LEIs. As respondent F-2 stated, the RES Region support such organisations so that they can help the initiatives. This corresponds with the literature from Oteman et al. (2017) who emphasize that intermediary organisations are in a good position to facilitate information flows towards and between LEIs. In section 2.1.4 it was questioned whether the RES is in a good position to stimulate umbrella organisations or even partly act as an umbrella organisation itself. While the first can be confirmed based on the results, the latter is not really something that the RES does specifically. For this, the RES region is too abstract and has too little of an implementation programme. Furthermore, umbrella organisations are situated within the energy movement giving them a lot of knowledge and close relationships with local initiatives. The RES on the other hand remains a governmental instrument that is not in place to perform such roles directly. The RES could however play a role in aggregating and coordinating all the knowledge, which is, according to the results, largely dispersed at the moment. Furthermore, the RES also plays an important role in framing and coordinating, a role which is also performed by umbrella organisations according to Warbroek et al. (2018). Finally, an important result is that the RES works as an important learning experience itself. By bringing all the knowledge from governments and other organisations together on a regional collaborative level, the frontrunners can take the stragglers with them (Respondent G-1).

Regarding administrative support, the results show that the RES regions do not really provide this to LEIs. The interviewees did also think that this is not a task of the RES regions, but rather something which should be done from within the energy movement, for example by umbrella organisations. Instead, the interviewees prefer a facilitative role of the government, making sure that processes themselves get easier. The RES could then play a role in removing barriers that are faced by LEIs, for example regarding permit procedures.

Finally, in section 2.1.3, it is stated that LEIs could be supported and facilitated by means of favourable regulations and policy frameworks (Wade et al., 2013; Walker, 2008). Similar to earlier results, it has become clear that the RES is not able to alter policy and regulations itself. However, ideas on how to develop favourable regulations and policies for LEIs are being discussed on the RES level by all sorts of organisations. Subsequently, a framework is being provided for which the implementation is the responsibility of provinces and municipalities. The same accounts for the provision of space. The search areas provided by the RES are not binding but provide a policy framework for municipalities to develop renewable energy here. In order to make sure this space is also utilized for LEIs, the RES tries to stimulate municipalities to apply '50% local ownership' as an assessment criteria for granting the permit.

5.4 The RES as a connector

The results in the section on networking activities (4.3) show that one thing that the RES certainly does in favour of LEIs is bringing governments, private parties, umbrella organisations, and energy cooperatives together to collaborate and make agreements on the regional level. Looking at the results, the majority of the interviewees agree that the RES regions stimulate collaboration and alleviate barriers between governments and citizen initiatives. This is in line with the statement from Lemos & Agrawal (2006) who state that a region is in a good position to respond to local relations and take account of the related interests and perspectives of the stakeholders involved, something which is problematic for central states. Furthermore, they state that connections with subnational governments and umbrella organisations appear to be essential for LEIs to emerge and grow. By

bringing these parties together and enhancing collaboration between them it can be stated that the RES does have its impact here.

While performing this connecting role, the results also show that the most important networking allies for LEIs remain the umbrella organisations. As discussed in the theoretical framework, these organisations are closer to the LEIs and function as boundary organisations to spur LEIs (Warbroek & Hoppe, 2017). This is probably one of the reasons why the results show that the RES regions are collaborating with these organisations and involving them in the development of the regional strategies. It is therefore also no surprise that direct partnerships between RES regions themselves and LEIs are not observed. As Oteman (2017) et al. stated, collaborations between Dutch governments and LEIs are scarce as the Dutch government mainly engages in partnerships with the traditional energy sector, neglecting local citizen-led projects. While the part on the scarcity of collaborations with LEIs is true, local initiatives are certainly not being neglected anymore. On the contrary, the RES regions repeatedly underline their importance in the energy transition and make sure that they are put on the agenda of provinces and municipalities. Furthermore, collaborations with the traditional energy sector are also not a given anymore. As can be seen in the results, local initiatives are increasingly advantaged by municipalities, for example by having ‘local ownership’ as a criterion for development.

Finally, from reviewing literature, we discussed the importance of LEIs to connect with one another. In this way, relational networks can be formed through which knowledge exchange takes place (Raven et al. 2010). The results show that umbrella organisations are the most actors in connecting the initiatives. Therefore, the RES mainly focuses on these to stimulate the connection of LEIs. Finally, the results also show that little assistance is needed for this to happen, as cooperatives are well able to connect themselves (Respondent NHZ-2).

On the basis of the results, the following figure is developed which shows how the RES can contribute to the emergence and success of LEIs:

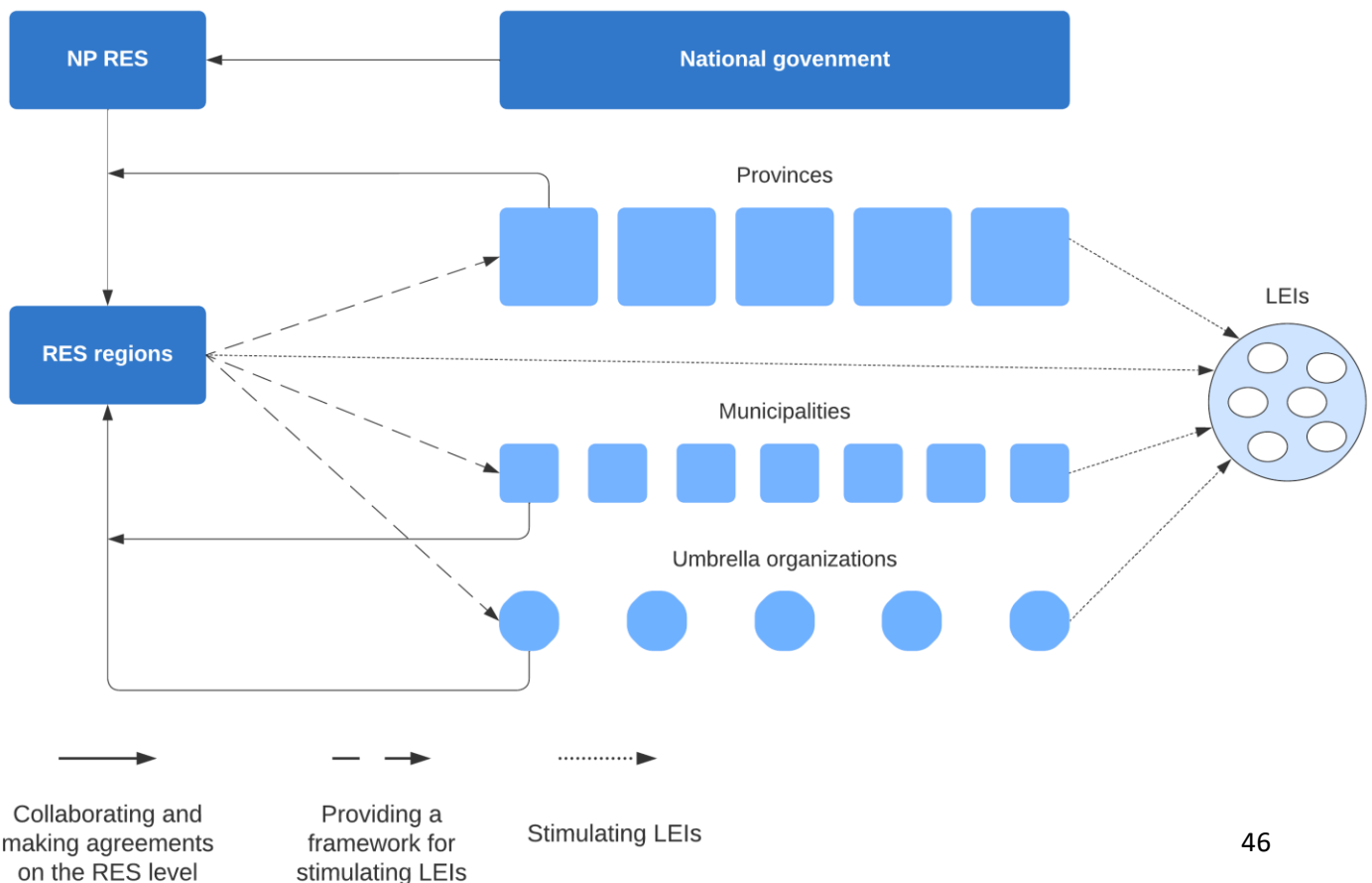


Figure 14. The RES contributing to the emergence and success of LEIs. Developed by author.

5.5 The role of the RES from a transition perspective

In the section on strategic niche management (2.3.2) the question came to the surface whether the RES could function as an instrument to support LEIs and open up the regime for their uptake and further growth, which we defined as success. In section 2.3.1 it is described that, for this to happen, separate LEIs first need to develop in a coherent niche. Raven et al. (2010) describe that this starts with networking activities and the exchange of knowledge between LEIs. When it comes to networking, the results show that the RES plays an important role in alleviating barriers towards other organisations. In connecting initiatives the results do however show that the role of the RES is marginal and that the umbrella organisations are mainly the ones who are able to do this. This is in line with the statement from Hargreaves et al. (2013 p.1) who state that umbrella organisations are in a good position to create a relational framework by connecting local initiatives with one another. Furthermore, the results show that LEIs are very well able to connect with other initiatives themselves (Respondent NHZ-2). However, considering the above, it could be stated that the RES can contribute to the growth of LEIs into a coherent niche.

In section 2.3.2 on strategic niche management, it is stated that for the uptake of the niche in the regime, scaling up is important (van den Bosch and Rotmans, 2008). For the question of how this can be managed, Caniëls and Romijn (2008) emphasize the importance of the relational network of the niche. They state that for the scaling-up and acceptance of niches, it is important to engage with a group of stakeholders who actively interact with each other. As stated previously, the results show that the RES regions are well able to facilitate this, bringing governments, private parties, umbrella organisations, and energy cooperatives together to collaborate and make agreements. Furthermore, Kemp et al. (1998) state that this should lead to mobilizing resources as well as second-order learning in which actors critically reflect on the assumptions of regime systems. While the first can for example be observed through the knowledge transfers and favourable policy frameworks provided towards LEIs, the latter also increasingly seems to be the case. According to Respondent F-1, the thought of being responsible together for the energy transition for example has penetrated people's minds through the RES. Considering all this, it could be argued that the RES also can contribute to the upscaling of the niches.

Finally, Hargreaves et al. (2013) state that umbrella organisations play the most important role in scaling-up niches towards the regime. Therefore, at the end of section 2.3.2, it was questioned whether the RES could perform some of these roles assigned to umbrella organisations in the literature such as providing resources, and knowledge, and alleviating barriers. From the results and everything that has been discussed so far, we can indeed state that the RES is able to perform some of these roles. However, there are also many roles that the RES can't perform directly. When this is the case, the results show that the RES is able to create a supportive environment to stimulate and help intermediaries to perform those roles.

6. Conclusion

This research has aimed to investigate how the RES can contribute to the emergence and success of local energy initiatives (LEIs). To do this, a literature study was conducted first to define the concept of LEIs, explain the importance of these initiatives in the energy transition from an institutional and transition perspective, and explore the potential of the RES to stimulate these initiatives from a governance perspective. This resulted in a conceptual framework (figure 6) and a framework for analysis (table 6) consisting of types of support from the RES which could contribute to the emergence and success of LEIs. This framework formed the basis of the empirical analysis consisting of a policy document analysis and semi-structured interviews with experts involved. Applying the framework of analysis to the collected empirical data led to results that provide insights into how the governance structure of the RES can contribute to the emergence and success of LEIs, and what stimulants are provided for these initiatives. This section will provide the conclusions of the research. It will do this by answering sub-question 3 and 4 based on the empirical study. After this, the main research question *“How can regional energy strategies contribute to the emergence and success of local energy initiatives in the Netherlands?”* will be answered.

6.1 Does the governance structure of the RES contribute to the emergence and success of LEIs?

First, the lack of authoritative power from the RES to change policies and regulations in favour of LEIs is an important constraining factor in its ability to contribute to the emergence and success of LEIs. The implementation of the agreements made on the RES level to stimulate and facilitate LEIs remain dependent on what municipalities and provinces are willing to do with it.

Secondly, the regional approach from the RES does not do much in terms of applying place-based approaches that are in favour of LEIs. Municipalities are the ones that are best in place for this. Furthermore, to increase the participation of citizens in LEIs, the RES region turns out to be too abstract for most people. On the other hand, the regional approach is suitable to enhance collaboration between LEIs and other organisations. The RES regions do a great job of connecting LEIs with other parties and removing obstacles to collaboration. This relational network is essential for the emergence and success of LEIs. Furthermore, the RES functions as a learning platform due to the fact that municipalities that are frontrunning when it comes to facilitating LEIs come together with municipalities that are lacking behind.

Finally, the RES regions are intentional structures with the goal to make the transition towards a renewable energy system. With their attention fully focused on the energy transition, the regions are in a good position to put LEIs on the agenda and spread their importance to other governments and organisations. Something for which provincial energy policy is often too generic. On the other hand, the RES as another layer of governance might create administrative fuzzi, blurring the division of responsibilities between municipalities, the RES region, and provinces.

Overall, it can be stated that the governance structure of the RES does contribute to the emergence and success of LEIs. Despite its lack of authoritative power, its regional approach and intentional structure are useful for connecting LEIs with other organisations and creating ambitions and agreements for LEIs on the RES level.

6.2 What stimulants are used by the RES to contribute to the emergence and success of LEIs?

Due to its governance structure, most of the stimulants that the RES provides to LEIs are indirect. Financial means are barely available and if, aimed at municipalities or umbrella organisations so that they can stimulate and facilitate the LEIs. The same accounts for providing favourable regulations and policies for LEIs. The RES does not have the authority to change these but does provide means for municipalities to do so. For example, a lot of knowledge transfers are provided on how they can stimulate and facilitate LEIs. When it comes to providing administrative support, the RES aims for the umbrella organisations as they are closely situated to the initiatives and are already used to doing this. Again, knowledge transfers are the most primarily stimulant provided.

Although there are also some direct stimulants provided by the RES towards LEIs, influencing other organisations and decision-making arenas in favour of LEIs belongs to the foremost way in which the RES stimulates LEIs. More direct stimulants and an implementation programme from the RES itself may be worth considering, but leaving the implementation with the organisations that are already in place for this for centuries is, for now, the pathway that is chosen by the government.

6.3 How can regional energy strategies contribute to the emergence and success of local energy initiatives in the Netherlands

The answers to sub-questions 3 and 4 combined form a significant part of the answer to the main question. Considering these, the following conclusion can be formulated. In relation to LEIs, the RES mainly functions as a means to bring governments, private organisations, and citizens together. The RES Alleviates barriers to collaboration and ensures that all those involved collectively state ambitions and make agreements about LEIs on the RES level. Furthermore, the importance of LEIs is stressed here and they are put on the agenda. Through this framework of agreements created at the regional level, the context is created through which the implementation can take place by those organisations that have the authority for it, like municipalities and provinces. These same organisations are forced to collaborate with each other and with other important parties like umbrella organisations. Together, they receive support and stimulants from the RES on how to facilitate LEIs. This mainly includes knowledge transfers and some financial means. Furthermore, some direct stimulants are provided towards the LEIs, like means to set up an organisation or favourable regulations due to the appointment of space in search areas. Finally, by collaborating together on the regional level, knowledge about LEIs can be exchanged and the front-running municipalities can take the stragglers with them.

7. Reflection and recommendations

7.1 Reflection on the research outcomes

Now that the research outcomes are clear, it is important to discuss their validity and trustworthiness. The RES-related policy documents mainly include ambitions and optimistic plans for stimulating and facilitating LEIs. To see whether these ambitions and plans are brought into practice, semi-structured interviews were conducted with key actors involved in both the RES and LEIs. As stated in section 3.3.2 this prevented the data from being one-sided. In the final interviews, the point was reached where no new information was provided. This was a signal that the data was saturated. The fact that almost all interviewees independently pointed to the same potentials and shortcomings of the RES when it comes to contributing to the emergence and success of LEIs is a good indication that the results can be considered valid. Furthermore, because the RES does not have a formal governance structure, the interviewees spoke freely about the RES and were not constrained by the interests of the RES itself. On the other hand, people only working for the RES, instead of being involved as a representative on behalf of another organisation, were hard to find. Therefore, the point of view from the RES itself is somewhat underexposed. Besides, all interviewees that are working in the energy sector were partially annoyed by the bureaucracy and politics involved in governmental procedures when it comes to renewable energy production. Therefore, they might have emphasized the shortcomings of the RES more than its potential.

The results come from three case regions that can be considered front-running when it comes to LEIs according to data from the report 'Monitor Hier Opgewekt'. These regions for example hold the most energy cooperatives, also when corrected for their number of inhabitants (HIER, 2021). Therefore, the results can be considered best practices when it comes to stimulating LEIs. On the other hand, as the RES is a relatively new phenomenon, it is questionable what the contribution of the RES is here. In Friesland for example, people always have participated in local initiatives due to historical and cultural aspects. Furthermore, this does also not mean that the RES in other regions provides less support to LEIs. There could be regions that want to grow their number of LEIs and therefore come up with innovative mechanisms.

The outcomes of this research can be used by other countries to take lessons about implementing a regional approach to the energy transition and about stimulating LEIs through this. Furthermore, the results are useful for the RES and other organisations involved in the energy transition in the Netherlands for improving the stimulation of LEIs. For example, the RES could consider to set-up something like an implementation plan or an executive agency. Finally, the research outcomes should also function as a wake-up call to the national government, which should provide more means for the RES and other governments to stimulate LEIs.

7.2 Recommendations for further research

This research explicitly aims to investigate how the Regional Energy Strategies can contribute to the emergence and success of LEIs. Despite that these initiatives are of great importance in the energy transition due to their social impact, their contribution to the 35 TWh goal is marginal. Therefore, a suggestion for further research is to investigate what the RES does in relation to the somewhat bigger energy projects. In the results, respondent F-1 namely stated that the RES tends to focus on larger energy generation instead of small initiatives. This research could then also have more of a quantitative approach, for example in terms of generated megawatts.

Secondly, the results from this research show that most of the stimulants that the RES provides towards LEIs are indirectly and foremost aimed at municipalities. Another suggestion for further research would therefore be to investigate how municipalities can contribute to the emergence and success of LEIs. This would allow to discover stimulants for LEIs by organisations that have the authority for it. Besides, the ways in which these organisations are in turn supported by the RES could be emphasized.

Finally, research could be conducted on regional energy governance in other countries in the world. These approaches can then be compared with one another, identifying best practices.

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Appendix 1: Interview guide

Vooraf

- Nog een keer kort uitleggen wie ik ben en wat ik doe
- Onderwerp kort introduceren → wat wil ik onderzoeken
- Extra benadrukken over welke lokale energie initiatieven ik heb → dus geen warmte en initiatieven op het niveau van individuele huishoudens
- Toestemming vragen om interview op te nemen
- Benadrukken dat ik het interview uittyp en het transcript zal opsturen, zodat de participant de mogelijkheid krijgt deze aan te passen op feitelijke onjuistheden
- Vragen om de overeenkomst van deelname te ondertekenen

1. RES algemeen & opwarmende vragen

- Kunt u kort iets vertellen over uw werkzaamheden binnen de RES?
- Heeft u enig idee waarop de begrenzing van de regio's in de RES eigenlijk gebaseerd zijn?
- Is de regio een logisch schaalniveau voor het aanpakken van de energietransitie?

Ik zou nu graag in willen gaan op de manieren hoe de RES het ontstaan en de groei van deze lokale energie initiatieven kan bevorderen. Allereerst met betrekking tot de verstrekking van diverse middelen en diensten richting lokale energie initiatieven.

2. Institutional support

- In welke mate worden lokale energie initiatieven financieel gestimuleerd door de RES?
 - o Bijv. subsidies, startkapitaal, korting op stroom etc.
- Wordt er ook kennis verstrekt voor het opzetten en groeien van lokale energie initiatieven vanuit de RES?
 - o Bijv. handreikingen, kennis platformen, trainingen, workshops etc.
- Voorziet de RES ook in technische ondersteuning richting de lokale energie initiatieven?
 - o Denk aan organisatorische steun (een mens die meedenkt/ ondersteunt of werkt)
- Is er vanuit de RES ondersteuning richting lokale energie initiatieven in administratieve taken?
 - o Zoals hulp bij vergunningsprocedures of andere juridische processen?
- Is er sprake van een flexibel beleid en gunstige regelgeving voor het starten en groeien van een lokaal energie initiatief?
 - o In andere woorden: maakt de RES het opzetten en groeien van een lokaal energie initiatief makkelijker?
- Wordt er in het bestemmingsplan of omgevingsplannen (als de omgevingswet wordt aangehouden) ruimte aangewezen voor lokale energie initiatieven?

Dan zou ik nu graag een paar vragen willen stellen over netwerkactiviteiten die worden ondernomen vanuit de RES richting lokale energie initiatieven.

3. Networking activities

- Worden er ook (bindende) samenwerkingen aangegaan met lokale energie initiatieven om deze te helpen?
- Speelt de RES ook een actieve rol in het verbinden van lokale energie initiatieven met andere (markt)partijen, overheden en organisaties?

- Worden de drempels en barrières tot samenwerking verlaagt door de RES, zo ja, hoe?
- Verbindt de RES lokale energie initiatieven ook met elkaar?
 - Zodat deze initiatieven ook van elkaar kunnen leren en er een netwerk ontstaat

Als laatste categorie zou ik nog in willen gaan op de regio als schaalniveau en de potentiële voordelen die hierbij komen kijken.

4. Regional governance

- Denkt u dat een regionale benadering de participatie van burgers in lokale energie initiatieven bevordert?
 - Bestuurlijk gezien dichter op de burgers, meer bottom-up
- Denkt u dat de RES met de regio als schaalniveau beter in kan spelen op de lokale omstandigheden?
 - En hiermee de kansen voor lokale energie initiatieven beter benut
- Denkt u dat de een functionele regio als de RES, met de energytransitie als beleidsdoel, gunstigere omstandigheden kan creëren voor lokale energie initiatieven dan meer centrale overheden?

5. Tot slot

- Op welk vlak zou de RES nog meer toereikend kunnen zijn richting lokale energie initiatieven?
- Denkt u dat de RES over het algemeen lokale energie initiatieven stimuleert?
- Bedanken voor tijd
- Nogmaals uitleggen vervolg
- Eventueel nog contacten snowballen
- Afsluiting

Appendix 2: Reflection on the research process

Overall, the research process went well. The general topic, a combination between the energy transition and governance, was something that was on my mind for a while already during the master's programme. The Regional Energy Strategies (RES) turned out to be the perfect combination of the two. Besides, it is a relatively new phenomenon which made it interesting to research. When I started to scan some RES-related policy documents, I observed a lot of sentences emphasizing the importance of local energy initiatives in the energy transition. This was something that I also remembered from the course Reinventing Environmental Planning. This in turn made me curious about how the RES could contribute to the emergence and success of local energy initiatives.

Doing the literature study and writing the theoretical framework was a process that I felt comfortable with. I write relatively easily and I also don't mind analysing academic articles. However, this is also something that can work against me. Sometimes I am afraid to miss out on something important and therefore have the urge to include everything, even though some parts were not that relevant for this research. The literature study could therefore be done more efficiently. On forehand, I could have developed a better idea of what to include and what not. On the other hand, this is also a method that works for me. While writing and engaging with the material, ideas emerge. Furthermore, although time-consuming, the literature study can always be narrowed down afterward.

While the basis of the research was developed well on schedule, I entered a busy period after this. Organising the Geo Promotion Conference in combination with courses from the master Economic Geography made that the progress stagnated a bit. This was not a surprise, but something that I already noticed far before the study year. I knew I could handle this, especially because I did not follow any courses in the last period of the semester. At this time, I could put all my focus on the thesis. What I underestimated a bit was how time-consuming the data collection process was. The participants were all gathered within one week via the platform LinkedIn and within two weeks all the interviews were conducted. However, the processing of the data seemed like an endless process. Although being a routine task, transcribing and coding the interviews in Atlas.ti consumed a lot of energy. Looking back, I would also have planned the interviews somewhat earlier. This has mainly to do with the fact that the interviewees suggested a lot of other participants from their own network. There was however barely time left to interview these.

When all the data was prepared, the results, discussion, and conclusion sections were developed quickly. This allowed me to spend the rest of the time preparing the presentation for the Graduate Research Day, processing the feedback, and completing the thesis. The final result gives me a feeling of satisfaction. The results from the empirical analysis are interesting and also convincing due to the fact that the majority of the interviewees pointed to the same potentials and shortcomings of the RES in relation to LEIs. Finally, I want to thank Ferry van Kann for supervising this research. The communication was efficient and the feedback was always extensive and useful.