Exploring the field of Local Wind Energy Organizations in the Netherlands

Researching the interaction between the niche of LRWEOs and the energy regime

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Abstract:
The Netherlands is producing only 3.7% of its gross final energy consumption via renewable energy sources, while the average in the EU-27 is 8.7%. This means the Netherlands is lagging behind in renewable energy production within the European Union, while a transition towards a renewable energy system is important in battling climate change. Therefore the Netherlands has to put in a greater effort in creating more renewable energy. Transitioning from fossil fuel based energy towards renewable energy encompasses several things. First of all it will mean more decentralized generation of energy. Second this decentralization and technologies such as solar panels and wind turbines allow for new actors such as local communities, municipalities and small businesses to enter the market of energy production. The Netherlands has seen an up rise in Local Renewable Energy Organizations (LREOs) since 2007. However, little research has focused on these initiatives and how they relate to the existing energy regime. This research focused on analyzing the interaction between niche and regime, i.e. between LREOs focused on on-shore wind energy production (LRWEOs) and the on-shore wind energy regime. The research focuses on LRWEOs because a large part of the renewable energy production in the Netherlands will be based on wind energy (both on- and off-shore) and especially on-shore wind energy is prone to many difficulties arise with the traditional methods for realizing this. This is summarized in the Not In My Back Yard (NIMBY) principle. The practice of LRWEOs could provide a needed opposing point of view on the realization of on-shore wind turbines, because local participation is at the heart of it.
This research uses the theories of Strategic Niche Management (SNM) and Transition Management (TM) to explore the impact LRWEOs have on the incumbent regime. Furthermore these theories are supplemented with notions of literature on Modes of Governance to overcome some of the deficits associated with SNM and TM theory.
The results show that four main themes can be identified that best describe the struggles of the niche of LRWEOs to become a more stable factor within the regime. These themes are: opportunity, ground positions, niche building and local support.

CONTENT

1. INTRODUCTION

1.1. SOCIETAL BACKGROUND

The energy transition and the difficulties of on-shore wind energy

The Netherlands is producing only 3.7% of its gross final energy consumption via renewable energy sources, while the average in the EU-27 is 8.7% (Eurostat, 2011). This is while a transition from the conventional centralised fossil fuel based energy system towards a decentralised renewable energy system is very important in battling climate change (Walker, 2008).According to Eurostat (2011) only the United Kingdom and Luxembourg are performing worse in their renewable energy production. Therefore the Netherlands needs to make a greater effort in generating renewable energy and diverting from fossil fuel based energy production. In the Netherlands wind energy will play an important role in increasing its energy production from Renewable energy sources, both on- and off shore (I&M & EZ, 2014). The policy of the national government requires 6000MW of on-shore wind energy to be built by 2020 (I&M & EZ, 2014). As of the end of 2015, 2950 Megawatt (MW) was realised, from which 2000 already existed before the agreement on the target of 6000MW. This leaves 3050MW still to be realised (RVO, 2016). From the 'monitor on-shore wind energy' it can be deduced that realizing this 3050MW on-shore wind energy is very difficult because it is difficult to find the right locations and local resistance leads to stagnation of the procedures (RVO, 2016). Realizing on-shore wind energy has proven to be difficult in the past because of the local resistance that is almost inherent to on-shore wind energy (Kaldellis & Zafirakis, 2011). Increasingly, participation by local residents in some form or another is introduced as a means to overcome this barrier.

The rise of Civilian initiatives on sustainable energy

Decentralisation and the transition towards renewable energy production also mean the introduction of new actors (Allen et al., 2008). The introduction of solar panels and wind turbines offers opportunities for private investors, local communities, consumer cooperatives, housing associations or municipalities to become both producers and consumers (prosumers) of renewable energy and compete with the traditional large scale energy producers (Allen et al., 2008; Verbong & Geels, 2010).

One form that has seen a big growth in numbers in the past few years are local cooperatives consisting of civilians that are realizing wind turbines and solar panels completely independent of the existing regime (the large energy producers and project developers) (HIERopgewekt.nl, Schwencke). One of the reasons given is because they want to contribute to a sustainable society, but the government is lacking (Boon & Dieperink, 2012). This is among others possible because the energy transition means a transition from centralised energy production to decentralised energy production due to the technologies involved (wind, solar and bio-energy) (Allen et al., 2008). This decentralisation offers the ability for these new actors to become involved in energy production.

In recent years large numbers of civilian initiatives have started to generate their own renewable energy (HIERopgewekt.nl). The number of civilian initiatives in the Netherlands has been growing significantly in the past few years resulting in up to 500 local initiatives as of 2016 (HIERopgewekt.nl). Figure 1 shows the development of civilian initiatives in the last decades. Here it can be seen that these organisations started to occur around 1980. This development then stalled from 1999-2007, after which they started to greatly increase in numbers.

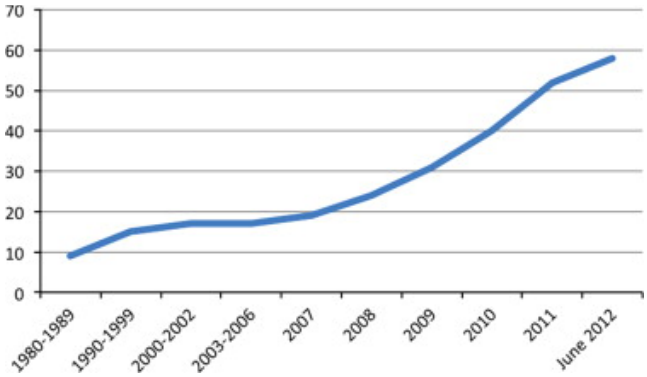


FIGURE 1; LREOS IN THE NETHERLANDS (1980-2012) (BOON & DIEPERINK, 2012 P298)

Civilian initiatives as answer to the difficulties of on-shore wind energy

Seeing the troubles with local resistance from the conventional ways of realizing a wind farm (with no local participation) this new form advocated by civilian initiatives might proof the answer to the problem, because local participation is corner stone of this development (Boon & Dieperink, 2012). Furthermore, in the UK civilian initiatives have been growing for a number of years and are supported by the government, which has resulted in large revenues (Walker, 2008; Arentsen & Bellekom, 2014; Oteman et al., 2014). It is estimated that wind energy generated by local initiatives could generate up to 40% of the total energy production in the UK (Watson et al., 2008).

Especially municipalities are increasingly seeing the benefits of cooperatives in the struggle to realise more renewable energy, but have difficulties with how to support these initiatives and how they can get the most out of them (Schwencke, 2012; De la Court, 2015).

The opportunities generated by civilian initiatives are also in line with what Hajer[1] (2011) calls the 'energetic society'. This refers to a large group of civilians that are willing to take part in the transition to a more sustainable world, but are often not fully exploited by policy makers. Traditionally civilians are seen as nuisance for policy makers, but Hajer (2011) advocates that they can also be used to pull a transition. This is emphasized by the research of Boon & Dieperink (2012) who conclude that one of the main reasons for founding an LREO is to overcome the failures of the government to act on climate change.

These are all predictions, but the real impact of these local initiatives in the Netherlands is still unknown; many factors may influence the ability of these civilian initiatives to impact the energy transition in the Netherlands, but there is a knowledge gap on what factors those are and what the real impact is going to be. This research will uncover some of these factors by diving into the civilian initiatives.

The struggle between a stringent target and experimentation by the government

The government is also increasingly interested in the potential of these new forms of organization around wind energy, especially because they too see the need for new forms of organization in order to decrease local resistance and empower local communities. Especially Municipalities and provinces are positive (Schwencke, 2012; De la Court, 2015; Rijkswaterstaat, 2013; Elzenga & Schwencke, 2014). However, the national government is less interested in civilian initiatives, but rather sees large-scale wind farms (I&M & EZ, 2014). This is obviously less interesting for civilian initiatives that are mainly focussed on small-scale wind farms and singular turbines (Elzenga & Schwnecke, 2014). Furthermore, the main goal of 6000MW is difficult to be realised as it is, much less if new forms of local participation need to be introduced and learned. This pressure on realizing the 6000MW by 2020 leaves little room to reflect on the practises and experiment with new forms of local participation. This in combination with the realization that new forms of local participation are needed reflects the difficulties within the current on-shore wind energy policy arena.

In conclusion, the Netherlands needs to make a greater effort in realizing more renewable energy. In this effort wind energy will account for a large part of this renewable energy, but especially on-shore there is a long history of difficulties surrounding local resistance. However, in recent years local civilian initiatives surrounding renewable energy have been on the rise since 2007. These initiatives could account for up to 40% of the total energy production of the Netherlands, and more over, could be an answer to the difficulties presented on the realization of on-shore wind energy. Hajer (2011) and Boon & Dieperink (2012) support the trend of an increased energetic society that can contribute to a transition to a more sustainable society, but this society still needs to find a place within the current policies and actors that make up the energy regime. Furthermore, Hajer (2011) underlines that a change in governmental policy is needed to see civilians not as nuisance, but as an asset in this transition. This change can be detected at municipal level, but not yet at national level. Local civilian initiatives that are involved with creating renewable energy as embodiment of the energetic society on energy could play an important part in the energy transition. What this part may be, how big it will be, what factors influence that and how the government can support these local initiatives remain unclear (Elzenga & Schwencke, 2014; de la Court, 2015). This research will focus on getting some answers to these questions about local civilian initiatives focussed on generating renewable energy.

[1] former president of the Plan Bureau voor de Leefomgeving (in English Netherlands Environmental Assessment Agency), which is an influential advisor of the national government

1.2 SUSTAINABLE CIVILIAN INTIATIVES IN LITERATURE

Local civilian initiatives around sustainable energy have been getting increased attention by scholars for their possible contribution to the diffusion of renewable energy technologies and an energy transition towards renewable energy (Walker et al., 2007; Walker, 2008; Hargreaves, 2013; Watson et al., 2008; Boon & Dieperink, 2012). Some advantages of locally based initiatives are: increased public participation, empowerment of the local population and self-sufficiency (Hoffman & High-Pippert, 2005; Walker, 2008). Furthermore, generating renewable energy on a decentralised and local basis, close to where it is consumed, could contribute to as much as 40 per cent of the national electricity demand (Allen et al., 2008; Watson et al., 2008; Boon & Dieperink et al., 2012). This is group that is very interesting to research.

Definition of Local sustainability initiatives by civilians

The literature discusses many terms for local civilian initiatives that focus on sustainable energy, i.e. Community based initiatives (Seyfang & Haxeltine, 2012), community energy (Walker et al., 2010) and Community ownership (Warren & McFadyen, 2010). Boon & Dieperink (2012) give the following comprehensive term for these organizations: LREOs or Local Renewable Energy Organizations. They define these as:

> *"Organisations, initiated and managed by actors from civil society, that aim to educate or facilitate people on efficient energy use, enable the collective procurement of renewable energy or technologies or actually provide (i.e. generate, treat or distribute), energy derived from renewable resources for consumption by inhabitants, participants or members. The latter live in the vicinity of the place where the renewable energy is generated".* (Boon & Dieperink, 2012 p298)

This terminology will be used throughout this research when referring to LREOs. Additionally this research will refer to LRWEOs, which are Local Renewable Wind Energy organizations, i.e. the subject of this research.

The interaction between niche and regime as main perspective in literature

Within the literature on local civilian initiatives the main body of literature looks at local civilian initiatives as a significantly different approach to energy production and consumption then the existing system, or regime (the large centralised energy production by a handful of energy producers) (Smith, 2007; Smith et al., 2015; Smith et al., 2016; Seyfang & Haxeltine, 2012; Seyfang et al., 2014; Walker et al., 2010; Walker et al., 2007a; Walker et al., 2016; Allen et al., 2008; Schot & Geels, 2008). This conceptualization means that local civilian initiatives are viewed as a radical innovation that challenges the incumbent energy regime through the entrance of new actors, the creation of new networks and, most of all, they take over part of the energy production from the existing energy suppliers by producing locally and independent from the large scale energy companies (Moe, 2010; Schoor & Scholtens 2015; Walker et al., 2007).

Within the literature on LREOs Strategic Niche Management (SNM) is often used as a framework for analysis (Klein & Coffey, 2016). Smith (2007), however, combines Strategic Niche Management with Transition Management in an analysis of two green niches in the UK. He concludes that more attention is needed among scholars for the niche-regime interaction in order to better understand the impact of niches and how niches can influence the regime or generate systemic change. This research will take on this advice and use TM and SNM as a framework of analysis of the niche of LREOs involved with wind energy in the Netherlands. However, one argument often made against Transition Management and Strategic Niche Management alike is that they think too lightly about the role of the government in a transition (Loorbach, 2007; Kemp, Loorbach, 2003). This research will therefore introduce the literature on modes of governance as an attempt to overcome this deficit.

Introducing SNM and TM

A niche is conceptualised in SNM and TM literature as a protective space that helps to nurture experimentation and develop technologies and practises that contribute to long term desirable goals, such as sustainability, but have a miss-match with the existing market, i.e. they do not coincide with the existing selection environment (Geels & Raven, 2006). Actors in a niche are often bottom-up initiatives. The existing selection environment, or market is the regime. The regime consists of a set of actors, routines and practices that ensure the continuity of a large-scale system, for example the energy system (Schot & Geels, 2008). Actors in the regime are the established actors such as large energy companies that have vested interests in the existing policies.

Transition Management and Strategic Niche Management both seek to explain how niches and regimes interact and how they can change each other. SNM sees niches as drivers of change that need to be nurtured

so they can grow to eventually over-take the existing regime (Schot & Geels, 2008). TM sees niches as part of a managed transition path that has been planned to manage a systemic change at regime level. Here niches are a place where experiments with new practices and technologies can take place that can be integrated in the regime (Rotmans et al., 2001). Both theories are pre-occupied with inducing systemic change at regime level that is needed to serve long-term desirable goals, such as sustainability. The assumption of path-dependency of the regime lies at the heart of these arguments. This argument consists of the fact that the regime will not change systematically if niches do not challenge it or of the regime is not managed properly to do so, i.e. Transition Management. Otherwise the regime will increase its efficiency of the existing technologies, routines and practises (Rotmans et al., 2001).

This research will use the perspectives of these two theories in order to understand how the niche of LRWEOs can integrate or over-take the existing wind energy regime and what factors influence the ability of the niche to do so. By doing this an assessment can be made of the impact the niche of LRWEOs has on the wind energy regime and what factors decrease or increase this ability, i.e. how they can have a bigger influence in the energy transition. This will then contribute to the knowledge on LRWEOs and their impact on the regime, which at the moment is still unclear, although scholars see them as potential big players in the regime.

Existing research on LREOs/LRWEOs

As an upcoming niche within the existing energy regime there is little scientific research on LREOs, let alone LRWEOs, in the Netherlands. The role of these initiatives in the energy transition from conventional centralised energy production from fossil fuels to decentralised energy production from renewable sources could be significant (Allen et al., 2008; Watson et al., 2008; Boon & Dieperink, 2012). But little research has focussed on how big this role could be and what factors influence the ability of this niche to play a bigger role and challenge the regime. As will be done in this research.

Most of the research on LREOs has focussed on the UK (Walker, 2007; Watson et al., 2008; Warren & McFadyen, 2010, Seyfang et al., 2014). For example, Walker et al., (2007) discuss the meaning of community and trust based on UK cases, Seyfang & Hexaltine (2012) look at how transition towns in the UK influence the incumbent regime from a Strategic Niche Management perspective and Walker et al. (2007a) seek to explain the recent upswing of LREOs in the UK and what their impact is.
Only a handful of scholars have focussed on other countries besides the UK. Oteman et al. (2014), for example, have made a comparative case study of community renewable energy initiatives in Denmark, Germany and the Netherlands. Even fewer scholars have researched the area of LREOs in the Netherlands. Jager (2006) discusses the market of Photovoltaic energy (PV) in the Netherlands for private owners, Blokhuis et al., (2012) discuss the upcoming of local energy companies set up by municipalities, Schoor & Scholtens (2015) investigated mostly the internal factors influencing the effectiveness of LREOs in the Netherlands from a teambuilding perspective and Boon and Dieperink (2012) researched the initiation phase of LREOs; how and why are they initiated.

This study charts the current state of affairs in the Dutch renewable energy market and the role of LRWEOs in this market by researching how the LRWEOs are organised and how they are interacting with the regime, i.e. influencing the major players involved in the renewable energy market.

1.3. DEMARCATION, RESEARCH GOAL, RESEARCH QUESTIONS AND RESEARCH FRAMEWORK

Demarcation of the research, focussing on LRWEOs

This research is delimited by focussing on Local Renewable Wind Energy Organizations (LRWEOs). There are two main types of LREOs; (1) those that focus on solar energy and (2) those that focus on wind energy. This research focuses on LREOs that generate wind energy (LRWEOs) (HIEROpgewekt.nl). The focus on LRWEOs is a strategic choice since there has been relatively little scientific research on these initiatives. Secondly, wind energy plays an important role in the transition towards decentralised renewable energy system in the Netherlands. The Ministry of Infrastructure and environment (I&M) and the Ministry of Economic affairs (EZ) stated as much in their report 'Structural vision on-shore wind energy' (I&M & EZ, 2014). Thirdly, wind energy is often hard for authorities to realize. Because people tend to see them as loud, ugly and invasive objects it is hard to generate local support (as is summarised in the Not In My Back Yard (NIMBY) principle) (Kaldellis & Zafirakis, 2011). LRWEOs are seen as an instrument to generate local support that state organs and large

energy companies often lack. Finally, LRWEOs are probably the drivers of niche formation among LREOs in the Netherlands. For example, REScoop and ODEdecentraal[2] are mostly concerned with Local Wind Energy Organizations and also their members are mainly Local Organizations dealing with wind energy and not solar energy.

Furthermore, as explained in section 1.2 this research will use the theories of TM and SNM (supplemented with literature on the modes of governance to attempt to overcome some deficits of these bodies of literature) as an analytical framework.

Research goal and research questions

As explained in sections 1.1 and 1.2 there is very little research on LRWEOs in the Netherlands, while the literature suggests they could contribute to as much as 40% of the national energy demand. Furthermore these LRWEOs could bridge a difficult problem of the realization of on-shore wind energy production, i.e. the lack of local support, which is at the moment stagnating progress on on-shore wind energy production in the Netherlands. Furthermore, scholars are increasingly seeing LREOs in general as frontrunners in the energy transition, which are much seeing the lack of effort put into the energy transition by the national authorities.
Therefore it is needed to further investigate the current ability of LRWEOs to contribute to the much needed energy transition in the Netherlands and what factors influence this ability in order to understand how the impact of LRWEOs can be enlarged to further the energy transition in the Netherlands.

Research goal

This research explores the role that LRWEOs play in the energy transition from a centralised fossil fuel based energy market to a decentralised renewable energy market. This will be done from a TM and SNM perspective supplemented with literature on modes of governance. Consequently LRWEOs are seen as a niche within an incumbent regime. Where the regime dictates the field, or in this case how the energy transition is shaped, and the role of LRWEOs in the energy transition thus depends on its ability to influence or take over the regime. The combination of the focus on LRWEOs and the perspective taken from SNM and TM literature result in the following research goal:
To explore the interaction between niche and regime in the field of Local Renewable Wind Energy Organizations and to understand what drivers and barriers hinder or stimulate the ability of the niche of LRWEOs to influence the incumbent wind energy regime. In doing so this research aims at providing insights and recommendations for policy makers and LRWEOs alike on how these organizations can be more successful in contributing to a transition towards a decentralised renewable energy system.

Since there is no previous research to refer to this goal requires a number of steps before the final goal can be attained. The niche and the regime need to be defined in order to better understand the units of analysis (the niche and the regime). Next to this also the dependent variable 'influence on the regime' requires further investigation. Therefore this research will present three kinds of results. The first two are necessary to present the third and main result. The following results will be shown in this research:

1. Identification and definition of the niche and the regime
2. Identification and definition of ways in which the niche can influence the regime
3. Identification and definition of drivers and barriers that hinder or stimulate the ability of the niche to influence the regime.

Research questions

The goal presented above results in the following main and sub-research questions:
Main research question: *What drivers and barriers hinder or stimulate the ability of LRWEOs to influence incumbent energy regime in the Netherlands?*

Sub-questions:

1. *Which drivers and barriers that hinder or stimulate the ability of the niche of LRWEOs to influence the wind energy regime can be identified from SNM and TM literature?*
2. *What possible ways of influencing the regime can be identified from SNM and TM literature?*

[2] These are two overarching bodies that represent LREOs on a national level (REScoop.nl)

3. *What do the niche and the regime consist of; what stakeholders are involved and what are their interests?*
4. *What forms of regime influence can be identified from the empirical data?*
5. *What drivers and barriers that hinder or stimulate the ability of LRWEOs to influence incumbent energy regime in the Netherland are recognised in the empirical data?*
6. *What recommendations can be given to policy makers, cooperatives and other stakeholders to increase the potential of LRWEOs to support the growth of LRWEOs?*

The research framework

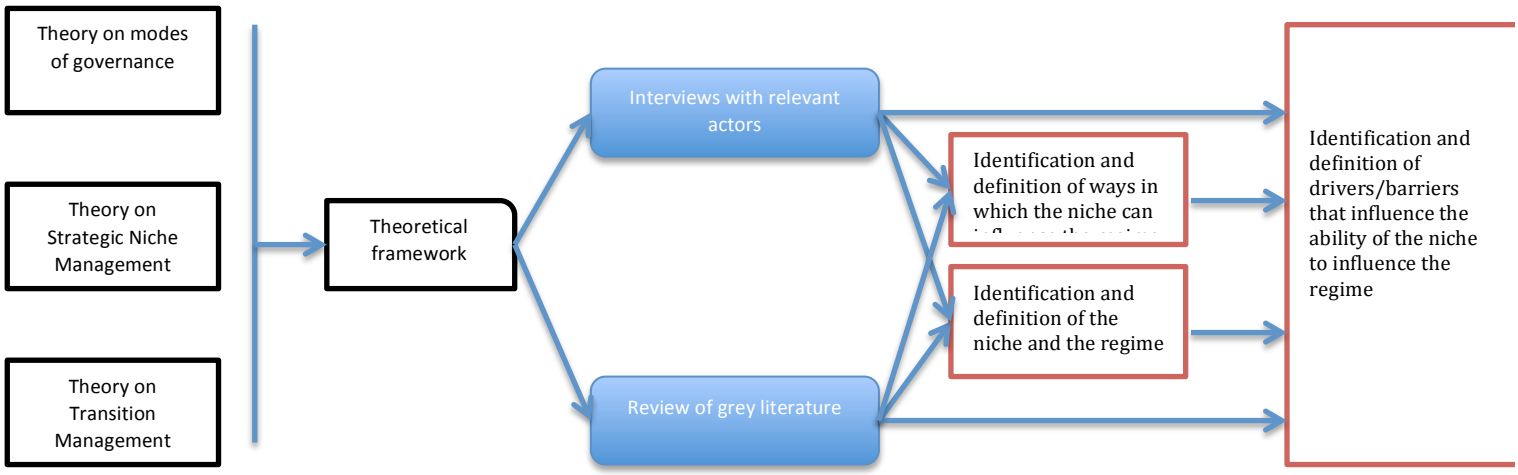


FIGURE 2: RESEARCH FRAMEWORK

1.4 SOCIETAL AND SCIENTIFIC RELEVANCE

This research contributes to the societal and scientific debate on the current up rise of LREOs that is seen in multiple countries such as the UK, Denmark, Germany and the Netherlands by charting the current state of affairs in the Netherlands of a sub-division of LREOs, i.e. LRWEOs. This will contribute to the understanding of these LRWEOs and the discussion on what role they play in an energy transition and what factors influence this role.
This research furthermore contributes to the theories of SNM and TM and investigates the potential of the literature on Modes of Governance as an addition to these theories.
Lastly, the results of this research are of societal relevance because they can be used as support of policies to enhance the contribution of LRWEOs to the energy transition in the Netherlands.

This research will proceed as follows. In chapter 2 a conceptual framework will be established by drawing possible drivers and barriers that simulate or hinder the ability of LRWEOs to influence the incumbent wind energy regime in the Netherlands from the aforementioned bodies of literature, resulting in a checklist against which empirical data can be matched. Also in this chapter the various ways of regime influence that these bodies of literature entail will be identified. Hereafter the methods for the empirical data gathering and analysis will be explained in chapter 3. In chapter 4 a sketch of the current status of the regime and the niche is provided to understand the context of this research. In chapter 5 the two cases that have been researched will be presented. Hereafter, in chapter 6 the results will be presented following the drivers and barriers that were identified in literature and ending with additional drivers and barriers that were found. At this point the forms of regime influence and the role of the literature of Modes of Governance are integrated in the presentation of the results. Lastly a discussion and conclusion will form the end of this research. The description of the regime & niche and the description of the individual cases in chapters 4 and 5 will be done along the lines of the bodies of literature that are used so the drivers and barriers will already become somewhat apparent from the context. The conclusion will yield an overview of all divers and barriers and the respective forms of regime influence they affect and a reflection on the use of the literature on modes of governance to supplement to overcome the deficits of SNM and TM.

2 LITERATURE REVIEW: BUILDING A CONCEPTUAL FRAMEWORK

This chapter will discuss the theories of TM and SNM to construct a theoretical framework to analyse the niche of LRWEOs and their impact on the wind energy regime. Additionally this chapter will discuss the literature on Modes of Governance, which will be used throughout this research as an addition to the theories of SNM and TM to overcome the aforementioned deficits of these theories. This is a new approach, which will be reviewed at the end of this research.

The discussion of the theories of SNM and TM will provide a framework of drivers/barriers and forms of regime influence that can be expected. Some of the drivers/barriers and forms of regime influence will overlap among the theories and some will not. Therefore, at the end of this chapter a synthesis will conclude with a table containing a list of drivers/barriers that will be used in the remainder of this study to classify the influence of the niche of LRWEOs on the Wind energy regime.

The theory of Modes of Governance will have a somewhat special place. As a secondary goal in this research the literature on Modes of Governance will be tested for its use as an addition to the TM and SNM literature. It could potentially explain some of the interaction between a niche and regime, which is left out in the other theories. It will therefore not be used to provide drivers/barriers or forms of regime influence. Modes of Governance will, when fitting, be used to provide a better understanding of a driver/barrier from a governance perspective.

In section 2.1 the governance features will be introduced. Hereafter sections 2.2 and 2.3 will describe the drivers/barriers and forms of regime influence found in Strategic Niche Management and Transition Management. In these sections it will also be presented which governance features can be combined with some of the drivers/barriers. Section 2.4 will present a synthesis where the conceptual framework for the analysis of the interaction between the niche of LRWEOs and the wind energy regime will be presented (Table 4).

2.1 GOVERNANCE MODES

The literature on modes of governance is a divers body of literature that seeks to explain shifts in modes of governance. Governance is a manner of governing in which state, market and civil society share responsibilities towards a common goal and work together to achieve this goal. This manner of governing has gained interest among scholars in the social sciences in recent years, specifically in the sustainability sciences (Mees et al., 2013; Bartley et al., 2008; Driessen & Glasbergen, 2002; Durant; 2004; Glasbergen & Groenenberg, 2001). Many scholars refine governance by referring, with different labels, to the various forms of governance (Mees et al., 2013; Zeijl-Rozema et al., 2008; Driessen et al., 2012; Van Tatenhove et al., 2000). This research will use the term Modes of Governance. Scholars have defined multiple modes of governance ranging from completely top-down governance arrangements to self-governing arrangements in which the market, or private actors initiate policy to govern the market instead of the state doing so (Mees et al., 2013). Driessen et al. (2012) have created the most complete framework so far for the sole purpose of providing a framework for analysing modes of governance.

Driessen et al. (2012) have generated an elaborate framework to characterise different modes of governance (see Appendix 1). This framework consists of five different modes of governance that can be characterised along the lines of 11 governance features. In this research it is not the aim to characterise the modes of governance in the regime and the niche, but to investigate how the literature on modes of governance can support the theories of SNM and TM. Therefore this research will focus on the eleven governance features that Driessen et al. (2012) distinguish (see table 1).

Governance features will be added to a driver/barrier that is identified in sections 2.2 and 2.3 if it is reasonable to think that one or more of the governance features have some overlap with a driver/barrier. For example, the driver/barrier 'aggregation of goals and visions' has some overlap with the governance feature 'goals and visions'. In that case the governance feature will be coupled to the driver/barrier and this will be reviewed in the results. This is a very basic approach, but it does filter the governance features to those relevant for this research.
The governance features will also be used as guidance for the description of the niche and the regime. With the understanding that only the governance features that have some overlap with the identified drivers/barriers will be included in the description of the niche and regime.

Table 1 presents the eleven governance features as defined by Driessen et al. (2012). These eleven features are explained how they would be found in each mode of governance in appendix 1. The features will be matched with drivers/barriers in sections 2.2 and 2.3.

I – Actor features:	II – Institutional features	III. Features concerning policy content
Key actors that initiate action and specify the environmental interest in policy ambitions	Model of representation	Types of goals that are pursued
Position of other stakeholders	Formal and/or informal rules of exchange and interaction	Policy instruments that are predominantly used for policy implementation
Predominant policy level at which key actors operate	Mechanisms of social interaction	Type of knowledge that is used for policy preparation, decision-making, implementation and evaluation.
Formal and/or informal basis of power of the key actors		The extent to which policies are integrated or not.

TABLE 1) GOVERNANCE FEATURES (DRIESSEN ET AL., 2012 P.148)

2.2 STRATEGIC NICHE MANAGEMENT

2.2.1 THEORY

Strategic Niche Management is used to analyse and manage the process from niche innovation to institutionalization in a regime (Schot & Geels, 2008). This process consists of several steps. It starts with a grassroot innovation that gets the opportunity to grow and learn in a protected space, a niche. This growing phase consists of learning of other similar innovations and the exchange of knowledge. After some time, the innovation is able to step out of its niche and engage with the incumbent regime. Then it evolves into networks within the niche and intermediaries increasing the exchange of knowledge, which eventually leads to standardization and institutionalization (Smith et al., 2016 p416). SNM argues that innovations that need this strategy are different from other innovations, because the demand for it is not readily available. This is because the innovations are not minor specifications of the existing system, but radical changes of the system (Schot & Geels, 2008 p539). This is why these innovations need a protected niche where they can be tested and made more robust before they can enter a market. If they would not have this opportunity, the market would crush them because of lack of demand. The innovations need to be nurtured and cared for until they are strong enough to enter the market (Schot & Geels, 2008).

SNM was made to serve innovations with two specific characters.

1. Those that serve long-term socially desirable goals, such as sustainability and
2. Those that are radically new and have a mismatch with the existing infrastructure, practices and regulations.

Local wind energy organizations fit these characteristics. They serve a sustainable future through renewable energy generation and they are completely new, since they are local instead of centralized and driven by individuals and communities instead of the current regime of big centralized energy companies. Local energy initiatives could account for about 40% of energy production, meaning that it would severely cut into the monopoly of big energy companies, challenging them in their practices (Watson et al., 2008; Boon & Dieperink, 2012). Not only in the percentage of energy production, but also in the institutional sphere local energy production could create dramatic changes. An innovation can even be unsuccessful in taking a market share, but still be successful in changing rules, practices and government policies creating a path for other innovations to take its place (Schot & Geels, 2008). Three processes for successful SNM are essential according to Schot & Geels (2008):

1. *The articulation of expectations and visions. Expectations are considered crucial for niche development because they provide direction to learning processes; attract attention, and legitimate (continuing) protection and nurturing.*
2. *The building of social networks. This process is important to create a constituency behind the new technology, facilitate interactions between relevant stakeholders, and provide the necessary resources (money, people, expertise).*
3. *Learning processes at multiple dimensions:*

    a. *Technical aspects and design specifications*
    b. *Market and user preferences*
    c. *Cultural and symbolic meaning*
    d. *Infrastructure and maintenance networks*
    e. *Industry and production networks*
    f. *Regulations and government policy*
    g. *Societal and environmental effects* (p540)

One strain of SNM, also closely linked to Transition Management, is the multiple-levels perspective. “The core notion of the multiple-level perspective (MLP) is that transitions come about through interactions between processes at three different levels: (a) niche innovations build up internal momentum, (b) changes at the landscape level create pressure on the regime, (c) destabilization of the regime creates windows of opportunity for niche innovations” (Schot & Geels, 2008 p545)

MLP draws upon the fact that there are three levels in the regime (Rip & Kemp, 1998). The lowest level is the niche level in which innovations occur and are tested. This does not have much influence, but hopes that

innovations, or part of the innovations are diffused throughout the regime and sometimes, through windows of opportunity, are able to shock the regime. The second level, the meso-level, is the socio-technical regime, which essentially ensures the stability and continuity of the regime or existing large-scale systems. This can, in the case of energy, for example be the actors ensuring transport of energy. This consists among others also of the cognitive routines, social rules, regulative rules and belief systems of the regime. Actors in this level are policy makers, special interest groups, scientists and users. Finally, the third level, called the macro level, is formed by the sociotechnical landscape. This is an exogenous landscape, that is not influenced by any actor in the regime and that consists of cultural patterns political developments and developments in other regimes. Changes in this level can open policy windows from which actors on the niche level can profit to make big changes in the meso-level (Schot & Geels, 2008). This refines the original SNM idea that regime shift happen through small expansions of a niche. It sets the playing field as a co-evolution of landscape, regime and niche and suggests that a niche can only trigger regime shifts if they line up with the larger arenas in which they operate (Schot & Geels, 2008).

2.2.2. SNM APPLIED IN A RELEVANT CONTEXT

Many scholars have worked with SNM as a theoretical background to further investigate the above mentioned processes found in SNM. Schot & Geels (2008) find that Innovations tended to be very narrowly constructed, not letting outsiders give their expertise and not exposing the innovations to markets. Also the lack of input from regime actors can lead to insufficient funds and institutional embedding (Schot & Geels, 2008). A broad network seemed to be an important factor to increase all of the above. Another important lesson was that innovations were mostly making the technology better, while visions and social aspects of the innovations mattered less.

Geels & Raven (2006) made a conceptualization of a market niche containing the following elements: A niche does not only contain the innovative technology, but for its implementation it is also dependent on a stable set of rules and practices. A niche consists of an instable set of (cognitive) rules and expectations, which are initially broad, diffuse and unstable. An innovation can be developed in multiple niches in multiple local projects. If these projects are able to learn from each other, the (cognitive) rules and expectations become more aggregated, gradually making them more global, specific and stable. This conceptualization means “The movement to a market niche does not only entail a movement to more exposure to selection pressures, but also to more stable shared rules (e.g. dominant designs)(Schot & Geels, 2008 p543)”. The main argument drawn from Geels & Raven (2006) is that learning from each other in the niche is important for the improvement of the innovation, but also for niche forming through the diffusion of cognitive rules and the standardization of processes.

In light of niche forming through learning, Geels & Deuten (2006) stress the importance of intermediaries in the process of learning and aggregating rules from multiple projects. However, learning can also be hampered. SNM approaches niches with the assumption that diversity is good and stimulates learning. However, this only holds when lessons are shared and people are willing to learn from each other. When niche innovations start to compete with one another, lessons might not be easily exchanged or kept secreted. This can lead to a stagnation of learning and progress within the niche because it creates uncertainty, fragments resources and hampers the development of a stable set of rules.

Seyfang et al. (2014) find that learning is an important factor in supporting and managing growth of niches. However, they see a trend in which many lessons are not shared, because most learning is generated through other parties rather then through consultation among different projects. For example, intermediaries share much of the knowledge through case-study reports, rather then consultation between two projects or direct mentoring. This means that many lessons dissolve after a project is finished, because the lessons are not written down or communicated. The authors describe this process as pull-up of knowledge. This is in contrast with the thrust-up assumption. This means that intermediaries, policy actors or other actors pull lessons out of the projects, rather then projects wanting to disseminate their knowledge and thrusting it outwards through formal evaluations, monitoring and structured codified learning mechanisms.
The authors also find that networking is indeed an important factor in the development and operations of activities. However, they find that most projects network on a local scale predominantly relying on pre-existing contacts. The main conclusion made is that the local projects heavily rely on the network, contacts, expertise

and skills that members bring to the group. Moreover, these connections were mostly with local actors and municipalities and based on informal meetings.
Finally the authors look at the managing and aggregating of visions and expectations. The authors contribute to the notion that clear goals and expectations are needed. However, they also see that projects in which the priorities and visions were flexible over time, better fitting and engaging the local community and becoming more successful.
Overall Seyfang et al. (2014) find that a standardized model of knowledge sharing and funding are important to increase the impact of niches. Furthermore, they ask questions about who represents the niche. The intermediaries are best organized and learn the most, but certainly not everything. They give an aggregated view of the niche, whether this is the right one is not certain according to the authors.

From innovation to regime change as depicted before is unfortunately more complicated. Certainly not all innovations have an influence on the regime. Moreover, only a few innovations are strong and good enough to actually change something (Hoogma et al., 2002). This proves once more that a single level analysis of a niche is insufficient to come to a clear picture. Broader and stronger forces then only the internal forces of the niche influence the successfulness of a niche. Therefore a multi-level perspective on niche management is needed.

2.2.3. DRIVERS/BARRIERS, FORMS OF REGIME INFLUENCE AND GOVERNANCE FEATURES

Conceptualization of successful influencing the regime from SNM literature
The main form of regime influence explained in the SNM literature is creating a strong and robust niche so the niche can take over the regime. This can be divided in multiple intermediate forms of regime influence as described below, but all these forms of regime influence lead to the same overarching form of regime influence.

Many of the scholars mentioned here are focussed on learning. They argue that learning contributes to two aspects. First it contributes to the improvement of an innovation. This in turn contributes to an increased potential of influencing the regime through a better and more robust innovation. Second learning contributes to niche forming. Through sharing of knowledge, rules and practises are shared and become more standardised practice in the niche. This also provides a more robust niche that, from there, can evolve into a regime or influence the regime.

Furthermore, networking is mentioned here as an important factor. The authors mention the size of these networks and the actors in them as important indicators for the success of a niche to influence the regime. Again two ways of influence can be delimited. Firstly direct influence through contact and cooperation with regime actors ensures a better alignment with the regime through the exchange of practices, rules and routines, which increases the ability to influence the regime through the overlap in practices, rules and routines between niche and regime according to the SNM theory. Second, having a broad network, with for example intermediaries, increases the potential for learning and its aforementioned influence on the regime through more robust innovations and niche building activities. On the other hand both intermediaries and regime actors can have a negative influence on the niche through the pull-out of knowledge. This means intermediaries and the regime are profiting from the lessons learned in individual projects, using it to implement this for themselves. This is effectively a take-over by the incumbent regime.

Lastly the authors and the SNM theory mention the factor ‘expectations and visions’. According to the SNM theory the articulation of them is needed to increase niche development. However, adaptable goals and expectations could also prove useful, because this increases local support for these projects. And a niche can only exist if local projects can be developed.

Many of these forms are very non-specific and theoretical. Almost none of the forms of regime influence described here really explain how a niche can take over or change the regime, i.e. increase the role of LRWEOs. This is a major research area for scholars in Strategic Niche Management. Smith & Raven (2012) explore this deficit by defining two possible ways in which the niche can influence the regime: stretch-and-transform and fit-and-conform. These forms of regime influence both relate to the institutions at regime level, especially the selection environments. Stretch-and-transform entails changing the selection environments in favour of the niche. This means a change in norms and values at the landscape levels that makes that the niche no longer

needs protection, but that it can compete with the regime, because there is a market for the innovation of the niche, i.e. a selection environment that favours the niche. On the other hand, the niche itself can change to be competitive with the selection environment at regime level. These are both forms of empowerment of the niche as described by Smith & Raven (2012).

Governance features needed

If we take a look at the drivers and barriers that have been identified from Strategic niche management there are some very close relations between the governance features from Driessen et al. (2012). The first is the importance of the articulation of goals and visions. This articulation has an obvious overlap with the governance feature 'goals and visions', which refers to the types of goals that are pursued. There might be a difference between the types of goals being pursued at regime and niche level. Furthermore there are a number of drivers/barriers that could be explained when looking at the feature of 'stakeholder position'. This feature refers to the ability of stakeholders to participate in the governing mode (Driessen et al., 2012). This might also prove an important governance feature. Looking at the position of each stakeholder gives insight each of their ability to take part in governing and how they are able to. This for instance sheds light on what actors are important to have in your network and why. Looking at this feature also implies looking at the added value of each actor. This for instance has an influence of the network of each actor. A cooperative might want regime actors in their network to provide funds and knowledge, but a regime actor might just not see the added value of a cooperative and rejects the cooperative, or the other way around. So in the discussion of the governance modes the stakeholders position and their added value will be discussed. Looking at the stakeholder position also implies that you have to look at the initiating actor of policy as can be interpreted from the framework of Driessen et al. (2012). Because Driessen et al. (2012) look at the stakeholders' position from the perspective of the initiating actor. So the Initiating actor obviously has to be identified.

Driver/Barrier Literature	For what	Source	Governance feature needed
The articulation of expectations and visions	Strengthening the innovation /alignment with the regime	Schot & Geels, (2008); Geels & Raven (2006)	Goals and visions
The building of social networks	Strengthening the innovation /Increased learning/establishing long term contact between relevant stakeholders	Schot & Geels, (2008); Geels & Raven (2006); Seyfang et al. (2014)	Stakeholder position
Learning processes at multiple dimensions	Strengthening the innovation /improving the innovation	Schot & Geels, (2008); Geels & Raven (2006)	
Embedding in the institutional sphere	Alignment with the regime	Schot & Geels, (2008)	
Cooperation with outsiders of the niche	Getting resources/increase knowledge/alignment with the regime	Schot & Geels, (2008)	Stakeholder position
Intermediaries in network	Increased learning/Pull-out of knowledge/niche building activities	Schot & Geels, (2008)	Stakeholder position
Regime actors in network	Alignment with the regime	Schot & Geels, (2008)	Stakeholder position
Aggregating rules	Strengthening the innovation	Geels & Deuten (2006); Geels & Raven (2006)	
Learning from diversity	Strengthening the innovation/ Increasing the niches' stability and strength	Geels & Deuten (2006)	
Willingness to learn	Strengthening the innovation	Geels & Deuten (2006); Seyfang et al. (2014)	
Competition among niche actors	Strengthening the innovation/ Increasing the niches' stability and strength	Geels & Deuten (2006)	
Creating routines	Increasing the niches' stability and strength	Geels & Raven (2006)	
Direct knowledge sharing among projects	Strengthening the innovation/ Increasing the niches' stability and strength	Seyfang et al. (2014)	
Standardized model of funding	Increasing the niches' stability and strength /providing resources	Seyfang et al. (2014)	
Explicitly managing of the learning process write lessons down and communicate them/structured and codified learning processes	Strengthening the innovation/ Increasing the niches' stability and strength	Seyfang et al. (2014)	

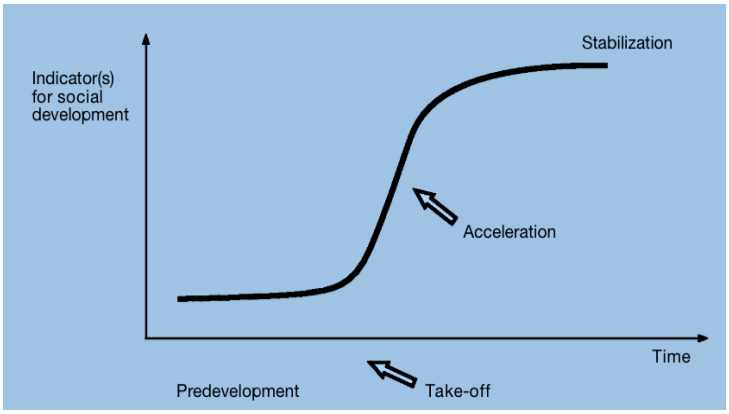
TABLE 2: DRIVERS/BARRIERS, FORMS OF REGIME INFLUENCE AND GOVERNANCE FEATURES DERIVED FROM SNM

2.3. TRANSITION MANAGEMENT

2.3.1. THEORY

The theory of transition management is that it can be used as a tool to guide transitions of complex sociotechnical systems (Kemp et al., 2007). Rotmans et al. (2001) were the first to introduce the concept of Transition Management (TM) in the field of sustainable governance. It was introduced as an answer to so-called persistent problems. These problems are characterised by complex interactions between processes in the societal and physical sphere, which aid in providing structural uncertainty, and consist of many stakeholders with different perspectives. This makes them hard to manage in older structures of governance (Dirven, Rotmans, & Verkaik, 2002). The Transition Management framework offers tools for structuring and explaining the complex societal dynamics behind these problems. It goes beyond incremental changes, but looks for structural solutions on a long term base that transform the sociotechnical landscape, the regime and the niche (Kemp et al., 2007). Some examples of complex systems that Transition Management can be used for are: the transport sector, water management, agriculture and energy supply (Van der Brugge & Rotmans, 2007; Rotmans, 2001). Although this theory has by no means grown to its full potential, it has evolved into an interesting view on transitions in society (Loorbach, 2010). This is because it lays the foundation for an analytical framework in which: "the interaction processes between markets, networks, institutions, technologies, policies, individual behaviour and autonomous trends in the economic, ecological, socio-cultural and institutional domain" can all be accounted for (Van der Brugge & Rotmans, 2007. P.4). Such a framework is needed, as mentioned above, to provide a management tool for big societal transitions, as is the transition from centralised fossil fuel based energy production to energy production from decentralised renewable energy sources (Van der Brugge & Rotmans, 2007; Rotmans, 2001). Next to its inherent goal to analyse transitions, the theory of Transition Management forms an interesting addition to this research because of its view on transitions from a Regime and landscape level opposed to the niche perspective taken by SNM and the governmental view taken by the modes of governance.

In TM a transition is often depicted in an S-curve showing four different phases in a transition (see figure 2).



1. In the predevelopment phase the regime is still stable, but increasing bottom-up activity is showing and the social landscape is changing.
2. In the Take-off phase the transition is actually starting to move and also the regime is slowly shifting
3. In the acceleration phase the transition is visibly taking shape in all aspects of the regime and new institutions are formed around emerging values
4. In the stabilisation phase a new equilibrium is formed, a new regime has taken shape and changes only are incremental.

Figure 3: transition phases (Rotmans et al., 2001. p.17)

Furthermore, transitions can be characterised on the lines of three main points (Van der Brugge & Rotmans, 2007; Rotmans et al., 2001):

1. They concern large scale technological, economic, ecological, socio-cultural and institutional developments that influence and reinforce each other
2. The process of a transitions is a long term process that covers at least one generation (25 years)
3. There are interactions between different scale levels (niche, regime, landscape).

TM as such provides a tool for analysing, explaining and managing big societal transitions. According to TM these transition happen through the interaction between three scales; niche, regime and landscape Rotmans et al., 2001; Loorbach, 2007). This assumption is much in line with the multiple-levels framework as described by Schot & Geels (2008). TM also looks at niches as starting point for radical innovations, which can change he regime. However, the emphasis in TM is much more on the regime and the landscape then on the niche. TM looks at transitions from a regime perspective, while MLP and SNM look at transitions from a niche

perspective. The process of Transition Management aims at directly steering towards a transition at a regime level, whereas SNM steers towards transitions from a niche level. The focus of Transition Management is to bring together actors and views in order to bring about widespread acceptation and participation of a transition by all actors involved. Kemp et al. (2007) make a distinction between three activities in Transition Management: strategic, tactical and operational activities. Strategic development is the generation and aggregation of goals and visions. This encompasses, among others, the formulating long-term goals (30years). The tactical activities constitutes of the regulations, practises and the technologies used. These need to be actively changed by the dominant actors. The operational activities are the learning by doing and doing by learning at niche level. In a relatively short period (0-5years) experiments can be done in order to diffuse and implement these experiment at a regime scale. This is a very different approach to niches then SNM for example. This shows that TM looks at niches that can be set up deliberately to serve a transition; a niche is a tool in order to achieve the transition that is managed at a regime level (Kemp et al., 2007; Loorbach, 2007).

Transition Management starts at an equilibrium in which the "old" regime is the standard and the system is functioning according that standard. This is the regime level and this can be explained as: "the dominant practices, rules and shared assumptions at the meso level that guide private action and public policy - for the most part geared towards optimising rather than transforming systems" (Rotmans et al., 2001. P.19). Especially the latter is important. This means that regimes are only optimising their existing structures, i.e. making it more efficient. This process is called path-dependency, which makes the established regime blind, or unable to adapt to radical new innovations. Instead innovations are incremental and in line with the existing institutional structures and technologies. As summarised by Seyfang & Smith (2007 p.587+588) this tendency is owing to:

The cognitive frameworks, routines, resources, capabilities, and knowledge of technology producers and users, and expectations about what kinds of knowledge will be profitable in the future. Radical new knowledge is not recognised as interesting to invest in.
The way specific social and technical practices are embedded within wider, facilitating infrastructures, which subsequently restrict opportunities for alternatives.
Incumbent practices enjoy economies of scale (e.g. mass markets) and positive network externalities (it is easier and less risky to follow established practices than to invest in new practices).
The co-evolution of institutions with technological practices, like professional associations, government policies, and market rules reinforce existing trajectories.
Prevailing market and social norms influence the kinds of performance deemed satisfactory, and the lifestyle routines and norms that develop embed these practices further

(Seyfang & Smith, 2007 p.587+588)

This path-dependency immediately describes some possible barriers for niche innovations to manoeuvre within the incumbent regime. The inherent systemic difference of niche innovations in relation to the existing regime as described in the grassroots innovation literature creates difficulties for these innovations to be successful. The institutions are all based around the existing regime and will as such favour it above systematically different perceptions in the niche. Rotmans et al. (2001) describe three possible reactions of the regime, or regime actors to developments in a niche. They can (1) inhibit the development in the niches, they can (2) try to react by making system improvements while hanging on to existing structures and technologies or they can (3) take an innovative stance and try contributing to the innovation by providing capital, funding and sharing knowledge. It is also possible, or even likely, that the regime will react differently at different phases in the transition. When the niche has grown more and is likely to break through (take-off phase), the regime is forced to take an enabling or reacting stance. While it can take an inhibiting stance when it is still developing (pre-development phase) (Rotmans et al., 2001). Actors are expected to change their behaviour according to the phase the transition is in. This has to do with the perceived danger of the niche for the regime. When it has evolved into something stable, the regime might feel more threatened then when it is still uncertain whether or not the niche is going to make it or not (Rotmans et al., 2001). The role of the government for example changes from facilitator in the predevelopment phase to director and catalyst in the stabilization phase (Rotmans et al., 2001).

Altogether, Transition Management departs, just like SNM and the adjacent MLP framework, from the fact that there are three layers: the niche, the regime and the landscape. However, TM is based on the idea of an actively managed transition at the regime level, where the niche is a tool to experiment with new ideas and organizational forms. As such, the niche is not seen as a bottom-up threat to the regime, but as a structure managed and guided from the initiators of the transition.
This is not the case with LRWEOs. This is a bottom-up movement that is not controlled by the regime. However, the theory of TM can still be applied when it comes to determining the ability of this niche to influence the regime. Because essentially TM describes how niches can contribute to a transition at regime level, i.e. how they can influence the regime. Much as SNM does.

2.3.2. TM APPLIED IN A RELEVANT CONTEXT

Loorbach et al. (2008) evaluate the energy transition practise applied by the ministry of economic affairs in the Netherlands to govern an energy transition from traditional non-renewable resources to renewable resources. The authors question in which direction and how this transition unfolds and whether or not the Dutch are able to govern such a transition in the desired direction. From the lessons from transition theory and from historical analysis of the Dutch energy system they derive five basic transition management principles. They continue by evaluating the energy transition policy of the ministry of economic affairs according to the five principles they derived earlier. The main conclusions are:

- The problem was framed along the old lines of reasoning. It was directed on the supply side and it primarily focussed on the existing regime actors. In doing so it ignored the multi-facetted multi-actor dimensions of TM. By only focussing on regime actors the policy became path-dependent on the existing institutions, rather then formulating new ones. This can also be derived from the fact that focus was on the supply side, rather then taking into account the demand side, consumption and bigger societal and cultural aspects influencing the energy sector.
- "A fundamental reflection on problems, their origin and the future of a sustainable energy system were so far barely touched upon. Although the experiments also involve societal and institutional aspects, they are still insufficient to amount to a fundamental debate, let alone change, at the level of societal culture and structures. Such debate can induce a broader public interest and participation in the problem-structuring process, something that is undoubtedly important for the development of support for measures, creating awareness and involvement" (p.17)
- Also the energy transition policy did not change regular policies such as investments in unsustainable energy, its infrastructure, consumption patterns and resource use. Also evidence of the lack of recognition of the problem as being a very complex and persistent problem
- The strategic, operational and tactical levels of the implementation of TM were well developed and produced desirable outcomes. The implementation went well, but the underlying assumptions and problem definitions were not good.
- By providing the space for different transitions paths to be developed and many experiments to take place uncertainty was reduced and successes were realised.
- The Energy transition policy has created more cooperation and convergence in the field, but this has been only among incumbent regime actors. Consumers and citizens were not involved. Overall the few actors that dominate the present Dutch regime are still the biggest players in the efforts of creating something new. Resulting in the question: is there something new, or is it the old presenting themselves as new?
- The energy transition policy is, in general, providing the basis for new combinations of actors cooperating together. However: "because a process architecture is missing, there is neither a convergence between vision, images, paths and experiments nor a convergence between innovative regime-actors and innovative outsiders." (p.18).
- The regime did not change its structures, routines and culture yet, but the ministry has seen a transformation. Through evaluation, debates and learning the ministry and its employees have seen a change in thinking about the role of government and how it should act in the transition. This change continues to evolve. Furthermore, through cooperation between ministries and with other organisations this evolution in thinking is being distributed more widely outside the ministry.

Van Der Brugge & Rotmans (2007) describe the transition in Dutch and European water resource management. They conclude that due to the increasing complexity and interconnectedness in modern society also the water functions are becoming more and more interrelated. This combination results in increased complexity uncertain and multi facetted problems. These problems however seem to be persistent, because the management style is unable to cope with the problems. Due to the strong interwoveness of water institutions, management structures and dominant practises there is a tight and well-organised water management regime. This interconnectedness leads to a tight network with its own internal logic. Due to this tightly organised and interconnected water regime it is very hard for innovations to break through to open up and change the regime. They acknowledge that there is a difference between strategic, tactical and operational level. What is going well is the increasing cooperation between organisations, also with organizations that were previously not taking part in the regime. A key element in the case of water management was the lack of coordination. This meant that there were lots of experiments going on, but this was not coordinated and lessons were not shared. Coordination to systematically share lessons and knowledge from experiments is needed. In line with this conclusion the authors acknowledge that creating institutional arrangements and an institutional structure that fits the new regime would reinforce the regime and would lead to feedbacks that could speed up the process of regime transformation. Caution is needed, however, if ill structured the institutional structure might slow down or block the desired direction of the transition.

2.3.3. DRIVERS/BARRIERS, FORMS OF REGIME INFLUENCE AND GOVERNANCE FEATURES

Conceptualization of successful influencing the regime

From the authors that have used TM and the Transition Management theory itself a number of drivers and barriers are derived on ability of the niche to influence the regime. These are summarised in the table below. However, there are also various forms of regime influence that can be derived from the literature. The most important form of regime influence is on whether or not the niche, i.e. new actors, is able to take part in the development of the new regime. This is logical because TM is a way of actively controlling and steering a transition. This steering takes plays at a strategic level. Therefore, in order to be able to influence the regime, the niche needs to be represented at this level. Since there is no TM policy in place that applies to the LRWEOs this needs some adaptation. Therefore the strategic level will be replaced with the level at which the policy on wind energy is created. Meaning the first form of regime influence is the ability of the niche to take part at the policy making level.

Second, Transition Management is based on experiments in the niche gradually being diffused within the regime and its practises. Therefore it is important that regime actors and niche actors cooperate and share practises. This ensures alignment between regime and niche actors. This off course works both ways. The regime influences the niche and the niche influences the regime. So alignment with of regime and niche actors is a way for the niche to influence the regime. A barrier here is that the internal logic and interwoveness of the regime can inhibit the ability of non-regime actors to take part and cooperate with regime actors.

Lastly there is a more hidden possibility for the niche to influence the regime that can be derived from the case of the water management regime. There it is concluded that the lack of coordination between experiments in the niche and the consequent lack of learning and knowledge sharing reduces the impact of these experiments. Therefore, if the niche is able to organise itself, learn and coordinate the experiments that are taking place, i.e. niche coordination, it could succeed in have a bigger impact on the regime then when coordination is lacking.

All in all the following three forms of regime influence can be derived from the Transition Management theory and its applications:

1. Alignment between regime and niche actors
2. Representation of the niche at the policy making level
3. Niche coordination

Governance features needed

As mentioned, the main body of drivers and barriers influence the ability of niche actors being able to participate in the regime. In the framework of Driessen et al. (2012) a number of governance features apply to this subject. The basis of power and the model of representation have a direct effect on the ability of niche

actors to participate. But also the mechanisms of social interaction, formal and informal rules and predominant policy level have an effect in so far that these have the ability to exclude niche actors because they do not understand the rules, are focussed on other policy levels or do not know where and when they can most affectively contribute to the building of a new system. Furthermore the position of the niche actors has an influence in such a way that it determines whether or not they are appreciated as an actor that can contribute to the building of a new system. This is for the initiating actor to decide; she/he decides who can participate and who cannot in the building of a new system. According to TM the government is the one who initiates transition arenas and therefore attributes a large responsibility to governmental bodies in this respect.

Altogether it is possible to argue that every feature defined by Driessen et al. (2012) should be discussed in the results section. However, when looking a little closer to the drivers and barriers it is possible to identify a small number of governance features that provide sufficient discussion of the modes of governance at regime and niche level. Furthermore, TM only looks at the regime level and sees the niche as a tool for experimentation of new forms. In this respect the governance mode at niche level should be supporting and aligned with the mode of governance at regime level. Even though there are a small number of drivers/barriers that specifically apply to the niche level.

The first governance feature that is important to discuss is the dominant policy instruments used. This is with respect to the barrier of a tight interwoveness and internal logic of the regime. This barrier was derived from Interwoveness of management structures and dominant practises in the water management regime. From this perspective the dominant practises refer to the instruments used to manage the water. Therefore the governance feature 'policy instruments' is applicable for this barrier.

Second, it is important to determine the initiating actor and the stakeholder position. As discussed in section 2.2, these features are based to a great deal on the added value of each actor and who is seen as important actor in decision-making and who is not. This will probably influence the ability of niche actors to be represented at the strategic level. Discussing these features will also shed light on the ability of niche actors to force representation at the decision making level through their added value.

Driver/Barrier	For what	Source	Governance features
Reaction of regime actors towards niche actors *(Inhibiting/Enabling/ Reacting)*	Alignment between regime and niche actors /Representation of the niche at the policy making level	Rotmans et al (2001)	Stakeholder position
Facilitating role of the government	Representation of the niche at the policy making level	Rotmans et al (2001)	Initiating actor
Regime actors as providers of capital for the niche	Alignment between regime and niche actors	Rotmans et al (2001)	
Sharing knowledge between niche and regime	Alignment between regime and niche actors	Rotmans et al (2001)	
Tight network and interwoveness of the regime, internal logic	Alignment between regime and niche actors	Van der Brugge & Rotmans (2007)	Policy instruments
Coordination among experiment or grassroot innovations for systematic knowledge sharing	Niche coordination	Van der Brugge & Rotmans (2007)	
Co-evolution of institutional structures and grassroot innovations	Representation of the niche at the policy making level	Van der Brugge & Rotmans (2007)	Initiating actor/stakeholder position
Framing of the problem along the lines of reasoning and logic of the old regime by the government.	Representation of the niche at the policy making level	Loorbach et al. (2008)	Initiating actor/stakeholder position
Willingness of regime actors to reflect on the basics of their practices.	Representation of the niche at the policy making level	Loorbach et al. (2008)	Initiating actor/stakeholder position
Process coordination to combine regime actors with innovative actors and to converge transition paths.	Niche coordination	Loorbach et al. (2008)	
Niche actors included in the new system	Representation of the niche at the policy making level	Loorbach et al. (2008)	Initiating actor/stakeholder position

TABLE 3: DRIVERS/BARRIERS, FORMS OF REGIME INFLUENCE AND GOVERNANCE FEATURES DERIVES FROM TM

2.4. SYNTHESIS

As is described at the beginning of this chapter, this section will provide an amalgamated list of the drivers/barriers, a merged list of the forms of regime influence and, when fitting, the governance feature that can be linked to a driver/barrier. This chapter will start by discussing the forms of regime influence identified, followed by a section that combines the drivers/barriers that overlap resulting in six umbrella factors and a short discussion of the governance features. These will then all be linked together at the end.

Since this research is exploratory in nature and researches many different aspects, this synthesis will simplify and reduce the forms of regime influence, the drivers/barriers and governance features to two forms of regime influence and six drivers/barriers and four governance features. Although many more drivers/barriers, forms of regime influence and governance features can be identified that honour the complexity of these factors, here it is chosen to simplify the theory to prevent from drowning in the various forms of regime influence, drivers/barriers and governance features. This results in a framework that combines all theories, but still is insightful and useful.

Two forms of regime influence

The literature shows a great deal of forms of regime influence as discussed in sections 2.2.3 and 2.3.3. However, these forms of regime influence can all be traced back from two main forms that are identified in SNM and TM literature. Both SNM and TM have a very specific form of regime influence on which they are based. SNM suggest mostly drivers and barriers that help to build a regime and make it more robust, so it can take over the regime. TM however, looks at the niches as tools that can be used to experiment with new ideas and innovations that can then be used to integrate into the regime to avoid radical changes and stimulating slow changes in the regime. This leaves the following two main forms of regime influence:

1. Creating a strong and robust niche so the niche can take over the regime
2. Aligning with the regime so the niche can integrate into the regime

These are two very different and to some extent mutually exclusive forms of regime influence: integrating vs. over taking. However, this is not a problem, because part of this research is finding out what regime influence means and how it can be found in the niche of LRWEOs. Furthermore, this gives more diverse drivers/barriers that can be used for the empirical research.

The Umbrella factors

Throughout the theories, some recurring elements can be identified as important drivers/barriers. Learning, the position of regime actors towards the niche, the network of LRWEOs and the actors that are in them are some example. These elements are the basis for the final drivers/barriers. Each of these 'umbrella factors' will be overarching a number of drivers/barriers that have some overlapping elements.

The following six umbrella drivers/barriers are identified:

1. Active niche building
    a. Active Niche building is a recurring element, which especially originates in the SNM literature and refers to the need of a robust niche in order to over-take the regime.
2. Cooperation between niche and regime
    a. Cooperation between niche and regime actors is an element that can mostly be seen in TM and refers to the ability of the niche to cooperate and align with the regime, which increases the possibility of experimentations in the niche to integrate in the regime.
3. Active learning
    a. Active learning also is a factor that originates from SNM theory and refers to the need of learning and dissemination of knowledge in order to create a more robust niche and innovation in order to over-take the regime.
4. Role of the government
    a. The facilitating role of the government originates from TM literature that looks as the government as initiator of a transition management policy. It therefore decides who participates and who does not in the transition arenas. Here the governance feature 'initiating actor' and consequently the 'stakeholder position' (See section 2.3.3) have some overlap with the theory.

5. Institutionalization
    a. Institutionalization is a factor that originates in SNM literature and refers to the increasing institutionalization that is needed in order to create a niche that is sufficiently embedded in institutes, which is needed to transition into a regime. On the other hand in TM a similar driver/barrier can be identified.
6. Ability of niche to influence the decision making level
    a. The factor ability of the niche to influence the decision making level originates in the TM literature and refers to the strategic level at which the transition is managed, when there is a transition management policy.

The governance features:
In sections 2.2.3 and 2.3.3 it is already discussed which governance features are applicable to some of the drivers/barriers. This division will be taken over in the final table. The governance features that apply to one or more of the drivers/barriers that an umbrella factor entails are taken over for the umbrella factor. The sub-division of drivers/barriers per umbrella factor can be found in appendix 2.

Presenting the analytical framework
The empirical data will be discussed along the lines of the three variables: driver/barrier, form of regime influence and governance feature. This means that for each driver/barrier it will be discussed (1) how it presents itself in the data, (2) what form of regime influence can be attributed to it and (3) how the governance feature plays a role.

However, as is stressed previously, this framework is created to get an initial idea of what can be expected. This research will match the variables with the empirical data. This means different drivers and barriers and different forms of regime influence might be discovered in the empirical data. The result will be a similar table as the one below, which is validated and complemented with findings from the empirical data. The table below shows the conceptual framework that will be used to analyse the results:

Driver/Barrier	Form of regime influence	Governance feature
1. Active Niche building	Creating a strong and robust niche so the niche can take over the regime	Goals and visions
2. Cooperation between niche and regime	Aligning with the regime so the niche can integrate into the regime	Stakeholder position/policy instruments
3. Active learning	Creating a strong and robust niche so the niche can take over the regime	Stakeholder position
4. Role of the government	Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position
5. Institutionalization	Creating a strong and robust niche so the niche can take over the regime/ Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position
6. Ability of niche to influence the decision making level	Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position

TABLE 4: COCEPTUAL FRAMEWORK

3. METHODS

3.1. GENERAL SET-UP

In this chapter the methods for answering the main research question are explained. In order to answer the main research question: '*What external drivers push LRWEOs to challenge the regime and what barriers prevent LRWEOs to challenge the regime',* a number of steps need to be taken. In the previous chapter a conceptual framework was created based on the theories of SNM, TM and Modes of Governance. This chapter will explain how the empirical data will be gathered and analysed.
The empirical data consists of 21 interviews. These interviews are divided over two case studies, interviews with experts and important regime and niche actors. This was supplemented with some grey literature.

This chapter starts with discussing the case studies that were selected. Then the data collection of the grey literature is discussed followed by an elaboration on how the interviews were conducted. Lastly the method for data analysis is discussed.

3.2. THE CASE STUDIES

As is mentioned above, two cases were selected for this research. Before going into the case studies selected, a brief reasoning as to why a case study design fits the purpose of this research.

A case study can serve many different goals. General notions are that it is useful when answering a 'how' or 'what' question in a study. This means that it is used for a descriptive or explaining purpose (Woodside & Wilson, 2003). For this research such a 'what' question is answered: "what external drivers…challenge the regime". Furthermore, multiple ways of setting up a case study research exist (Gerring, 2004). For this research an exploratory approach to the drivers and barriers is taken. This means that the drivers and barriers are not weighted or researched in-depth. The purpose is to get a better understanding of the phenomenon of LRWEOs and to give an overview of the drivers and barriers without leaving anything out, so further research can bring further focus in this area.

Case studies can either be selected based on similarity or diversity (Gerring, 2004). The case studies in this research are selected on their diversity, to grasp as much drivers and barriers as possible. This is in line with a cross-case analysis (Gerring, 2004). Another selection variable is that the case studies have to be initiated by civil society, or they must play a significant role in order to fit the definition of an LRWEO. Lastly, they must be initiated in the last ten years, to get the most recent data. This criterion is also used, because there is evidence of two waves of LRWEOs developing in the Netherlands (Elzenga & Schwencke, 2015). This study focuses primarily on the second wave, which only started recently and probably has very different motives and drivers then the first wave, which originated in the 1990s. In order to prevent an overlap and keep the data about the intended research object the criteria of 'started within the last ten years' is used. Overall, the following three principles are guiding in choosing the case studies:

1. They must differ as much as possible, to get as much drivers and barriers as possible since this is an exploratory research (Gerring, 2004)
2. Actors from the civil society must initiate them partly or completely, because this research aims at investigating Local wind energy organizations from a bottom-up perspective.
3. They must be initiated in the last 10 years, to get the most recent data. And because there is evidence that

There are many LREOs in the Netherlands and mapping them is a research in itself. A report by Hieropgewekt.nl presents an overview that attempts to show all LREOs in the Netherlands (HIERopgewekt, 2015). It is unlikely that these are all LREOs, because this field is rapidly growing in the Netherlands with more LREOs and LRWEOs being founded as this research proceeds. This rapid growth, however also shows the significance of this research. None the less, the report by Hieropgewekt.nl presented the only overview of LREOs and LRWEOs in the Netherlands and is thus used as a base from which the case studies were selected.

The report speaks of around 500 local initiatives for producing renewable energy. Of these initiatives 49 primarily focussed on wind-energy from which 22 are also citizen initiatives. In the report of Hieropgewekt.nl (HIERopgewekt, 2015), a full documentation is made of all LRWEOs in the Netherlands, including when they were initiated. Using the third criteria (founded within the last ten years) leaves six wind energy cooperatives allegeable for this research. From these six only one has actually produced wind-turbines: cooperative Zuidenwind. One other organization is however in the last phase of constructing its own wind-turbines: cooperative Windpower-Nijmegen. For practical reasons only successful cooperatives are taken into account. This is because it is much harder to find examples of failed LRWEOs. Now, only two possible case studies, from the base of HIERopgewekt, are allegeable for research based upon the second two criteria. But they still have to differ as much as possible to fit the first criterion. Table 1 presents the facts known from HIERopgewekt. Zuidenwind is smaller and is founded earlier. Also, Zuidenwind is only a civil initiative, while the project of Windpower Nijmegen is in cooperation between state, market and civil society. Lastly they are based in different provinces. Based on the facts known there are quite some differences between these cases. This means all criteria were fulfilled for these cases to be researched.

Cooperative	Founded in	Initiator	Number of members	Number of wind turbines	Province
Zuidenwind	2011	Civil society	50	1	Limburg
Windpower Nijmegen	2013	Civil society, Market and government	420	5	Gelderland

TABLE 5: BASIC VALUES OF THE CASE STUDIES

3.3. DATA COLLECTION

3.3.1. GREY LITERATURE

The data collection of grey literature, i.e. policy documents and other non-scientific documents were based on freely available documents and whatever documents made available by interviewees or experts.

3.3.2 DATA COLLECTION INTERVIEWS

The empirical data consists of 21 semi-structured interviews. These interviews were conducted both at the niche and regime level. Representing the niche level two case studies were conducted in which the key players were interviewed. The key players were identified using the snowball technique, i.e. interviewing persons or other stakeholders of interest mentioned in the interviews. This is because it was very hard to identify key players from desktop research. In both case studies a contact form on the website of the cooperatives was filled in. From thereon contact with members of the board of the cooperatives was established and interviews were conducted.

Identifying other key players in the field of LRWEOs, especially on the regime level was not an easy task, among others because this field is very new and still developing. This required a hands-on approach that resulted in the attendance of a conference (the all energy day) and a discussion evening in both of which members of the ministry of economic affairs did the introduction. At both of these days/evenings potential relevant players were identified. From these players on the snowball technique was used to identify more players. The full list of interviewees, their functions and relevant publications can be found in Appendix 3. Below the interviewees and their relevance will briefly be discussed. At the point when new interviews did not provide new information it was concluded all the information that could be acquired through interviews was gathered and more interviews would therefore be unnecessary.

People Interviewed

In order to get a full picture of the case Windpower Nijmegen the following people were interviewed: de Greeff (board member of the cooperative Windpower Nijmegen), de Ridder (project developer and member of cooperative Wiek 2 and Windpower and initiator of the project), de Meijer (Employee of the Gelderse nature and environmental federation/project leader wind farm Nijmegen) van Ginkel (employee of the municipality of

Nijmegen and coordinator of spatial projects concerning sustainability and spatial planning) and Bruggink (project coordinator structural vision on-shore wind for the province of Gelderland).

For the case Zuidenwind the following people were interviewed to get a full picture of the case: Geenen (initiator of the initial wind farm and local entrepreneur), van der Stappen (member of the cooperative and council member of the municipality Weert), Zomer (member of Windvogel and temporary board member of Zuidenwind), Doorenspleet (employee of Rabobank) and Verbeek (employee of Yard energy group).

In order to get a better picture of the regime a member of the NWEA[3] was interviewed (Harmsen) and a number of regime actors were interviewed. These were Rabobank, Eneco, Yard and Raedthuys. These are all regime actors that have had some encounters with wind energy cooperatives. Additionally a member of the umbrella organization for provincial governments (IPO) was interviewed (van der Gaag). He is program manager of the Interprovincial Cooperation on Energy transition and Economy (IPS2E), which, among others, provides the main policy framework on on-shore wind energy per province.

Lastly, for a helicopter view six experts were interviewed: two PHD students working on local energy cooperatives in the Netherlands (Harmsen & Warbroek), one professor specialised in public policy and environmental policy with a special interest in local low carbon citizen initiatives (Hoppe), one professor specialised in SNM and TM theory (Raven), an independent researcher in the field of energy cooperatives in the Netherlands was interviewed (Schwencke) and a researcher and entrepreneur focussing on cooperatives focusing on solar energy (Roodenrijs

Set up of the interviews
In the interviews the main focus was on the drivers/barriers that affect the influence of the regime on the niche. The interviews were guided using the set framework as presented in section 2.3, but were set up to provide the opportunity for interviewees to expand and broach on new subjects. The forms of regime influence and governance features were not directly asked for in the interviews, but were derived afterwards in the analysis of the interviews.

Furthermore, the questions asked differed per respondent. Respondents from the cooperatives were primarily asked to walk through the process that took place, from the moment the plan to build wind turbines was there till the moment the turbine(s) was/were in place. This was a very open line of questioning that brought about very different but useful answers. The list of governance features and drivers/barriers were used to guide the interview. For example, when the creation of an institutional framework by the government was not yet discussed it was asked: “Did the government change laws or legislations in order to help the cooperative?”

The governmental agencies were questioned on the role of the government on the subject of LRWEOs. This could be asked very directly. For example: “How does the government see its role in the field of local wind energy organizations?” Also questions were asked on how the different governmental agencies see this field and what they expect from it, i.e. do they support them with legislation, or do they want to support them with legislation. If they were negative about cooperatives, the interviewees were asked why. Altogether, very direct questions on the drivers/barriers were asked, but also very open questions in order to give the respondent a place to expand on subjects or broach new subjects of importance.

The questions to regime actors, such as Eneco, Rabobank and Yard, were much the same. They included how they saw their role, what they expected from the upcoming LRWEOs and would they support them or not. Again an open line of questioning was practised, while keeping an eye on the conceptual framework as presented in section 2.4.

The experts and intermediaries were asked for the drivers/barriers and forms of regime influence directly. Examples of questions were: What hinders and stimulates the growth of LRWEOs, Are they influencing or building a regime, How do they see the role of the government and do cooperatives learn from each other?

[3] The NWEA is the branch organisation for wind energy. Most of the regime actors that work in the wind energy sector are a member of the NWEA. The NWEA represents the interests of the branch

Also more specific questions on the drivers/barriers, which were more difficult to grasp, could be asked. An example of such difficultly to grasp driver is the overall aggregation of rules, routines and goals.

3.4. DATA ANALYSIS

Due to the large amount of interviews conducted for this research a large amount of data is gathered. In order to get as much valid information as possible, this data needs to be analysed in a structured way. All of the data is qualitative, which means that getting valid conclusions is difficult and caution is needed with generalisation of the results. The data is analysed using NVivo. This programme is specifically designed to analyse qualitative data in a structured way (Bringer et al., 2004). The first step in this research is to transcribe the interviews. In this way there is a text that can be analysed. Then, the data is coded according to the codes that were created in the previous chapter, i.e. the conceptual framework. From the textual interviews fragments will be assigned to the codes they belong to. In this step a bias from the researcher comes in. Initially only fragments that fully agree with the codes will be assigned to the codes. Furthermore, sections that seem important but cannot directly be assigned to a code will be highlighted for further analysis. These fragments will be re-evaluated for patterns and if necessary they will be assigned to a new code that fits a combination of fragments. It might also be possible that it is concluded they fit an already existing code. This method is called initial coding (Glaser & Strauss, 1999; Charmaz, 2003). By highlighting fragments, coding and re-coding those fragments a complete picture is formed and the final codes give a valid picture of the results. Again, there is an interpretation bias from the researcher, but by coding the fragments as directly as possible, meaning that the codes will not stray too much from the actual texts this bias is limited. Keeping the codes close the words in the fragments Leaves little interpretation room and thereby limits the researchers bias. Finally, the codes are compared to form a complete picture of the drivers and barriers and how they interact with each other to influence the ability of the niche to influence the regime.

4. DEFINING THE NCIHE AND REGIME

In this chapter the regime and the niche will first be defined. This will give a clear overview of the stakeholders and their role within the niche and the regime. Hereafter the individual cases will be discussed. This is needed to understand the levels of analysis and how they interact in order to better understand the results.

4.1. DEFINING THE REGIME

The goal of this chapter is to define the wind energy regime. However, before jumping to the current regime a brief overview of the energy regime in the Netherlands is provided to understand the developments that led to the current wind energy regime. Here only the important events of the past that influence the current energy regime will be discussed. It is not the goal to describe the entire development of the Dutch energy system from the beginning; this has already been done by other scholars and does not serve the purpose of this paper. This section will contain a brief overview of the history of the energy regime, followed by a description of the current wind energy regime, its stakeholders and their roles.

4.1.1. A BRIEF OVERVIEW OF THE HISTORY OF THE DUTCH ENERGY REGIME

Before 1960

A good starting point in the energy regime is the discovery of natural gas in the Netherlands in the 1960s. Before this time energy was a regional or local activity and an informal regime rule was to leave out the national government and organise everything locally (Verbong & Geels, 2007). Local utilities owned by municipalities were the regime actors when it came to energy production and distribution.

The discovery of natural gas; increased influence of the national government

After the discovery of natural gas the national government became dissatisfied with its place outside the regime and started to increase its influence. The creation of the public-private partnership between the Dutch state, shell and Exxon, resulting in the Gasunie, completely changed the playing field with its monopoly on the distribution of natural gas. They focussed on the use of gas for heating in households (Verbong & Geels, 2007).

It wasn't until 1968 that gas was also used for electricity production purposes increasing the dependency on natural gas in the electricity sector to 80% in the 1970s (Verbong & Geels, 2007). Next to this development, the Dutch government was also very much interested in the development of nuclear power plants. It supported many developments in the 1950s, but it proved difficult to fully align all the actors and create a nuclear regime (Verbong & Geels, 2007). This resulted in regional and local utilities again going their own way to the frustration of the national government. This is important, because the combination of the natural gas developments and the nuclear energy developments, from both of which the national government was a big supporter, lead to an idea within the national government that it should have more influence on the energy regime (Verbong & Geels, 2007). This feeling was increased even more by the co-evolution of industry en energy production. Increased energy production was very important for the growth of industry and households, which in turn was good for the economic growth (Verbong & Geels, 2007).

This all meant that the government wanted more influence. Energy was coupled very much with industry and economic growth and was put under the authority of the ministry of economic affairs, where it still is today (Verbong & Geels, 2007). It wasn't until the oil crisis of 1973 however that the government formally increased its influence in the energy regime. With the first 'Energy White Paper' the government increased its influence by transferring the authority on fuel use in power stations and the purchase of nuclear power stations to the ministry of economic affairs. This transference of power was initiated to diversify the energy resources used to reduce dependency. In addition, the Energy White Paper called for energy efficiency to reduce environmental impacts (Verbong & Geels, 2007).

From 1968 to the 1980s the energy mix changed dramatically several times. Gas dependency largely increased from 1968 until the first oil crisis, because of the expectation that nuclear energy would soon reduce the value of gas, the strategy was to consume the gas rapidly to maximise gas revenues (Verbong & Geels, 2007). However, the oil crisis changed that perception. After the first oil crisis, the national government framed gas as a valuable commodity and restricted the use of natural gas and enforced the use of oil. This policy was

interesting to say the least. It was also completely opposite to the policy of other European countries, who set about to decrease their oil dependency in light of the oil crisis.

Two electricity laws; Establishing new actors

In 1989 a new electricity law was implemented. This law enforced separation between electricity production and distribution. This resulted in EDCs or energy distribution companies. These companies buy electricity from varying energy production companies and sell it to customers. Four EDCs were established: Eneco, Nuon, Essent and Delta. At the time the provinces owned the EDCs. In 1998 a new electricity law started the liberalisation of the energy market. This law made it possible for consumers to choose their energy supplier. It also created a new actor: the transmission system operator. This actor was a semi-governmental organization that was in charge of operating, maintaining and expanding the electricity distribution network. Furthermore, EDCs were able to expand into the production of electricity. This meant that production and buying and selling of electricity to consumers came in the hands of EDCs, while the distribution came into the hands of an independent semi-governmental actor (Verbong & Geels, 2007).

Renewable energy

Renewable energy only got attention in Dutch policy following the third energy white paper in 1995. An ambition of 10% renewable energy in 2020 was formulised in this paper. There was however a big difference between policy goals and implementation. It was however not a top priority, while liberalisation and Europeanization of the energy market received the most attention. Also, most of the attention went to energy savings, rather then renewable energy production. Nonetheless the renewable energy consumed rose from 1% in 1990 to 3.8% in 2004. This was mostly because of two drivers: a tax that made green electricity almost the same price as grey electricity and advertising campaigns of the major EDCs who wanted to boost their green image. However, the production of renewable energy lacked the demand, meaning that green electricity needed to be bought in other countries. This was possible because the energy tax applied to demand, not the place where it was produced. This meant no effort was needed to boost production in the Netherlands, as long as it could be bought abroad (Verbong & Geels, 2007).

Wind energy

First interests in wind energy started in 1976 following the first energy crisis. The high energy prices made energy from wind much more attractive and thus incumbent regime actors started to show interest in this new energy form. However, from the perspective of the energy system only large-scale wind farms with high capacity turbines could contribute enough to the energy system to be feasible. However, the technology was not advanced enough and these turbines that were requested often failed and broke down. This slowed down the progress in the Netherlands significantly (Verbong & Geels, 2007).
The Danish took a completely different approach. They started with small-scale turbines and gradually started up scaling. This proved much more successful, because eventually the Dutch regime actors were overtaken by Danish ones (Verbong & Geels, 2007).

Competition, disagreement and failure

An important barrier for wind energy to break through in the Netherlands was the disagreement between multiple regime actors. These disagreements ultimately led to tensions within the existing social network of regime actors that should have worked together on providing a framework for wind energy to be integrated in the existing energy network. The disagreements were on several subjects. The amount of wind energy that could be integrated in the network was one of them. Because wind energy came with large fluctuations of the energy production some regime actors said only 650MW could be build. Hereafter the energy network would be endangered. Furthermore the way wind farms should be seen legally was contested. The EDCs argued that they should be seen as a power plant, which meant they would have the authority and not the government. Altogether this led to disagreement within the social network and failing to provide a place for wind energy in the energy system. The regime actors were to busy with their position within the regime that they neglected to embed wind energy within the established energy system (Verbong & Geels, 2007).

On the other hand their were some co-operatives that also tried to realize some wind energy in 5the 1980's and 90's, but they were disrupted because of the high costs of connecting to the grid and the low price they got for their electricity (Verbong & Geels, 2007).

The public picture of wind turbines: bird shredders, noisy and ugly objects

At the end of the 1990s the initial interest in wind energy was completely abandoned as described by Verbong & Geels (2007): "*Environmental groups came to see wind turbines as disturbances of the natural landscape, 'bird shredders', and noisy, ugly objects. Electricity production companies see wind turbines as unreliable and a danger to stability of the electricity system. Politicians increasingly perceive wind turbines as a not very cost-effective way of reducing greenhouse gases*" (p1033). An underlying cause of this failure was the neglect of societal embedding of wind energy. The focus was too much on technological innovation and technical aspects.

4.1.2. THE CURRENT WIND ENERGY REGIME

In the current regime it will become clear that the national government is has a large role in the wind energy regime as is consistent with the trend described above. Furthermore, the actor 'network operators' also takes part in the wind energy regime that is the result of the two energy laws. Furthermore, the section above describes why wind energy is a very difficult subject in the Netherlands following the ill managed public picture and disagreement that took place.

The stakeholders

The wind energy regime consists of the national government (the ministry of economic affairs and the ministry of infrastructure and environment), the provinces united in the interprovincial council (IPO), Dutch wind energy association (NWEA) the association of Dutch municipalities (VNG), The Dutch network operators united in Netbeheer Nederland, the united nature and environment organizations (in Dutch: verenigde natuur en milieu federaties) and the governmental organization for entrepreneurial Netherland (in Dutch: de Rijksdienst voor ondernemend Nederland)(RVO). These organizations are united in a core team that has the responsibility for carrying out the policy of generating 6000MW renewable energy from on-shore wind turbines by 2020 as opposed to the 2000MW dating from before this policy (Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014; RVO, 2016). Although there is a high degree of cooperation between state and market in the core team on-shore wind, the government carries the sole responsibility and is the initiating actor.

The current policy

The national government was the first to come with a national plan for wind energy. This was in 2010 and consisted of around 18000MW on-shore wind energy. This was unacceptable for the provinces and, according to them, also unachievable. In a consultation round between the IPO (inter provincial deliberation) and VROM the, at that time acting minister of VROM Huizinga, withdrew those plans and gave the provinces the mandate to come up with their own plans van der Gaag, 2016 pc). This resulted in the 'Structural visions on-shore wind energy' (in Dutch: Structuurvisie wind op land) that each province created. These were, to a great extend, adopted by the national government. This consisted of a target of 6000MW to be realised in 2020. At the moment this 'structuurvisie wind op land' (in English: Structural vision on-shore wind energy) is the main policy for onshore wind energy in the Netherlands. This policy is based on a target of 6000MW on-shore wind energy by 2020. This target is set by the national government, but the provinces have the mandate to execute it. For this policy all provinces made a prognoses of how much onshore wind energy they were able to get in their province in their own structural vision on-shore wind energy.

In the national structural vision on-shore wind energy the target of 6000MW is divided among the provinces according to their own estimates of what they are able to produce (See table 2). How the provinces reach their individual target is up to them. However, in the national structural vision on-shore wind energy a number of large places are designated for the exploitation of large wind farms (bigger then 100MW), for which the national government has the mandate to coordinate the process through the national coordination regulation (RCR) (Ministry of economic affairs & Ministry of infrastructure and environment, 2014). These projects are, for the most part, in the final stages.

For the remaining part each province has the freedom to make its own policy. This results in differences per provinces in the policy. In general there are two main differences. Those provinces that use a policy of a small number of big wind farms, for example North Holland and Friesland, and those that allow for singular and small scale wind turbines, for example Limburg and Gelderland (Ministry of economic affairs & Ministry of infrastructure and environment, 2014). The 'Structuurvisie wind op land' was mainly put together with the Ministry of economic affairs, Ministry of infrastructure and environment, the interprovincial consultation (IPO)

(where all the provinces come together to deliberate) and the Dutch wind energy association (NWEA) (the main representation body of the wind energy branch, from producers of wind turbines to project developers). Although other stakeholders are also part of the core team on on-shore wind energy these players can be seen as the most important players in the wind energy regime.

Stakeholders and their roles

The regime can best be understood in the context of the 6000MW target and a stringent need for renewable wind energy felt by the national government. The national government has to uphold international agreements and wants to create more renewable energy from renewable energy sources (Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014). Currently most of the regime actors are fully focussed on realising the goal of 6000MW of renewable wind energy, from which it is still a question whether or not this is going to be realised van der Gaag, 2016, PC; HARMSEN, 2016 PC; Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014). Below the most important actors in the regime are discussed and their role in the regime.

The National government

The national government has officially set the target for 6000MW and carries the official responsibility. Furthermore, it is the initiator of the on-shore wind energy policy and it has the authority on wind farms bigger then 100MW through the RCR (Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014; VAN DER GAAG, 2016, pc). The national government has as main goal the realization of 6000MW on-shore wind energy as fast and as cheap as possible in a free market setting. In its national policy it has delineated that it would prefer a small number of large-scale wind farms in order to keep the impact to the environment at a minimum (Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014). Furthermore it has taken a number of actions to speed-up the process that building a wind farm entails. The two main actions are the creation of the National Coordination Regulation (RCR) and invoking the crisis and recovery regulation. These two regulations aim at speeding-up the process by aligning a number of processes so they can run simultaneously instead of in sequence. These processes are for example the application for a license, the changing of the zoning plans, the objection procedures etc. Moreover, these regulations align the appeal procedures for multiple stages of the project, so only one moment for appeal exist instead of several. This reduces the time spent in court, which speeds-up the process of building a wind farm (van der Gaag, 2016 PC).

The provincial governments

The Provinces have the executive power of the policy. Since the provinces rejected the initial 18000MW from the government they have gotten the mandate to come up with a new target, i.e. 6000MW. The provinces have divided this target amongst them and each province has the freedom to establish its own policy to realize their own target (Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014). This makes it difficult to establish the specific roles of each province. In this research not all provinces were researched in depth, only the province of Gelderland and Limburg, because the cases selected for the case studies were in these provinces. From interviews with experts it became apparent that the strategies differ quite a lot per province. In some provinces, for example North Holland and Fryslân, there is a policy where no solitary turbines are allowed anymore and only larger wind farms are built (Craaikamp, 2015; Warbroek, 2016 PC). This is very much in line with what the national government wants. On the other hand you have for example Gelderland, which allows for solitary turbines (Harmsen, 2016 PC). The importance of which will become clear in the results. Also on the actors involved in policymaking, the rules of interaction and the degree of participation of civil society differs per province (RVO, 2016).

Gelderland has taken a bottom-up approach and, instead of top-down policy making, negotiated with local municipalities and communities on where wind energy could be realised. North Brabant has a similar approach. But many of the provinces take a more top-down approach by designating specific areas were wind energy could be realised. Increasingly though communities and local residents are involved, but the degree in which they are involved differs quite a lot (HARMSEN, 2016 PC; van der Gaag, 2016 PC; RVO, 2016). This differentiation covers everything from direct involvement in policy making to only a plenary meeting to provide information after the plans have been made (RVO, 2016). A striking conclusion from the 'monitor on-shore wind energy' is that Limburg is falling behind in the movement towards renewable wind energy. It has no conclusive policy on how to realise its portion of the target of 6000MW in 2020. The report says first steps are

now being taken in consultation with municipalities and communities, much like the approaches of Gelderland and North Brabant (RVO, 2016).

The policies differ and so do the interests the provincial governments serve. They all want to realise the target of 6000MW, but they do not attribute the same kind of importance as the National government does. Furthermore, the provincial governments are much more concerned with local interests and the attitude towards wind turbines in the provinces. We will later see that concerns of the local communities become even more important at municipal level. So the provinces are concerned with local interests, but also strive to get realize their provincial targets van der Gaag, 2016 PC; RVO, 2016; Warbroek, 2016 PC; Ministry of Infrastructure and Milieu & Ministry of Economic affairs, 2014).

Province	**MW**
Fryslân	530,5
Groningen	855,5
Drenthe	285,5
Overijssel	85,5
Noord-Holland	685,5
Flevoland	1390,5
Zuid-Holland	735,5
Utrecht	65,5
Gelderland	230,5
Zeeland	570,5
Noord-Brabant	470,5
Limburg	95,5
Total	**6001**

TABLE 6: MW PER PROVINCE (I&M & EZ, 2014)

The NWEA

The NWEA plays the part of actually building and exploiting the wind farms, actors in the NWEA are energy companies, project developers, turbine producers etc. The NWEA is mostly involved in lobbying at national level, but separate organizations, i.e. project developers and energy companies, lobby at regional and local level for contracts for wind farms. The NWEA and the organizations it represents are the main body of the regime that is responsible for building and exploiting the wind farms and generating electricity to sell to customers. These organizations own most of the assigned places for the realization of the 6000MW target. Each of the provinces has made a 'Structural vision on-shore wind energy' on where and how the targets are to be realised. Organizations within the NWEA, i.e. project developers, energy companies etc. have lobbied for these contracts or made deals with local land owners so they own the ground where wind turbines can potentially be realised according to the 'Structural vision on-shore wind energy' of the provinces.

The organizations within the NWEA base their decisions on the returns they can get from the project and the risks they have to take in the pre-development phase. These risks include the amount of time spent in court to fight appeals (which is a costly affair (yard, 2016 PC) and the applications for permits and the execution of environmental impact assessments (EIAs)(which also is a costly affair (Yard, 2016 PC, Nijmegen, 2016 PC, Geenen, 2016 PC). The latter are only useful when permits are approved, so it is a risk to invest a lot of money in EIAs and applying for licences, when it is not certain whether or not the project will hold.

The Network operators

The network operators are semi-governmental bodies and are only concerned with maintaining a safe, affordable and reliable network along the lines the energy is transported (Schwencke, 2016 PC). They also need to make plans for investments in the networks infrastructure in a time scale of around 30 years. So it is important for them to know how energy production is going to develop in the coming decades. They do not position on how this needs to be developing, they just want to know how (De la court, 2016 PC; Schwencke, 2016 PC).

The VNG and The united nature and environment organizations
Both the VNG and the united nature and environment organizations carry a controlling role in the core team. They are participating with the goal of ensuring the compliance of for example the code of conduct. Furthermore they provide an extra source of information on the progress of the 6000MW target additional to the information the provinces provide (RVO, 2016). They have much less influence then the NWEA, the provinces and the national government.

Policy instruments
The regime is based around the agreements the actors in the core team have made. These are part of the energy agreement, which is a public covenant (RVO, 2016). Furthermore the main instrument to promote wind energy is the SDE+ subsidy, which is also an instrument that is used by the cooperatives. The SDE+ subsidy provides security for the exploiters of wind turbines that they will get a good price for the energy they produce. This ensures that they can compete with other energy sources. This subsidy is an amount established each year, and as such can be exhausted (IenM & EZ, 2014). This played a role for the cooperative Windpower, who anticipated the money being spent by July, so they had to put in their application before that time (de Ridder, 2016 pc)

Current status of the target of 6000MW
The current status of the on-shore wind energy targets per province is described in the 'monitor wind op land' (in English: monitor on-shore wind)(RVO, 2016). As of the end of 2015, 2950 Megawatt (MW) was realised, from which 2000 already existed before the agreement on the target of 6000MW. This leaves 3050MW still to be realised, from which 832MW is being built or preparations for the built are made, 1355MW is still in the procedures of getting licences and adjusting zoning plans and 1151MW is still in the pre-development phase (RVO, 2016). This means that more then the required 6000MW (6288) is in some phase of construction.
However, only the aforementioned 832MW that is being built as of the end of 2015 is definitely going to happen. This means that the other 2506MW is still uncertain. The report also discusses a number of bottlenecks that have been identified in these projects. Amongst continuation of policy, a recurring theme is lack of local support. The main solution to this problem as suggested in the 'monitor wind op land' is 'field workshops'. The exact contribution of these workshops is not clear, but they aim at informing and creating involvement of civilians. It is however notable that participation by local residents is increasingly getting attention within the regime. A trend can be recognised that within the regime that participation by local residents can be beneficial for the project developer van der Gaag, 2016 PC; HARMSEN, 2016 PC).
A good example is project developer Raedthuys. In a project concerning five turbines in Deventer a local politician coupled Raedthuys and a local cooperative. At first Raedthuys only saw this as an inconvenience because more actors would increase the complexity. However, at the end of the project Raedthuys had changed its mind and is now approaching local cooperatives whenever possible (Vermeulen, 2016 PC). Furthermore, the NWEA has drawn up a code of conduct prescribing some form of local participation and investments by project developers building a wind farm. ODEdecentraal and REScoop also signed this[4] (de La court, 2016 PC; HARMSEN, 2016 PC).

Furthermore it can be concluded from the monitor that North Brabant and Gelderland have adopted a bottom-up strategy with lots of room for citizen initiatives, while Limburg is depicted as the problem child, with no clear policy on how they are to realise their target.

So in theory all is going well, the required Mega Watts wind energy are being build by actors from the current regime, leaving little room for LRWEOs to play a part in this regime. The theory is however different from practice. Local resistance to plans for wind turbines is often a deal breaker (HARMSEN, 2016 PC; Vermeulen, 2016 PC).

In conclusion
The regime consists of the NWEA, national and provincial governments, network operators, the VNG and the united nature and environmental organizations. In this regime the NWEA the national and provincial governments are the main actors. The main target at the moment is 6000MW on-shore wind energy to be

[4] See the section: 'defining the niche', for an explanation of REScoop and ODEdecentraal.

realised in 2020. This target is at the moment the priority of most of the regime actors. Although much of the plans for the 6000MW are already planned, it is still uncertain whether or not the target is going to be realised with the current methods. One of the bottlenecks identified is the lack of local support. Furthermore, the strategy for realizing the individual targets of the provinces defers per province with a clear distinction between a small number of large wind farms and a large number of small wind farms.
Lastly, an overall trend recognised by the IPO, participation by local civilians in wind farms, is increasingly getting attention within the regime (van der Gaag, 2016 PC).

4.2. DEFINING THE NICHE

In this section the main actors and their roles in the niche will be discussed. As will become clear throughout this section, some of the actors in the niche are also important at regime level, but because they are more related to the niche they will be discussed here.

Introduction
At niche level the main players are: ODEdecentraal, REScoopNL, HIERopgewekt and the HIERklimaat bureau at national level. At the regional level there is much less organization. Examples of umbrella cooperatives, i.e. cooperatives of cooperatives, are: Noordelijk lokaal Duurzaam (NLD), the association Gelderse Energy cooperatives (VGEC) and REScoopLimburg, where NLD is a cooperative of cooperatives of cooperatives. These actors together with all local cooperatives form the niche of cooperative wind on-shore wind energy in the Netherlands (Warbroek, 2016 pc; De la court, 2016 pc; HIERopgewekt, 2016; Schwencke, 2016 pc). Furthermore, the municipalities and provinces can be identified as governmental bodies that influence the niche. These actors are operating within the boundaries of the incumbent regime, in this case the policy target of 6000MW.

Before going into depth into each of the actors' roles in the niche it must be understood that as far as can be seen after this research the indication is that there is not yet a clear niche that has been developed. There are linkages between actors and signs that a niche is forming, but a clear niche with an established mode of governance is difficult to identify.

Goals and visions
As is just said, the niche is still forming, so it is difficult to distinguish one set of goals and visions. Establishing a niche wide set of goals and visions costs a lot of time, which is often not available because many of the actors are working voluntary next to their daily job. Furthermore, most local cooperatives are very much busy with doing their own thing, realizing their own turbine, which is hard enough without having to build a niche additionally (Schwencke, 2016 PC). However, there is one overlapping goal among the participants in wind energy cooperatives. This is the goal of a fossil fuel free energy system (De la Court, 2016 PC; van der Stappen, 2016 PC; De Greeff, 2016 PC; de Ridder, 2016 PC).

Stakeholder Position
ODEdecentraal:
ODEdecentraal is, among others, a lobbying organization that lobbies for better circumstances for local cooperatives. This lobbying organization operates at the national level (Zomer, 2016 PC; De la Court, 2016 PC). It can also be seen as a regime actor, since it works together with regime actors and lobbies at regime level (Vermeulen, 2016 pc; de la Court, 2016 PC). It has however difficulties with keeping up with the bigger lobbying organizations of large energy companies. This is because they do not have the resources to compete; it is an organization that leans on volunteers (De la Court, 2016 PC). Although many of the wind energy cooperatives are member of this organization, there is not yet a monetary flow between these cooperatives and ODEdecentraal to create a fund from which professional lobbyist can be paid (De la Court, 2016).
Furthermore, this organization is one of the main actors that are organizing the niche of local wind energy cooperatives. One of the ways in which ODEdecentraal is doing this is through the so-called 'broad communication'. This is mainly ensuring that new cooperatives are able to network and find the right sources for getting the right knowledge and funding for example (De la Court, 2016 PC). Each year they organise the HIERopgewekt event where cooperatives can meet, exchange ideas and network (De la Court, 2016 PC).
Lastly ODEdecentraal is providing feedback and knowledge for when cooperatives want to go a step further and professionalize, because this step requires a juridical sound organization that upholds to specific laws and legislations. So ODEdecentraal provides knowledge and a knowledge-sharing platform on this for cooperatives. Furthermore they work together with the authority financial markets. The authority financial markets is the authority when it comes to financial products, a part that is often not handled correctly by the cooperatives the first time (De la Court, 2016 PC.)

REScoop:
REScoop has been set up as a project developer for cooperatives and is part of ODEdecentraal, but nonetheless a separate actor in the niche. REScoop is: "a cooperative for wind cooperatives that also bundles experience and knowledge on project development, finance, cooperative building of business cases, land holdings and

advises parties and also participates in the financing of projects. So that's a young cooperative project among the other major commercial project developers" (De la Court, 2016 PC).

NLD, Gelderse Energy cooperatives, REScoopLimburg
These are all cooperatives of cooperatives that are mainly working on either regional or provincial level. They are a bundling of cooperatives in the region or province and as such represent a large number of cooperatives that in turn makes it a more substantial player at provincial and regional level (Warbroek, 2016 pc). Therefore they are better able to influence policy. REScoopLimburg has already been able to take part in plans for 10 to 15 turbines from a number of municipalities in the province of Limburg (Weert.nl, 2016). And the Gelderse energy cooperatives are an important interlocutor for the generation of policy on wind turbines by the province of Gelderland (Bruggink, 2016).

Local Cooperatives
The local cooperatives are the main body this niche is concerned with. The stakeholder position in the two cases was a bit different. In the case of Zuidenwind it was a real trial and error process, where they could not participate in the initial plans because they did not meet the legal requirements. Van der Stappen (2016 PC) already acknowledged that this was for a big part because of the lack of knowledge. This shows the vulnerability of the cooperative, which led to a regime actor taking over their place. Furthermore, the fact that the cooperative was based on voluntary commitment made that a professional approach was difficult. However, the cooperative approach did prove, for municipalities around Weert, that realizing a wind farm in their municipalities is possible without too much resistance when taking a cooperative approach (van der Stappen, 2016 PC; Weert.nl). These municipalities are now advocating a cooperative approach to any new wind turbine created (van der Stappen, 2016 PC; Weert.nl). This makes the position of cooperatives much stronger.

This is in accordance with what is said by other interviewees. Municipalities are increasingly seeing the added value of a cooperative. That is that they represent a pro-voice in the local community, where previously only the counter voice was only heard. This is especially important for municipalities to agree with plans for wind turbines. Municipalities are very sensitive for feelings in the local community. If they have the feeling there is only resistance within the community they won't approve any plans. So one of the biggest added values of cooperatives is that they provide the municipality with the much needed support to make a decision in favour of wind turbines (de Ridder, 2016 pc; Vermeulen, 2016 PC; van Ginkel, 2016 PC).

Municipalities
Municipalities are in the case of wind cooperatives often the authoritative body on the decisions on the placement of turbines. As said they are vulnerable to local feelings towards wind turbines. In the case of Windpower Nijmegen the municipality was an important player. They provided networking opportunities and some funds for the cooperative (van Ginkel, 2016 PC). But as to the position of this stakeholder in the niche, they are the authoritative body. The most important for the municipality is to serve the local community. If the community is against wind turbines, so is the municipality and the other way around. As an illustration, in the case of Windpower Nijmegen, it was the case that also the deputies from the VVD[5] voted in favour of the turbines, mainly because it was a completely local project (van Ginkel, 2016 pc).

Provinces
The niche consists of the LRWEOs, the municipalities and to some degree the provinces. The provinces to a great extent define the context in which the cooperatives can operate. For example in Friesland the Province has adopted a policy that does not allow for solitary turbines, which is a big problem for cooperatives, who are often aiming at the exploitation of only one or two turbines (Warbroek, 2016 PC). In the case of Gelderland, the cooperatives have been intimately involved in policy making, which has resulted in a stimulating policy for bottom-up initiatives (Bruggink, 2016 PC). The province of Limburg on the other hand is lacking any kind of policy on wind energy (RVO, 2016). Therefore it is often up to municipalities to decide on the placement of wind turbines. And the law says that if a project fulfils all legal requirements, municipalities have to approve it (De Ridder, 2016 PC; van Ginkel, 2016 PC; Vermeulen, 2016 PC). This means that a cooperative, provided that they oblige to all the legislations, has a good possibility to build a wind turbine.

[5] The VVD stands for 'volkspartij voor vrijheid en democratie' in English: People's Party for Freedom and Democracy. This is a right wing political party in the Netherlands

Conclusion

The niche consists of ODEdecentraal, Municipalities, LRWEOs, provinces and cooperatives of cooperatives. These actors all have different interests and goals that not always align. Furthermore, most of the local cooperatives are working to get their own ideas of the ground and are not ready to contribute to creating a niche and aggregating goals and visions. Furthermore, the provincial government determines to a great extend the opportunities for cooperatives to even build a turbine. Lastly the cooperative niche is able to penetrate every administrative layer, i.e. local, provincial and national by using different tools. At the local level they provide a much needed pro-voice for municipalities, on the provincial level they have organised in such a way that they are a sizable actor to consider and on the national level they penetrate the system through an active lobbying campaign.

5. INTRODUCTION OF THE CASE STUDIES

In this chapter the two case studies that have been researched will be presented. In chapter 6 'Results' there will be referred to this chapter for further clarification of the events. The cases will be put in the perspective of the layers of the niche and the regime in the results chapter.

5.2. WINDPOWER NIJMEGEN

The description of this case is based on interviews with C. de Greeff (board member of the cooperative Windpower Nijmegen), P. de Ridder (project developer and member of cooperative Wiek 2), M. van Ginkel (employee of the municipality of Nijmegen and coordinator of spatial projects that have to do with sustainability in the spatial planning), A. de Meijer (policy advisor at the GNMF) and W. Bruggink (project coordinator structural vision on-shore wind for the province of Gelderland.

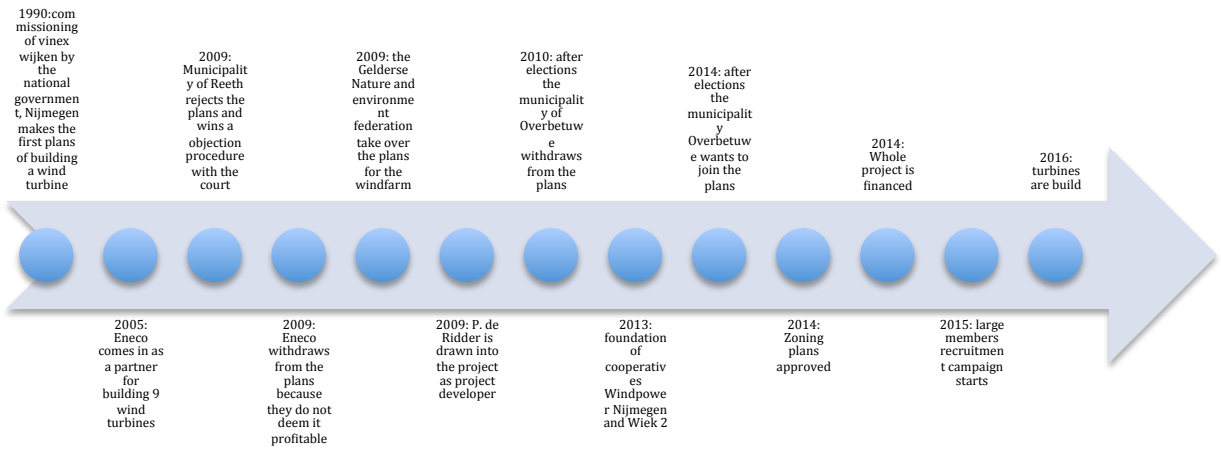


FIGURE 4

Before the cooperative

The first plans for wind turbines in Nijmegen can be drawn back to the 1990s. At that moment plans were made for a new neighbourhood north of the city of Nijmegen. This neighbourhood was in line with national plans to increase the number of homes in the Netherlands; the vinex plans (VIerde Nota EXtra) (van Ginkel, 2016 PC). Early on in that project the municipality of Nijmegen had the idea of building wind turbines along the highway that marked the end of the neighbourhood. This idea came, among others, from active citizens. Nijmegen at the time comprehended a big population of activist citizens that were concerned with renewable energy (Van Ginkel, 2016 PC; de Ridder, 2016 PC). The municipality of Nijmegen started looking into the possibilities of the turbines, first alone, later with other people from the region, municipalities and civil organizations (van Ginkel, 2016 PC).

In 2005 Eneco came in as a potential partner in the development of the project. At that point a zoning plan for nine wind turbines was established with Eneco, the municipality of Nijmegen and adjacent municipalities (Reeth & Overbetuwe). The municipality had considered a citizens initiative to build and exploit the turbines, but decided to attract a contractor (Eneco) instead. This was because the municipality did not have the confidence that a civil organization could handle developing a complete wind farm (van Ginkel, 2016 PC). This was, among others, because a similar civil initiative alongside the A73 had failed around that time (van Ginkerl, 2016 PC). Participation of local civilians was however part of the deal between Eneco and the municipality of Nijmegen.

In 2009, however, the municipality Reeth started an objection procedure, which they won at the council of state (the highest objection court) based on a technicality. After this ruling Eneco withdrew from the project after they already started to have doubts about the yield of the project (van Ginkel, 2016 PC).

The start of the cooperative
Almost the same day the council of state dismissed the plans with Eneco a working group of local partners in sustainability met up (the group was called 'power to Nijmegen)[6]. The municipality Nijmegen and the Gelderse environmental and nature federation (GMNF) were members of this working group. Within this group the GMF announced it would want to take over the project and realize it as a complete civil initiative with local citizens as owners of the wind farm (Meijer, 2016 PC).

This marked the start of the civil wind farm Nijmegen. The GMNF started looking for someone that had the knowledge of realizing a wind farm. This would be a local project developer who had experience with the development of a wind farm (van Ginkel, 2016 pc; de Ridder, 2016 pc).

The local project developer and the GMNF came to the decision that they would need a professional organization for the development of the wind turbines. This led to the foundation of two organizations in 2013, the cooperative WindpowerNijmegen and the foundation Wiek 2. The cooperative would manage the recruitment of members and the communication with local inhabitants, while the foundation Wiek 2 would manage the procedures and technicalities that building a wind farm involves (de Ridder, 2016 pc).

Change of plans, withdrawal of Overbetuwe
In the mean time, the initial plan for nine turbines was replaced by plans for four wind turbines. This was because the initial project was together with the municipality of Overbetuwe. Overbetuwe would account for 4 wind turbines and Nijmegen for five. However, Overbetuwe withdrew from the project after elections put a party against wind turbines in charge in Overbetuwe (van Ginkel, 2016 PC)[7]. Furthermore, the municipality of Nijmegen owned the ground for four turbines' positions and one position was on the ground of a farmer who did not want to sell his land to the cooperative. The cooperative chose to proceed with the four wind turbines (de Ridder, 2016 PC). They continued to negotiate with the farmer instead of coerce the farmer to give up his land, because they did not want to be on bad terms with him (de Greeff, 2016 PC).

Funding
Now there were plans for four wind turbines that were initiated by the Gelderse nature and environment federation (GNMF) with the help of a local project developer and the support of the municipality. The Gelderse nature and environment federation and the project developer proceeded by founding two cooperatives: Wiek 2 and Windpower. Wiek 2 was the executive cooperative; the cooperative that would lead the project and Windpower was in charge of getting support, getting members and would eventually own the wind turbines, when they were placed (de Greeff, 2016 PC; de Ridder, 2016 PC). Wiek 2 was, from the start, a professional organization with professionals working on the development of the wind farm with an experienced project developer leading it. The people working here worked on a 'no cure no pay' basis (de Ridder, 2016 PC). They would be paid from the revenues of the wind turbines, meaning that they would not be paid if they would not end the project successfully. Furthermore there was some funding from the province for the costs of founding a cooperative, funding from the municipality for the planning procedures and a price question from the province of Gelderland that provided 100.000 euros presented additional forms of funding.
For the turbines itself most of the money would come from a mortgage granted by the Rabobank and money from members. The funding was consequently divided as follows:

-Members of the cooperative:	2.000.000 euro
-Province of Gelderland:	1.000.000 euro
-Rabobank:	13.000.000 euro
-Municipality of Nijmegen:	80.000 euro
-Price question:	100.000 euro

[6] 'Power to Nijmegen' is a network of people in the region that have something to do with sustainable energy. The Municipality of Nijmegen created this network as a co-creation route, so these organizations could work together and brainstorm on how to put the energy transition in the region into work. (van Ginkel, 2016 pc; power2Nijmegen.nl)
[7] Since this, there have been new elections and Overbetuwe is again investigating the possibility of placing the wind turbines

The membership recruitment campaign
After the plans were mostly secure, the cooperative needed to get enough members to fund the turbines. In order to reach as much citizens as possible the cooperative started a professional membership recruitment campaign that ran the entire summer of 2015. For this campaign several professionals from within the community were involved to set it up. This proved very successful and there was even more money available from within the community then was needed (de Meijer, 2016 PC; de Ridder, 2016 PC; de Greeff, 2016 PC).

Role of the municipality
The municipality had to decide its position in the project; would it take an active or a passive role in this? The municipality actively struggled with this question (van Ginkel, 2016 PC). There was a discussion group organised from the national government where municipalities could discuss this question. They looked at the possibilities they had, i.e. would they only be facilitating by providing the basic conditions for the project or organize, develop and invest in the project themselves. In the end the municipality decided that they would finance the planning procedure in advance and would bear the risks if this would not yield any results. Furthermore they helped organise citizen participation and supported the cooperative getting finance from the province for setting up the cooperative[8] (van Ginkel, 2016 PC). Next to this, the municipality had the ground positions for the wind turbines, which they consequently decided to sell to the cooperative.

Also interesting to mention is that when the council of the municipality had to decide about the zoning plans, 36 of the 38 members voted in favour of the plans. This was partially because the entire project was bottom-up from the citizens of the municipality and everything was handled locally and partially because the council had set 2045 as a target of being energy neutral (van Ginkel, 2016 PC). This effectively means you cannot block plans that are working towards that target.

[8] The province had a special subsidy fund for the starting of cooperatives that would want to invest in wind energy (de Ridder, 2016 PC; Bruggink, 2016 PC)

5.2. ZUIDENWIND

The description of the case is based on interviews with H. Geenen (initiator and local entrepreneur), J. van der Stappen (member of the cooperative and council member of the municipality Weert), S. Zomer (member of Windvogel and temporary board member of Zuidenwind), H. Doorenspleet (employee of Rabobank) and G.H. Verbeek (employee of Yard energy group).

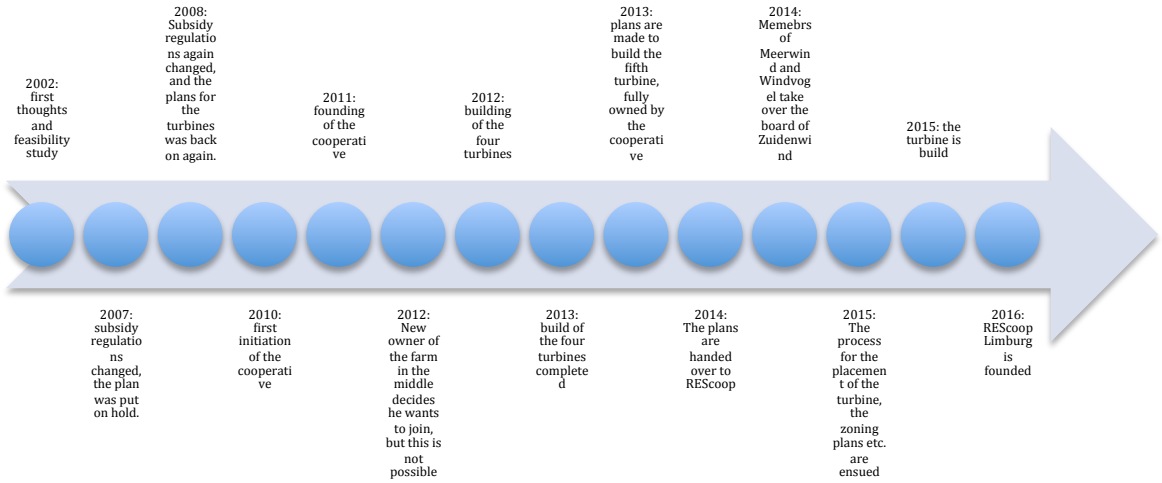


FIGURE 5

Before the cooperative

The first thoughts about creating a wind farm in the vicinity of Weert started in the year 2002. This idea came from two local entrepreneurs, Har Geenen and Jan van Eck. They started by asking the municipality of Weert to do a feasibility study on wind energy in the region. At the time a program was in place that the province would pay this, so the municipality ha no reason not to do this (Geenen, 2016 pc; van der Stappen, 2016 pc). A feasibility study was conducted and some locations were designated as possible sites for the generation of wind energy. Hereafter Geenen and van Eck put the plans on hold for a while (Geenen, 2016 pc). Until time became of the essence when a larger project developer started to show interest in the locations for wind energy, meaning that they would loose the locations. The two entrepreneurs did not hesitate, because they were convinced it should be done locally (Geenen, 2016 pc). At that time the two entrepreneurs started negotiations with local farmers for land positions. This was followed by the legal procedures of requesting a change of the zoning plans and doing an EIA (environmental impact assessment). This was all paid for with private funding of the two entrepreneurs. According to the entrepreneurs the EIA and change of zoning plans would have been approved, but due to a miscommunication among departments of the province one turbine had to be removed from the plans (Geenen, 2016 PC). It was too close to a nature reserve. In 2007 the subsidy regulation changed, making the plan not viable anymore. The plan was put on hold (Geenen, 2016 pc). Then in 2008 after again a change in the subsidy regulations the plan was viable again and the two entrepreneurs restarted their efforts. After a back and forth of plans for the wind farm between the entrepreneurs, the municipality and the province the plans were approved and they applied for a licence to build the wind turbines. At this point the cooperative was founded, but that, for several reasons, was not able to take part in the project (see the heading ‘the start of the cooperative’).

The entrepreneurs found Yard as an external financier instead of the cooperative and proceeded to build the turbines without the cooperative. This did not fall well within the cooperative. At that moment the objection procedures against the licence started. This is often an expensive part of the process. Yard was a welcome financier at this point and it also had expertise in handling these kinds of lawsuits (Verbeek, 2016 pc; Geenen,

2016 pc). The objections were declared unfounded. The four wind turbines were built without the cooperative and with the outside help of project developer Yard.

From five to four turbines, a blessing for the cooperative
In the mean time one of the five farmers on whose property the turbines would be build moves and the next owner is at first hesitant to join, making the plans go from 5 to four wind turbines. The turbine that is lost is the one in the middle.

The start of the cooperative
After applying for the licence to build the turbines Geenen and van Eck decided a cooperative should be founded in order to let surrounding citizens join and profit from the project. This led to the founding of the cooperative Zuidenwind. There were however some difficulties for the cooperative to join the project. One of the difficulties was that the cooperative promised a fixed yield on the obligations they would sell to members. This is against regulations and the authority financial markets (AFM) stepped in and stopped the cooperative participating in the project using this particular financial product (Geenen, 2016 pc; van der Stappen, 2016 pc). A second difficulty was that the cooperative was lending money to a project without them being the owner. This meant they were acting as a bank, for which they needed to have a licence, on which ground the AFM also stopped the cooperative participating in the project. This all meant that the cooperative needed time to change these faults, which the two initial entrepreneurs did not have (Geenen, 2016 PC; van der Stappen, 2016 PC). The two entrepreneurs continued with their plans without the cooperative for several reasons. First of all they had been dragging the project at that time for about 8 – 10 years and they wanted results. Secondly because some of the farmers, on who's ground the wind turbines would be built, started to withdraw because of the long time span (Geenen, 2016 pc).

In the mean time the new farmer, in the middle, had changed his mind and wants to join the project. However, because the licence did not cover this it could not be taken in with the other four and a new legal procedure had to be followed for this fifth turbine (Geenen, 2016 pc; van der Stappen, 2016 pc). Geenen decided he would endeavour to build this fifth turbine with the cooperative (Geenen, 2016 PC). The cooperative was interested, but at first the entrepreneurs still wanted to own a part of this turbine. After deliberation it was decided that the whole turbine would be developed and owned by the cooperative (Geenen, 2016 PC; Geenen, 2016 PC).

The building of the turbine
There were some difficulties with building the wind turbine itself. Both the board members and the other members of the cooperative wanted to build the turbine, but the board members felt that it was impossible to raise enough money (1milion euros) and they did not feel comfortable handling that amount of money of their members (van der Stappen, 2016pc; Zomer, 2016 pc). In order to overcome this they tried to find another solution and arrived at the concept of wind sharing. This is an option of green choice that comes down to green choice owning and being responsible for the turbine and the members of the cooperative buying shares of the turbine. This would exempt the board members from the responsibility. The members of the cooperative however did not agree with this option, because they would have no say over the revenues the turbine would produce. The board members therefore discarded the idea, but still did not want to carry the burden of responsibility. They resigned and put the idea of the turbine at the wind department of REScoopNL[9] hoping there could come some new input from them (van der Stappen, 2016 PC).

This indeed was the case. From REScoopNL, two 'older' cooperatives (already founded in the 90s) joined to help Zuidenwind built its wind turbine. These cooperatives were Windvogel and Meerwind. Meerwind is a cooperative from North-Holland and was probably looking for an opportunity to put their money at work, because the province where they are based, North-Holland, did not allow for any more wind turbines. While they already had some from which they had some of the revenues saved up for future investments (van der

[9] REScoopNL is a part of ODEdecentraal, that is a cooperative project developer and place where smaller cooperatives can go to for expertise and money. It is an umbrella cooperative, which means it is a cooperative from cooperatives. This means that cooperatives can join REScoopNL.

Stappen, 2016 pc). Windvogel was around the time just starting to get more active again after they had built their first turbines in the 80s and 90s[10] (Zomer, 2016 PC).

So these two cooperatives joined Zuidenwind on the one hand bringing in expertise and on the other hand money. The expertise came in the form of three representatives of the two cooperatives who replaced the existing board of Zuidenwind. Immediately they started the processes that were needed and, according to van der Stappen, brought a sphere with them that it was going to succeed, which had previously been absent (van der Stappen, 2016). They had expertise and knew the moments were it was necessary to hire professionals in order to secure a smooth process (van der Stappen, 2016 pc). The fact that the two cooperatives would also invest in the turbine reduced the money that needed to be raised by the members of Zuidenwind. Consequently, the money that needed to be raised from members of Zuidenwind was brought down from 1 million to around 200.000 euros. The wind turbine cost in total around 3 million euros. Half of this was paid for with a mortgage from the Rabobank, this is normal procedure with wind turbines (Van der Stappen, 2016; Doorenspleet, 2016; pc). Sometimes even more is paid for by mortgage, but since the idea was a cooperatively owned turbine, the cooperative wanted to put in as much own money as possible (Van der Stappen, 2016; Doorenspleet, 2016; pc). This would result in earlier and larger revenues for the cooperative instead op paying off the mortgage and the interest (Doorenspleet, 2016 PC).

After the turbine started to produce energy, this energy still needed to be sold and brought to the right people, i.e. the members of the cooperative. Therefore there is the cooperative DEunie, who has a licence to buy and sell energy and is also a cooperative of cooperatives. This process requires a licence and specialised knowledge. Therefore it is very hard to manage this within the cooperative. Therefore this process was trusted to DEunie, who then sell the energy to the local energy cooperatives of Leudal, Weert and Peel & Maas, who then sell it to their own members (van der Stappen, 2016 PC).

The membership recruitment campaign

A membership recruitment campaign was started with the help of a member of Zuidenwind who had some expertise on this area and already started working on it at the time the previous board initiated the idea of green choice (van der Stappen; 2016 pc). This was at the request of the previous board because they wanted to keep their options open at the time. The recruitment campaign was far from massive advertisements. It was set up with the help of several other local energy cooperatives: Leudal energy, Weert energy and Peel & Maas energy. The campaign consisted of small scale meetings in each of the municipalities were people could join and get information about Zuidenwind (van der Stappen, 2016 PC).
In the mean time the license and other legal procedures were already done. This went a lot easier because it was the fifth turbine in the middle of the wind farm so the impact was not any bigger. There were also almost no objections. This was probably due to the cooperative nature of the turbine, but also because it was the fifth in the middle, which made the impact not so big.

Ensuring local support

Directly from the start the three new board members from the other two cooperatives started talks with the surrounding citizens from where the turbine would be placed about what they needed. This was among others to ensure local support, but also because of the vision that the revenues of the turbine should flow back into the local economy. These talks resulted in a plan to build an optical fibre network in the neighbourhood. The local citizens mostly consisted of farmers in a rural area where Internet was said to be very slow. This meant that this was a quick and clear decision for the farmers who could also use faster Internet to develop their businesses. This project would be financed partly by the cooperative Zuidenwind, partly by the residents themselves and partly by the Rabobank, who also financed half of the wind turbine of Zuidenwind. The project for glass fibre cabling was also put down in a cooperative (van der Stappen, 2016 PC; Zomer, 2016 PC).

[10] Led by Siward Zomer, who is a major player in the niche formation of the current wind energy cooperatives as chairman of Windvogel and ODEdecentraal and secretary of REScoopNL. So this was a great opportunity for him to put these newly founded umbrella cooperatives and their structures to work.

The cooperative in the future

At present the turbine is working and bringing in money, but the cooperative Zuidenwind is not intending to stop now. After the success of the first turbine, the cooperative intends to help built more. Surrounding municipalities have also advocated for a cooperative approach for the exploitation of new wind turbines (van der Stappen, 2016 PC). Moreover, there are now plans for at least one extra project in each of the municipalities involved: Leudal, Peel en Maas and Weert. This means that Weert will get a second wind farm. This is despite Leudal previous being against the building of the first wind farm. Next to this a partnership between Leudal energy, Weert energy, Peel and Maas energy and Zuidenwind has resulted in the foundation of REScoopLimburg. This will be a branch of REScoopNL that can help other cooperatives in the region and develop on its own wind energy projects (van der Stappen, 2016 PC). This will be in the first place in the municipalities that advocated cooperative input in new wind energy projects. One of the reasons this came to be was because of the cooperation between these cooperatives in the membership recruitment campaign. According to one of the interviewees this built a solid base for trust and a communal desire for wind energy projects (van der Stappen, 2016 PC).

Altogether, the project had some difficulties in the beginning due to lack of knowledge, but it was back on track after two other cooperatives got involved with expertise, experience and funding. They immediately started the necessary legal procedures and talks with surrounding citizens about how the turbine could benefit them. Especially interesting was that the citizens themselves could come up with the project. The membership recruitment campaign was also successful and brought in the necessary members and funding to finish the project. The cooperation with local cooperatives also started an umbrella cooperative with knowledge and funding for future projects. Also the success of the cooperative led to other municipalities advocating further development of wind farms in a cooperative manner.

6. RESULTS

In this section manifestation in the empirical data of each umbrella factor will be discussed, what form of regime influence could be identified and how the governance features can be applied. It will be discussed whether or not this is similar with the conceptual framework or completely different. Furthermore, new umbrella factors will be defined in section 6.7 'additional drivers and barriers'. Each of these umbrella factors gets its own section. At the end of this chapter a synthesis is added to discuss the interrelations and complexity of the umbrella factors, forms of regime influence and governance features and to highlight the most important results.
The table below shows each of the umbrella factors and how they were anticipated to relate to the forms of regime influence and governance features as was presented in the conceptual framework. The table also shows in which section what umbrella factor is discussed.

Section	Driver/Barrier	Form of regime influence	Governance feature
6.1	Active Niche building	Creating a strong and robust niche so the niche can take over the regime	Goals and visions
6.2	Cooperation between niche and regime	Aligning with the regime so the niche can integrate into the regime	Stakeholder position/policy instruments
6.3	Active learning	Creating a strong and robust niche so the niche can take over the regime	Stakeholder position
6.4	Role of the government	Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position
6.5	Institutionalization	Creating a strong and robust niche so the niche can take over the regime/ Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position
6.6	Ability of niche to influence the decision making level	Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position
6.7	Additional drivers/barriers found		

TABLE 7: CONCEPTUAL FRAMEWORK AND ADDITIONAL DRIVERS/BARRIERS

6.1. ACTIVE NICHE BUILDING

The factor 'active niche building' was derived from the SNM literature based on the assumption that a strong and robust niche is better equipped to take over the regime. The governance feature fitting to this factors was 'goals and visions'. A strong niche consists among others of aggregated goals and visions, routines and the building of social networks.

Driver/Barrier	Form of regime influence	Governance feature
1. Active Niche building	Creating a strong and robust niche so the niche can take over the regime	Goals and visions

In the empirical data there are signs of active niche building, with the exact notion to create a more robust niche. This can especially be seen when looking at the actors *ODEdecentraal* and *REScoopNL*. As is noted by De la Court (2016 PC), these actors have something to gain when the niche becomes stronger. At this moment

ODEdecentraal is still an organization that consists of volunteers. However, if they are able to create strong functional cooperatives, they can ask for funds from these cooperatives. These funds can be used to create a professional organization that can actively participate in the lobbying process (de la Court, 2016 PC). However, as de la Court (2016 PC) explains, this means that the cooperatives that make up the supporters need to be convinced of the advantages of ODEdecentraal (de la Court, 2016 pc). Their goals and visions must align with that of ODEdecentraal. This is the ideal version for ODEdecentraal. However, many of the cooperatives they are in contact with are not yet at a stage where they are making money that can be allocated to ODEdecentraal. Also some do not see the exact advantages of an organization such as ODEdecentraal. As de la Court (2016 PC) explains, many of the cooperatives are struggling to get their own project of the ground, much less think about expanding and helping others.

Looking at the governance feature 'goals and visions' this comes down to the fact that the goals and visions among niche actors are still being developed. In the case of Windpower the first turbines are nearly realised and they are, as this is being written, discussing what the future of the cooperative should be (de Greeff, 2016 PC). However, both case studies and many of the interviewees for the cooperative niche expressed interest in more civilian participation in wind energy projects and that, if possible, the cooperatives should help each other (de Ridder, 2016 PC; van der Stappen, 2016 PC; Rabobank, 2016 PC; Zomer, 2016 PC). So there is some degree of overlap in goals and visions being pursued.

Furthermore, there are some umbrella organizations (cooperatives of cooperatives) founded that can represent cooperatives in a specific region or province, such as: Noordelijk lokaal Duurzaam (NLD), the association Gelderse Energy cooperatives (VGEC) and REScoopLimburg. This shows that there is a tendency towards cooperation, networking and thus niche building. In the case of Zuidenwind there is a will to expand and help other start-up cooperatives (van der Stappen, 2016 pc). This led to building social networks in the form of REScoopLimburg. The creation of umbrella cooperatives like REScoopLimburg creates a more substantial and bigger actor that could better influence policy. This can be seen in the case of REScoopLimburg, which has been able to play a role in creating wind energy policy in other, surrounding, municipalities of Weert where Zuidenwind was situated (van der Stappen, 2016 PC; Weert.nl, 2016). The founding of such 'umbrella organizations' has another important benefit. That is that policy makers may want to ask cooperatives to the negotiation table, but they therefore need a representing actor that they can ask and that has some experience (Raven, 2016 PC).

Another form of active niche building that has been recognised in the empirical data is the organization of several networking events, where practices can be exchanged. An example is the yearly HIERopgewekt event where cooperatives come together and present their cases to each other. Furthermore, the organization of workgroups on specific subjects of wind energy production is an activity that provides networking and learning opportunities for start-up cooperatives (de la Court, 2016 pc; Geenen, 2016 pc; Zomer, 2016 pc; de Ridder, 2016 pc).

Conclusion

The activities described above are in the SNM theory drivers of niche building and thus influence the ability of the niche to influence the regime. But actual regime influence from these factors cannot be recognised in the empirical data. The most influence that can be recognised is the influence on municipal level that has been achieved by REScoopLimburg. Moreover, from the empirical data can be concluded that there is not yet a niche. As said, most of the cooperatives are struggling to get their own project of the ground, much less that of others. The goals and visions of the niche also have not been developed yet or can be seen as divers or barriers for that matter. There are a number of actors, mostly within ODEdecentraal, that are trying to build a niche that is stronger and bigger so institutionalised funding for ODEdecentraal can be realised and the niche can operate as one strong actor that can influence policy at the national level instead of only the municipal level. But the revenues of these activities and if they will succeed are still to be seen. Furthermore it is important to keep creating overlapping organizations that represent the niche. This is an important factor in the theory of TM, which influences the ability of the niche to be present at the decision making level (Raven, 2016 PC).

6.2. COOPERATION BETWEEN NICHE AND REGIME

The umbrella factor "cooperation between niche and regime" was derived from the Transition Management literature, but also has some intersections with Strategic Niche Management. It originates from the main idea in Transition Management that looks at niches as a tool for transitions at regime level, which means there is a high degree of cooperation between niche and regime to experiment with innovative ideas. SNM also advocates some degree of alignment and cooperation between niche and regime, because the shock from the niche would otherwise be too big if it did not have some similarities with the regime.

Driver/Barrier	Form of regime influence	Governance feature
Cooperation between niche and regime	Aligning with the regime so the niche can integrate into the regime	Stakeholder position/policy instruments

In both the case of Zuidenwind and Windpower cooperation between the cooperative and regime actors has been very little or non-existent. The highest degree of cooperation between niche and regime can be seen in the case Windpower. Here Lagerweij[11] participated in the project of the cooperative by funding part of the project, in exchange for the early decision to build turbines produced by Lagerweij. There is so little cooperation between cooperatives and regime actors simply because the cooperatives, in the cases researched, did not need them. When asked, van der Stappen (2016, PC) answered that if needed the cooperative would probably have cooperated with an actor as Eneco, but it was simply not necessary (van der Stappen, 2016 PC). Considering the funds[12] Windpower had more funds available from members then was needed (de Greeff, 2016 pc; de Ridder, 2016 PC). Also when it came to expertise in building turbines, this was available from networks outside the regime. Zuidenwind borrowed expertise from members of REScoopNL in the form of three interim board members (van der Stappen, 2016 PC), while in the case of Windpower one of the initiators was a project developer in wind energy (de Ridder, 2016 PC). Also the ground positions were not an issue for both cases. In the case of Windpower the ground was largely owned by the municipality and in the case of Zuidenwind the ground was owned by a recently moved farmer, which meant the possible contracts between ground owners and investors were not an issue (van der Stappen, 2016 PC).

The NWEA and the project developers spoken to also say that they are open to cooperation with cooperatives (yard, 2016 PC; Eneco, 2016 PC; Bruggink, 2016 PC; Vermeulen, 2016 PC). The main goal of these regime actors is to build as cheaply and as fast as possible wind turbines Vermeulen, 2016 PC; Eneco, 2016 PC). Especially Raedthuys and Eneco acknowledge that a project can go faster with the participation of a cooperative than without Vermeulen, 2016; Eneco, 2016 PC). It is also cheaper, because it would lead too less judicial costs due to the reduced number of appeals. Judicial costs are often a large part of the costs before the project can be realised (Yard, 2016 PC). The interviewees described the cooperation between them (the project developer) and a cooperative as a matter of reciprocity; the cooperative has the local support and the project developer the funds and expertise (Vermeulen, 2016 PC; Eneco, 2016 PC).

The regime actors described above are a bit smaller then the large companies such as Vattenfal or NUON for example and they seem to be the frontrunners, as they also describe themselves (Vermeulen, 2016 PC). Furthermore their policies on cooperation with cooperatives are only one or two years old (Vermeulen, 2016 PC; Eneco, 2016 PC). This shows that it is not common business within the regime to cooperate with cooperatives, but they fit the picture of a trend that participation by civilians is increasingly getting attention by regime actors in some form or another (van der Gaag, 2016 PC; Bruggink, 2016 PC; Schwencke, 2016 PC).

Furthermore, municipalities and the province of Gelderland are increasingly pushing for cooperatives to participate in any new wind energy project (van der Stappen, 2016 PC; Schwencke, 2016 PC; de Backer, 2016 PC; van der Gaag, 2016 PC; van Ginkel, 2016 PC). Although they cannot make this legally binding, this gives cooperatives a much better position in the negotiations with regime actors. A good example of this is given by Raedthuys. They were more or less obliged by the municipality of Deventer to work together with a cooperative in a project. At first they were hesitant, because this would mean they would lose some of the revenues to the cooperative, i.e. one turbine would be owned by the cooperative. However, after considering the positive and negative effects of the cooperation they decided that letting go of one turbine and owning the

[11] Lagerweij is a turbine producer based in Nijmegen, Gelderland

[12] Funds, expertise and ground positions are the main reasons a cooperative could decide to work together with a regime actor.

other, would be better than owning none. This was in 2015, and since then they are working together with cooperatives in multiple cases and they are actively searching for them (Vermeulen, 2016 PC).

On the national level it is clear that the cooperatives do not always want to cooperate with regime actors. ODEdecentraal has explicitly declined some regime actors as partner, simply because they have different views on how the energy network should develop (de la Court, 2016 PC). They do however have links with CEOs of a number of regime actors. They also closely work together with the network operators in the lobbying process (de la Court, 2016 PC). Furthermore, de la Court (2016 PC) explains that ODEdecentraal and REScoop are beginning to draw-up contracts with some project developers. These contracts mainly entail that these project developers can, from the start, negotiate with cooperatives on how to realise a project. This also reflects the willingness of regime actors to cooperate with cooperatives.

Conclusion

It can be concluded that the cases of Zuidenwind and Windpower were not specifically opposed to cooperation with regime actors, but simply did not need them. Therefore cooperation between niche and regime actors was not found in these cases. However, there are examples where cooperation has been profitable for both the regime and the niche actor, which fits a recognisable trend. The implications of this are mostly on a project-to-project basis, so there is no direct regime influence recognised. But the fact that some project developers are incorporating cooperation with civil initiatives in their business model for new projects and that ODEdecentraal is working on contracts that pre-emptively ensures cooperation between cooperatives and larger project developers does show some impact on the regime. However, this is all very recently and only in a number of smaller businesses that can be seen as early adopters of this approach incorporate this in their practices. Whether this is a trend that will spread across the regime is to be seen.

The governance feature 'stakeholder position' adds an extra perspective in this section. As is said earlier, the cooperation between larger project developers and cooperatives is based on reciprocity where the one has things the other needs and the other way around. This is an excellent starting point for cooperation and explains why collaboration between niche and regime is possible in the case of wind energy. Local support provides the bargaining chip for cooperatives in negotiations with larger project developers. Furthermore, municipalities or provinces more or less obliging project developers to cooperate with cooperatives is an important base of power for the cooperatives. This gives the role of the government an interesting extra dimension in the interaction between niche and regime that is not accurately described in the SNM and TM literature. The governance feature 'policy instruments' does not have an intrinsic link with this factor.

6.3. ACTIVE LEARNING

Active learning originates from the SNM literature and suggests that through learning the innovation is made better and practises and routines are shared[13], which leads to a more robust niche that is better equipped to take over the regime.

Driver/Barrier	Form of regime influence	Governance feature
Active learning	Creating a strong and robust niche so the niche can take over the regime	Stakeholder position

From the empirical data can be concluded that active learning was not present in the case studies. In the case of Windpower most of the expertise needed was already available through the initiators (de Ridder, 2016 PC). In the case of Zuidenwind the lack of knowledge was resolved through the interim board members, who had expertise and experience, but were not members of the cooperative from the start (van der Stappen, 2016 PC; Zomer, 2016 PC).

[13] see also 'active niche building'

However, there were some examples of learning and knowledge sharing, though not active, which took place in the cases. In the case Zuidenwind, the initiator, Geenen, did take advantage of the knowledge available at ODEdecentraal, but he was not doing this for the cooperative or the niche. He went to the meetings of the wind section of ODEdecentraal, where knowledge is shared and questions can be answered on all aspects of building a wind turbine (Geenen, 2016 pc).
It is also possible to identify some forms of learning that benefitted the niche of LRWEOs in the second try of Zuidenwind (after it failed to participate in the initial plans and members of Meerwind and Windvogel took over). The second try of Zuidenwind followed a much more professional approach. This was mainly due to the new board members that had a lot experience and had knowledge of the steps that were necessary to realize a wind turbine (van der Stappen, 2016 pc; Zomer, 2016 pc). Along the way of the second try, some local people involved learned from the process, learning by doing, and can now apply this knowledge in future projects (van der Stappen, 2016 PC). The same can be applied to the initiator, Geenen (Geenen, 2016 pc). This was direct sharing of experience between the older cooperatives (Windvogel/Meerwind) and the new cooperatives (Zuidenwind).
In the case of Zuidenwind the project was pulled by experienced people from older cooperatives, but when the wind turbine was in place, the project was again handed over to local, previous inexperienced, people (van der Stappen, 2016 pc; Zomer, 2016 pc). These people had, from the start, the idea of setting up a province wide cooperative that could help other start-up cooperatives in the region (van der Stappen, 2016 PC). Now Zuidenwind has the potential of being for new cooperatives what Windvogel and Meerwind were for them. This is a good example of direct learning among cooperatives.
Furthermore, REScoopNL and ODEdecentraal see the case of Zuidenwind (help from other cooperatives to make it succeed) is seen as a blueprint of cooperative wind energy development, although it is not happening on a bigger scale (Zomer, 2016 pc; Schwencke, 2016 pc). In this way, the niche can grow by generating more and more experienced people that, in turn, can help other novice cooperatives to become successful.
In the case of Windpower the municipality looked at Saerbeck in Germany[14] as an example from which they could learn (van Ginkel, 2016 PC). However, the respondents did not attribute specific successes to this.

Intermediaries, such as ODEdecentraal, HIERopgewekt and Windvogel, do play a bigger role in an active learning process across the niche. The yearly HIERopgewekt event, see section 6.1, is an example where learning from each other is encouraged and facilitated. Furthermore specific workgroups organised by ODEdecentraal on wind energy provides the opportunity for cooperatives to exchange knowledge with experts (Geenen, 2016 PC; de la Court, 2016 PC; de Ridder, 2016 PC; Schwencke, 2016 PC; Roodenrijs, 2016 PC). There are also newsletters and magazines that share some knowledge, but an institutionalised learning mechanism is still lacking. For example, ODEdecentraal sees the case of Zuidenwind as a blueprint for the cooperative approach, but when doing the interviews, it also became clear that there was no evaluation of this case (Schwencke, 2016 PC; Zomer, 2016 PC; de la Court, 2016 PC).

Regime actors, as far as can be derived from the empirical data, do not take part in learning. There is however the possibility to learn how a collaboration between niche and regime could be designed. This is done by Raedthuys through learning by doing (Vermeulen, 2016 PC), but also at ODEdecentraal where contracts on these collaborations can be shared (de la Court, 2016 PC).

Conclusion
The lack of learning within the niche is a barrier for the niche to grow into a more robust niche. As Zomer (2016 PC) puts it: “the major problem is that cooperatives are often unnecessarily re-inventing the wheel”. And as de la Court (2016 PC) says: “It takes quite some time and patience to get the local cooperatives to collaborate and make use of each others’ products”. These two quotes illustrate the lack of learning in the niche that hinders growth of the niche. Furthermore it illustrates the difficulty of bringing together the niche actors in, amongst others, learning processes, which also relates to section 6.1. However, this does not mean there is a complete lack of learning or learning possibilities. ODEdecentraal and HIERopgewekt provide several opportunities for cooperatives to learn from one another or from experts, they just need to be known. This shows that having these intermediaries, where learning is facilitated, in your network as cooperative is important to prevent ‘re-inventing the wheel’ ones more.

[14] Saerbeck is seen in scientific literature as one of the big examples of cooperative success (Hoppe et al., 2015)

The governance feature 'stakeholder position' was presumably useful in this umbrella factor, because it could shed light on why some stakeholders are important to have in your network as a cooperative. But learning is the inherent 'why' in this factor; so adding the governance feature 'stakeholder position' was a bit excessive here.

6.4. ROLE OF THE GOVERNMENT

The role of the government in SNM and TM literature is a somewhat unclear factor. The idea is that the government needs to facilitate interaction between niche and regime; in what manner and what exact responsibilities the government should have is unclear. This also relates to the initiating actor of a Transition Management policy. This initiating actor is, deducing from TM literature, the one responsible for organizing the processes that are needed within transition management. In theory, if the government is the initiating actor, it should ensure: process coordination to combine regime actors with innovative actors to converge transition paths, coordination among experiment or grassroot innovations for systematic knowledge sharing, co-evolution of institutional structures and grassroot innovations and embedding in the institutional sphere. Some of these are processes are also from SNM literature. However also in the SNM literature is unclear who is responsible for the SNM policy. Presumably this is the initiator of an SNM policy, i.e. the government. In this section the notion of the government as the initiating actor and the responsibilities forthcoming from this notion in SNM and TM literature will be discussed on the basis of the empirical data.

Driver/Barrier	Form of regime influence	Governance feature
Role of the government	Aligning with the regime so the niche can integrate into the regime	Initiating actor/ stakeholder position

The national government

The government in this research consists of three layers: the national government, the provincial government and the municipality. These layers also have very different influences on the niche of LRWEOs. The national government has not been interviewed in this research, but its main perspectives can be derived from the policy document 'structural vision on-shore wind' (IenM & EZ, 2014). In this policy document it becomes clear that the intent of the national government is to create a small number of large wind farms (IenM & EZ, 2014). This profits the big project developers, but is unfavourable for wind cooperatives (Warbroek, 2016 PC). This is because wind energy cooperatives are often not equipped to handle big projects, but depend on the development of small wind farms or individual turbines for their chances of building and exploiting wind turbines (Warbroek, 2016 PC). Therefore the policy of the national government is decreasing the 'wind chances' for cooperatives. Furthermore there is no evidence of the national government having any affinity with cooperatives in their policy. Moreover, the government prefers to generate wind farms in a top down manner. The national coordination regulation (RCR), which declares that projects larger then 100MW fall directly under the jurisdiction of the national government was used as a means to put wind farms on the fast track and reduce objection procedures (van der Gaag, 2016 PC). It was only after protest of the provinces and experience from other projects that top-down projects would not work that this practise of the national government was abandoned.

Lastly, there is the SDE+ subsidy that is available for all renewable energy projects (IenM & EZ, 2014). This is n important fund for cooperatives to ensure the profitability of the wind turbines.

One other important step that was initiated by the national government is facilitating ODEdecentraal to build a network and to support it in any way possible to ensure it to become a well-organised interlocutor. They supported ODEdecentraal mainly by providing funds and, in the early stages, by lending people with experience to help set up ODEdecentraal (de la Court, 2016 PC).

The provincial government

The provincial governments are a completely different story, because the national government has defined the targets, but the provincial governments are for the biggest part responsible for realizing their individual targets

(see table 6). The provincial governments are able to define their own policy for realizing the target, although the national government 'urges' them to taken over their policy (IenM & EZ, 2014).
Considering the ability of the provinces to create their own policy there is a great diversity between them. This diversity can be categorised into two policies: (1) a policy allowing for a small number of big wind farms or (2) a policy allowing for a big number of small wind farms or individual turbines[15]. Researching every policy of each individual province was not within the limits of this research. Therefore roles of the provinces Gelderland and Limburg will be discussed, because these were the provinces in which the case studies Windpower and Zuidenwind are situated.

Gelderland
The province of Gelderland played a remarkable role in facilitating the cooperative Windpower. The province made a policy in which singular turbines are accepted and where municipalities are the authoritative body on wind turbines. They also included in their policy that some degree of participation by civilians in any wind energy project is required (Bruggink, 2016 PC). This policy is basically perfect for cooperatives, because it allows for local wind turbines and small projects and it gives cooperatives a basis of power in negotiations with the municipality and project developers. This is for example very different from the policy of the province Fryslân, where they only allow large wind farms and no singular turbines. These larger wind farms are often too big for a cooperative to handle and thus make it much too difficult for cooperatives to join (Warbroek, 2016 PC). Furthermore, the province of Gelderland had some funds that could be utilised by the cooperative. Two different funds were used: (1) a fund that is specifically founded for the costs of founding a cooperative and (2) a price question on sustainability. These funds helped the cooperative in funding part of the initial costs. These initial costs are costs that have to be made before the project is approved. These costs are often quite high and carry a high degree of uncertainty, because these costs should be paid with revenues from the project (yard, 2016 PC). If the projects are not approved these funds are lost (de Ridder, 2016 PC; Yard, 2016 PC). This is a large barrier for civilians. This barrier was reduced due to the funds provided by the province of Gelderland. Relieving these barriers and creating a policy that benefits cooperatives helps them to create a bigger and more robust niche.

Limburg
The province of Limburg is lagging in generating policy for on-shore wind energy (RVO, 2016). In the interviews around Zuidenwind there was no mentioning of the provincial government of Limburg. That does not mean it did not have any role in the case Zuidenwind. If any, the lack of policy of the provincial government granted the freedom for cooperatives to emerge and create their own 'policy' by founding the cooperative Zuidenwind. This causation can however not be verified in this research.

The municipality
In the case studies was found that both municipalities were supportive of the cooperative in their community. In the case of Zuidenwind, the municipality merely provided the right documents and voted positively about the plans (van der Stappen, 2016 PC; Geenen, 2016 PC). In the case of Windpower the role of the government was more extensive. The municipality financed the costs of the planning process that was needed at forehand, with the understanding that the cooperative would pay the municipality back if they would eventually be allowed to place the turbines. If this would not be the case, the municipality would foot the bill (van Ginkel, 2016 PC). This meant that the cooperative did not have to make any of the initial costs, at which point there is still a large uncertainty about the plans and all its implications, as discussed earlier in this section about the funds provided by the province of Gelderland. Furthermore, the municipality provided a network of local actors with which the cooperative could engage to make their project work (van Ginkel, 2016 PC). Next to this the municipality already owned four of the five ground positions where the turbines could be placed. The municipality formalised that the cooperative could buy these grounds from the municipality (van Ginkel, 2016 PC).

In conclusion:
Overall, there is a big difference between national, provincial and municipal policies. This makes it possible for cooperatives to have some influence on the provincial and municipal level, but little influence on the national level. There has not been any institutionalization of pro-cooperative policies yet, although on the municipal and

[15] See also section 4.2.

provincial level there is some evidence of a pro-cooperative attitude, which results in political support for the cooperatives. This evidence is however limited to the provinces and municipalities researched, but experts interviewed corroborate that this is a trend occurring nation wide (Schwencke, 2016 PC; Hoppe, 2016 PC; van der Gaag, 2016 PC). Furthermore, municipalities and provinces are still learning to deal with cooperatives, because they are a new entity. For municipalities and provinces this new organization form of cooperatives is very difficult to adapt to. It doesn't fit with the conventional procurement procedures (Roodenrijs, 2016 PC). Cooperatives cannot provide the requested security; experience or funds asked for in traditional procurement procedures. There is also often not a professional basis or one frontman the government can talk to. Although this was the case in Nijmegen with Windpower, but this was an exceptionally well-organised and professional organization (de Ridder, 2016 PC; van Ginkel, 2016 PC).
Some interviewees recognize a trend that especially on the municipal level there is an increased positive attitude towards cooperatives and some municipalities are even trying to make cooperation with a cooperative mandatory for any new wind energy project (van der Stappen, 2016 pc; Eneco, 2016 PC; Schwencke, 2016 PC; Zomer, 2016 PC). On the national level there is however almost no policy on cooperatives and if any, the policy works against cooperatives because it reduces the opportunity for cooperatives to build wind turbines, i.e. the wind chances.

The government as initiating actor and definer of stakeholder positions
As mentioned in the introduction, the reason for this umbrella factor can be found in SNM and TM literature that both lack a definition of whom should be the initiating actor of SNM or TM policy.
In the case of wind energy, the initiating actors definitely are the national and provincial government as is specified in section 4.2. However, these governmental bodies do not do actively the things that belong to their function. Those things are mentioned previously: process coordination to combine regime actors with innovative actors to converge transition paths, coordination among experiment or grassroot innovations for systematic knowledge sharing, co-evolution of institutional structures and grassroot innovations, embedding in the institutional sphere. However, there are some indications that some of these factors occur within the niche. For example, the national government has supported the foundation of ODEdecentraal and is still actively trying to couple ODEdecentraal with some of the bigger energy companies (de la Court, 2016 PC). This can be ruled as 'a combination of regime and niche actors to converge transition paths'. However, this seems to be little more than the occasional question to ODEdecentraal if they would like to work with the bigger energy companies. The initiating actors also not actively pursue the co-evolution of institutional structures. Only at municipal level, which is not part of the initiating actors, there is room for institutional changes in the form of obligated citizens participation. The other factors do not play a role.

Furthermore, as initiating actors, the provinces and national government can define stakeholder positions (Driessen et al. 2012). Although there is no actual SNM or TM policy in place, they are still responsible for deciding who is able to take what place in the regime and thus also what place the niche gets within the regime. This will be further examined in section 6.6. 'ability of niche actors to influence the decision making level'. It is already revealed in section 4.2 that the national government has little interest in cooperatives, but that some provinces do provide space for cooperatives to take part in the provincial policy and wind energy plans. This also relates to the 'wind chances' given by provinces through the policy chosen, i.e. small number of large wind farms or large number of small wind farms.

6.5. INSTITUTIONALIZATION

Institutionalization is a factor that is present in both TM and SNM literature and is therefore also attributed to both forms of regime influence derived from the TM and SNM literature. The suspected governance features that are attributed to this factor; initiating actor and stakeholder position relate to the fact that institutionalization can be achieved by the initiating actor and the ability of the stakeholders to take part at the decision making level.

Driver/Barrier	Form of regime influence	Governance feature
Institutionalization	Creating a strong and robust niche so the niche can take over the regime/ Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position

Direct institutionalization of the niche cannot be identified from the empirical data. There is no explicitly managed learning process as discussed in section 6.1. Coordination among grassroot innovations is still very small scale as is also discussed in section 6.1, a standardised model of funding is not available, embedding in the institutional sphere is also not happening as discussed in section 6.4 and co-evolution of institutional structures and grassroot innovations occurs only sporadic on the municipal level as discussed in sections 4.2, 6.1, 6.2 and 6.4.

This shows the early stage the niche is situated in at present. Institutionalization is not yet achieved, but as discussed in the sections mentioned above, there are signs of institutionalization being pursued. Some examples are the trend of increased recognition for the need of citizens' participation within the regime (van der Gaag, 2016 PC), which can also be recognised in the code of conduct drawn up by regime actors on this subject (Harmsen, 2016 PC; van der Gaag, 2016 PC; Zomer, 2016 PC; de Backer, 2016 PC). Also the municipals' attitudes towards the cooperatives in the two case studies lead to think that institutionalization is near in these municipalities, for example through obliged participation of cooperatives in new wind energy projects. Also, in both cases researched, the municipalities learned from the cases and surrounding municipalities noticed the success (Weert.nl, 2016; van der Stappen, 2016 PC; van Ginkel, 2016 PC). However, on the municipal side there were no actual institutional changes, although it led to the founding of REScoopLimburg and cooperation between multiple municipalities and REScoopLimburg in the case of Zuidenwind (van der Stappen, 2016 PC; Weert.nl, 2016).

Conclusion
Since "Institutionalization" is not recognised in the niche, it also decreases its ability to influence the regime. The lack of explicitly managed learning processes and coordination among grassroot innovations negatively influences the niche in becoming a more robust niche that is able to take over the regime as SNM suggests as well as the alignment of the niche with the regime so it can integrate into the regime. The lack of embedding in the institutional sphere and co-evolution of institutional structures and grassroot innovations decreases the niche's potential to integrate in the regime.
However, there are some bright spots, in the sense that institutionalization is being pursued and in some cases at the municipal level a logical next step. If this is going to happen, then the potential of the niche to influence the regime becomes a lot bigger.

Governance features
The initiating actors, provincial and national government, do not give sufficient attention to the need of institutionalization of the niche. They are not pre-occupied with institutionalizing the niche, which reflects negatively on the niche's possibility to influence the regime. Furthermore, the niche actors are to a great extend dependent on governmental bodies for support and institutionalization (Roodenrijs, 2016 PC; Hoppe, 2016 PC). Their position as stakeholders is not that strong, only on the municipal level they have a bigger influence since they are a contribution for the municipality.

6.6. ABILITY OF NICHE TO INFLUENCE THE DECISION MAKING LEVEL

The ability of the niche to influence the decision making level originates from the TM literature and is based on the core notion of an active TM policy where it is important for the niche to take part in this policy in order to influence the policy to benefit the niche. The governance features 'initiating actor' and 'stakeholder position' have the aforementioned contribution of understanding the dynamics of influencing the decision making level that is determined by the initiating actor and the position of the stakeholder, in this case the niche actors.

Driver/Barrier	Form of regime influence	Governance feature
Ability of niche to influence the decision making level	Aligning with the regime so the niche can integrate into the regime	Initiating actor/stakeholder position

This factor has been touched upon previously in this chapter, especially in section 6.4 'role of the government'. As is said before there is no actual TM policy in place in the wind energy regime, but this does not mean this factor is completely irrelevant. The initiating actor (the national and provincial governments) of the policy that is in place, the structural vision on-shore wind energy, still determines which actors are included in policy making and which are not. From the policy document on the structural vision on-shore wind energy it became clear that the policy is a cooperation between several organizations united in the core team on-shore wind energy (IenM & EZ, 2014). As is discussed in section 4.1, in this core team the niche is not represented. This means that the regime influence based on this factor is very small. However, as with most of the other factors, this factor is more complicated then presented here. First of all, the policy on wind energy is determined in three governmental layers: national, provincial and municipal. In each of these layers decisions on on-shore wind energy are made, thus the niche can also influence the each of these layers.

The national level
As said, the niche did not have any influence on the national policy. However it is possible to influence the national level through lobbying. Here ODEdecentraal is the biggest advocate of the cooperative wind energy niche (Zomer, 2016 PC). However, as discussed in section 6.1, this organization is still struggling to get enough funds to keep up with the larger energy companies. As de la Court (2016 PC) explains, ODEdecentraal consists of volunteers that have to take part in the lobbying process in their free time next to their jobs, while the bigger energy companies have large professional lobbying teams. This means that ODEdecentraal is not always able to take part in the lobbying process, or to draw-up extensive document to support their arguments. This results in a lack the power to take a consistent and strong position in the lobbying process.

The provincial level
As discussed in section 4.1.2 each province has the ability to create its own policy. This resulted in diverse policies and also divers opportunities for the niche to influence the provincial decision making level. In the province of Gelderland the niche has gotten a place in policy making of on-shore wind energy (Bruggink, 2016 PC). This can be seen in the policy of the province that supports small-scale wind turbines and requires civil participation in any new wind energy project in the province. On the other hand there are also provinces that have changed their policy to only allow large scale wind farms or off-shore wind farms, which are both much more complex for civilian initiatives to exploit (Warbroek, 2016 PC).
So in some provinces the niche has succeeded in taking part at the provincial decision making level and in others not.

The municipal level
The municipal level has been discussed in multiple previous sections, as is the trend that civil participation is getting increased attention at regime level. Also at municipal level civilian participation is an increasingly important issue. In both case studies of this research the municipality played a facilitating role. On the one hand, the cooperatives' success created a basis for the municipalities they were operating within and surrounding municipalities to increase the support for cooperative wind energy. This was however because of the success of the cooperatives and not because of the ability of the cooperatives to take part at the decision making level. On the other hand, REScoopLimburg has, for example, been able to take part in the plans for wind turbines in surrounding municipalities of Weert (Weert.nl, 2016).
So, at present little evidence of actual influence at the decision making level by the niche at municipal level is available in the empirical data. However, it can be seen that it is possible in the future, if more organizations such as REScoopLimburg are founded.

Conclusion
The regime influence from participating at the decision making level is very small at this moment. The niche did not take part in the making of the main policy document, nor is able to take a strong position in the lobbying process. At provincial level the influence differs per province, where Gelderland is a positive example of influence by the niche. Lastly, at municipal level the niche has the largest opportunity to influence the decision making level, since there is a positive attitude towards cooperative wind energy. However, this opportunity still has to be exploited. Moreover, the municipality is not always the authoritative power on wind energy plans.

Governance features
The governance features stakeholder position and initiating actor shed light on the ability of the niche's ability to take part at the decision making level. If the initiating actor is willing, for example in Gelderland, the niche

can actively take part at the decision making level. So this is very dependent on the attitude of the initiating actor towards cooperative wind energy. On municipal level the niche has a bit more influence on their ability to take part at the decision making level, as is shown in the cases Zuidenwind and Windpower, which both had the effect that surrounding municipalities had an increased positive attitude towards cooperatively owned wind energy and thus are more willing to let cooperatives take part at the decision making level.

6.7. ADDITIONAL DRIVERS/BARRIERS AND FORMS OF REGIME INFLUENCE

Next to the drivers/barriers that were identified in the literature it was possible to identify a set of new drivers/barriers that played a role in influencing the regime. In this section those are displayed, they are: parties/sphere, pioneers mutual benefits, Setting up a membership recruitment campaign, working with the AFM, Skills available greatly depends on the composition of the participants, capricious market and the regime is under pressure.

Parties/sphere
In both of the researched case studies the "sphere" came up as an important driver of success. Explicitly managing the sphere by celebrating each milestone and keeping everyone up-to-date was an important measure to keep people involved over the years it took to acquire a wind turbine (de Ridder, 2016 PC; van der Stappen, 2016 PC). Managing the sphere and celebrating milestones does not directly influences the regime, but it does keep people interested and ensures a successful project. Creating successful projects is important to build a niche and, for example, fund a lobby organization such as ODEdecentraal.

Pioneers
The factor pioneers was first described by de la Court (2016 PC). He described the niche as a field consisting of pioneers, people who are among the first to do something entirely new. These pioneers must develop their own structures and practises in order to realize the project. This is in the early stages of niche forming. However, later on these practises need to be merged and adapted in order to create practises, rules and routines that overlap across the niche. This is, according to de la Court, where the niche is at this moment (de la Court, 2016 PC).
The transition from the first phase to the second is very difficult, because most of the pioneers in the field want to be recognised for their work, while their established work is completely re-organised. The re-organization is necessary to create a stronger and more robust niche instead of individual cases. This re-organization is often experienced as a kick in the head by the pioneers, because they feel they do not get the recognition they want, since the structures and practises they developed are completely changed. Managing this transition, from pioneering to niche forming, is a difficult and slow process. This slows down the process of niche forming, and can thus be seen as a barrier for influencing the regime.

Mutual benefits
Although this has been discussed in previous sections it feels important to explicitly mention this as a driver for regime influence. It concerns the fact that regime actors and cooperatives complement each other very well. The regime has the expertise and funds to realize a wind energy project, while the cooperative has the local support; the one has what the other needs. This is a great basis for cooperation (de la Court, 2016 PC; Raedthuys, 2016 PC). This cooperation between niche and regime fits best in the view of transition management, where integration of the niche into the regime is the main starting point.

Setting up a membership recruitment campaign
One factor that was specifically interesting was the successful implementation of a member recruitment campaign. This was, at some point for both case studies a decisive moment in the development of the cooperation (de Ridder, 2016 PC; van der Stappen, 2016 PC). At some point the cooperation needs sufficient members to raise enough money to continue with the development of one or more wind turbines. This meant that recruiting enough members was essential. Both cooperatives developed a professional recruitment campaign. Concerning the regime influence this is in line with creating more successful cases that can take part in the niche to become a bigger actor as a whole, thus creating a stronger and more robust niche.

Working with the AFM

Another factor that was mentioned by the interviewees was the difficulties of setting up a cooperative according to the laws and regulations. Most of the cooperatives consist of volunteers that do not have specific knowledge on these issues. Many of the problems are concerning the financial aspects of the cooperatives, which are the authority of the 'authority financial markets' (AFM), which has to impose fines if cooperatives do not comply with the rules. ODEdecentraal has now started cooperating with the AFM in order to prevent fines being imposed. This cooperation consists of the AFM informing ODEdecentraal when they see a cooperative violating laws, than ODEdecentraal has the opportunity to pre-emptively help these cooperatives to change so they do not violate the law anymore. This is important, because fines in the early stages of a cooperatives existence can discourage the cooperative to continue (de la Court, 2016 PC). The cooperation between ODEdecentraal and the AFM is still very new, so the impact is still to be seen. However, this also increases the amount of successful cases that can contribute to the niche.

Skills available greatly depends on the composition of the participants

This has been evident in both case studies. It also results in different things going good and different things going bad. For example, in the case of Zuidenwind, an entrepreneur who had no experience with wind energy projects started it. However, due to his experience in the local council he did know how to write reports and how the bureaucracy worked (Geenen, 2016 PC). This ensured that most of the legal requirements were met without too much difficulty. Nevertheless, the knowledge of setting up a cooperative was not available. This is one of the things that went wrong, mainly due to a lack of knowledge of legal aspects of such an activity (van der Stappen, 2016 pc). Another example of a skill that was present among the members of the cooperation of Zuidenwind was the knowledge of concrete casting. This led to the early discovery of wrongly poured concrete that probably prevented a lot of trouble early on in the building process (van der Stappen, 2016 PC).

These are some very specific skills on the project level. Two other skills that came forward from the interviews in both cases were the skill to acquire and hire the right knowledge/people and the skill of setting up a professional cooperation. The first seems quite logical, but is worth mentioning. As de Ridder (2016 PC) (project developer of wind energy and initiator of Windpower Nijmegen) puts it: 'all the individual pieces of building a wind turbine are not that hard, but putting them all together and keeping the oversight is'. No one on its own has all the knowledge for such a complex project. Knowing whom to hire, what knowledge is required and what needs to be done before a wind turbine can be placed is very important for the successful completion of a project (de Ridder, 2016 pc; van der Stappen, 2016 pc).

Having people with specifically useful skills can be a driver for a successful project. It can also be important for directly influencing the regime. However, what these skills should entail might be interesting for a next research.

Capricious energy market

LRWEOs often have a difficulty of finding enough consumers that want to purchase their energy. This is because the electricity sold by LRWEOs is often a little bit more expensive then that of the larger energy companies (Doorenspleet, 2016 PC). This is because larger energy suppliers can drive the price of electricity down through compensation with other assets, such as benefits from gas sails or previously accumulated savings, while an LRWEO cannot do such things. And the consumer only cares for the lowest price (van der Stappen, 2016 PC; Hoppe, 2016 PC; Doorenspleet, 2016 PC). This makes it difficult for LRWEOs to compete in the energy market.

The regime is under pressure

The energy regime is under pressure because of several events outside its reach. The Paris agreement puts extra pressure on realizing renewable energy and the difficulties with the natural gas that is mined in Groningen require other resources to realize the required electricity demand (Hoppe, 2016 PC). Furthermore, declining energy prices put larger energy companies under pressure to find new resources to get the required revenues to keep existing (Hoppe, 2016 PC). These pressures are increasingly pushing the regime towards renewable energy and away from fossil fuels.

6.8. SYNTHESIS

The niche of LRWEOs is very diverse, the drivers and barriers are complex and interact with one another to form the field as it can be identified today. Many drivers/barriers and forms of regime influence have been identified. They will be discussed along four themes that mirror the most important struggles in the ability of

the niche to influence the regime. Furthermore the additional drivers/barriers found will be categorised in new or existing umbrella factors. Lastly a small recap on the addition of the literature on modes of governance is included.

The main struggles in the niche of LRWEOs

The four themes along which the results will be discussed are:

1. Opportunity for cooperatives
2. Ground positions
3. Support
4. Niche building

The first two themes highlight the dependence of cooperatives on the policy of the provincial and municipal government and owners of ground. The opportunity for a cooperative to build wind turbines is an important starting point for cooperatives. This opportunity depends very much on whether or not the provincial government allows small wind farms, since cooperatives often focus on one or two turbines. Furthermore it depends on the governmental and provincial policy concerning cooperatives. If these policies include a preference for cooperatives or companies working together with cooperatives the cooperatives have a much better bargaining position. This bargaining position is especially important in acquiring land on which turbines can be placed. Regime actors often already claim these lands through contracts with the local landowners (often farmers), especially when it comes to the lands assigned for the 6000MW target of 2020. This makes it difficult for cooperatives to acquire lands on which to build wind turbines (Hoppe, 2016 PC; Schwencke, 2016 PC). Here governmental bodies could play an important role in supporting cooperatives through a policy that prevents financially strong actors to hijack ground positions. The trouble namely is that financially strong actors can invest in grounds for which it is still uncertain whether or not wind turbines could be build there, because they have enough capital to take the risk. Cooperatives cannot take this risk and because most of the grounds are already taken by other actors when they do want to build a turbine they are forced to work together with these actors, thereby decreasing their independence (de la Court, 2016 PC).
So, the opportunities given to cooperatives and the ground positions play a large part in the cooperative wind energy field. Examples of the policies as described above that benefit the cooperatives are scarce, but do exist. Especially on the municipal level a preference for cooperatives arises, as was also the case with the case of Zuidenwind and Windpower. Also at the provincial level negotiations are taking place in Gelderland to give cooperatives a better position in acquiring grounds to build on (de la Court, 2016 PC). The provincial policy on small or large wind farms differs per province, so although there is some influence on the regime making level this is still very small and mostly dependent on the role the provincial/local governments are willing to play.

The third driver/barrier is a major basis of power for cooperatives that helps in influencing the regime. That is the local support they bring to the negotiating table. Although it is not said that a cooperative equals local support, it is one of the most promising instruments to gain local support for on-shore wind energy. This provides ample opportunity for cooperatives to gain a position within the regime. What the standard will be in the future and what position this will be is to be seen in the future. However, a limited number of options are possible based on the empirical data. On the one hand it could result in equal partnerships between regime actors and cooperatives (as described in the case of Deventer and Raedthuys). On the other hand it is also possible that regime actors will take over a marginalised form of the practices of the cooperatives and integrate them into their own practises, thereby closing the door for cooperatives. This last option however would still mean a small contribution to the regime in the change of practises of the regime because of the pressure and experimenting in the niche. This can be seen in the overall trend within the regime towards more local participation and the code of conducted as created by the NWEA. This trend originates in the acknowledgement of the need for some form of local participation in order to realise a growth in on-shore wind energy, because without local support this will be very difficult (Harmsen, 2016 PC; van der Gaag, 2016 PC).

Lastly niche building is one of the most important struggles the niche needs to overcome. At the moment there is no existing niche of LRWEOs but a number of LRWEOs that are struggling to get their own project of the ground and often all re-invent the wheel. Although there is some moderate cooperation between the LRWEOs there is not an aggregated vision among these LRWEOs and no organization among the LRWEOs that can stand as one united front. While, based on SNM theory it is necessary for the niche to be united into one front, one strong niche with aggregated goals and visions that can over-take the regime.

The two case studies that were researched differed quite a lot from each other and gave insights into many drivers/barriers of regime influence and forms of regime influence. Something that came across in multiple interviews was that cooperatives all independently re-invent the wheel. They try to find their own way in how they can realize one or more cooperatively owned wind turbines, while there is already experience and expertise on the subject available, for example at ODEdecentraal. This coincides with what Harmsen (2016 PC) found in researching the different organizational forms of LRWEOs. According to Harmsen (2016 PC) there is still being experimented with different business models for the cooperatives. He also finds that different partners are found at each location that fit the circumstances and the way these partnerships are defined also differs per project. This is characteristic for the field, where each project stands on its own.

However, there is evidence of professionalization and aggregation of the cooperatives; umbrella cooperatives are formed, i.e. cooperatives of cooperatives, and knowledge is increasingly shared. The best example of this is ODEdecentraal, which is an advocacy cooperative that tries to ensure the interests of cooperatives in the national political arena. However, as De la Court (2016 PC) acknowledges, the power of ODEdecentraal is still marginal. This is mostly because of the lack of people and resources to compete with the large energy companies. Also, the people working for ODEdecentraal are volunteers and although these people are very motivated and experienced, they still do this next to their day jobs. Furthermore, the way ODEdecentraal and REScoop advocate the growth of LRWEOs in the Netherlands, the way of Zuidenwind, is not supported by all players. The success of Zuidenwind was based on the help of other cooperatives, who also owned some of the shares of the wind turbine. Critique on this form of help is that the turbine is not entirely owned by locals, but also by people of Windvogel and Meerwind, who live somewhere completely different (de Ridder, 2016 PC; de Meijer, 2016 PC). This shows that there is not yet agreement on how the niche should evolve, which in turn decreases its potential to influence the regime as a strong and robust niche.

Furthermore there is a big difference on the appreciation of cooperatives between the governmental levels and the influence cooperatives have. Although an overall trend is recognised in the increased attention for civilian participation, the empirical data suggests that on the municipal level cooperatives have the strongest bargaining position. However, municipalities also have the least to say in the policy on on-shore wind energy. Additionally, there are some examples of cooperatives participating in policy making at provincial level, with the best example being in the province of Gelderland.
Lastly, the differences in provincial policies have an influence on the opportunities for cooperatives. These 'wind chances' are to what degree wind energy can be realised in the direct surroundings of a cooperative, which is to a great extent determined by the provincial policy, i.e. the wind chances are determined by the size of wind farms allowed by the provincial policy. Here the rule is: the smaller this size, the better for cooperatives.
This shows that cooperatives are very dependent on the attitude of the local or provincial authority. Gelderland is a positive example, but there are also provinces where policy is decreasing the opportunities for cooperatives, such as Zuid-Holland and Friesland (Warbroek, 2016 PC)

Additional drivers/barriers found
There were eight drivers/barriers found additional to the ones delimited in the conceptual framework. They can initially be categorised in four categories. Below this categorisation is shown:

1. Drivers/barriers for the success of individual projects
    a. Parties/sphere
    b. Setting-up a membership recruitment campaign
    c. Skills available greatly depends on the composition of the participants
2. Landscape factors
    a. Capricious market
    b. The regime is under pressure.
    c. Mutual benefits
3. Drivers/barriers for actively building a niche
    a. Pioneers
    b. Working with the AFM

The first category consists of drivers/barriers that influence the success of individual projects. This has some overlap with the umbrella factor 'niche building activities'. Because in order for a niche to influence the regime, it is generally better the more actors it represents, i.e. the more LRWEOs that exist.
Furthermore, the fourth category consists of drivers/barriers that influence active niche building and thus is also logical to subdivide under the umbrella factor 'niche building activities'. The drivers/barriers falling under this category are however directly influencing the niche building activities, where the drivers/barriers under the first category are more indirectly influencing the niche building activities.

The second category identified has a very close relation with the conceptual framework. The 'landscape factors' refers to the landscape level to which both SNM and TM refer in their differentiation between the niche, the regime and the landscape. The landscape is an area on which neither the regime nor the niche has influence, but that does influence them. The landscape is changing on multiple levels that influence the position of the niche and the regime. First of all the overall energy system is under pressure because of the recent difficulties with the gas exploitation in Groningen. This puts more pressure on energy from other resources, such as renewable energy (Hoppe, 2016 PC). Second of all the wind energy regime has to deal with a change in selection environments. Increasingly provinces and municipalities are indicating the local participation needs to be guaranteed before a regime actor can realize wind turbines, which means they have to negotiate with a cooperative or other representation of the local civilians. Furthermore, the regime itself is realizing that they need local support to realize their projects, even if the municipality or province doesn't oblige them to. Otherwise costly legal procedures will follow, which may result in failing of the project all together, as well as a further declined image of wind turbines, which can have negative consequences for other projects as well. This change in the selection environment and the increased pressure on the energy regime has the effect that the regime needs to seek solutions to these landscape pressures which results in the fact that cooperatives are, in some cases, the perfect partner, because they can help increase the development of renewable energy through local support, while cooperatives might need regime actors to help with funding and expertise. This means that there are mutual benefits that can be explored under the pressure felt by the regime.

Governance arrangements
Part of this research was to see how governance arrangements could be used as an addition to the TM and SNM literature. In the drivers and barriers it was individually explained what governance features were applied and how they played a role. Overall it can be concluded that the important features were the initiating actor and the stakeholder position. In TM and SNM literature these two governance features are missing. Although several duties for the initiating actor can be derived in TM and SNM literature it is unclear whom the initiating actor should be. By determining the initiating actor through the literature on governance arrangements it could be identified who is responsible for these duties.
Next to the initiating actor the stakeholder position was a useful feature to determine the roles and expectations of the different stakeholders at regime and niche level. This feature helped to explain some of the power balances in the regime and niche and it helped with defining the niche and the regime through these power balances.
To conclude, the governance features provided a limited but useful addition to the theory of SNM and TM.

7. DISCUSSION

In the conceptual framework it was described that niches could exert two forms of regime influence corresponding with the SNM and TM literature. For these forms of regime influence drivers and barriers were identified that could influence the niche's ability to influence the regime in one of both ways. By combining the drivers and barriers with the forms of regime influence an evaluation could be made of the niche's ability to influence the regime. From this evaluation it could be concluded what role the niche plays and how big that role is, or can be in the future and what factors influence the niche's ability to influence the regime. However, a number of other questions on the niche needed to be answered in this research, before this could be achieved. These questioned concerned the subjects on: The way the niche operates and which actors play an important role, what kinds of factors are important for individual cooperatives to succeed, what the role of the government is and what forms of regime influence can be identified. These questions were necessary as intermediate steps to answer the main research question. This is because very little was known about the niche prior to this research. Taking these intermediate steps has resulted in a very divers set of results that show the diversity of the drivers and barriers that have been encountered in this research.
Furthermore an attempt was made to combine TM and SNM with literature on modes of governance, which could result in a better understanding of the drivers/barriers that influence the niche's ability to influence the regime.

Discussion of the results
The results have shown that both forms of regime influence derived from Transition Management and Strategic Niche Management could be identified to some extend in the niche. However, the main results are that the niche does not influence the regime to a great extend and some drivers/barriers that were derived from the TM and SNM literature could explain this lack of regime influence. For example the lack of learning and the lack of institutionalization of the niche prevent niche forming, which makes it difficult to influence the regime. Next to this, the literature on governance arrangements proved very useful in determining the stakeholder positions. This led to a better understanding of the interests and positions of the stakeholders in the regime and the niche. This proved especially useful in determining the basis of power for the cooperatives, i.e. local support. This basis of power is very important and suggests that cooperatives do have some added value that could disrupt the regime. Since local support is a big issue for on-shore wind turbines in the Netherlands cooperatives could play a vital role in ensuring this. Transition Management and Strategic Niche management suggest various ways in which this could play out in the future. The niche could be taken over by the regime, for example when regime actors integrate cooperatives in their practises, or the niche could take-over the regime, if local support takes a decisive position in the selection environments. For now none of these forms can be identified.

The two forms of regime influence have been identified. When it comes to creating a strong and robust niche so the niche can take over the regime, this is yet to be done as discussed earlier. Creating a strong and robust niche entails multiple activities such as sharing knowledge, aggregating goals and visions and networking. All of these activities are identified in the niche to some extent, but a strong and robust niche could not be identified. Therefore too many differences in goals, visions and practises were identified. However, there are a number of agents working very diligently on creating a more robust niche with institutionalized funding, representation at the national level and institutionalized forms of learning. This suggests that the creation of a strong and robust niche will happen in the future. On the other hand it has been shown that aligning with the regime, as is central to Transition Management, also plays a role in the niche. This came in the form of representation at the decision-making level and cooperation with regime actors. This alignment with the regime has been identified, albeit in modest forms. Some examples are the signing of the code of conduct of the NWEA by ODEdecentraal, talks between ODEdecentraal and several project developers to include cooperatives at the start of each project and cooperation between project developers and cooperatives on a project-to-project basis. This cooperation is fuelled by the fact that both parties have something the other does not. The project developers have knowledge, funds and ground positions, while the cooperatives have local support. This is a good basis for cooperation between niche and regime actors, as can be seen in the example of Raedthuys.

Furthermore, the results show that local wind energy cooperatives are a pioneering movement that is still trying to find the right form of organization and struggles for a place in the regime. Within this struggle it is also clear that a well-defined cooperative wind energy niche does not yet exist, although there are signs that this

will be the case in the future. As De la court summarizes the troubles of these organizations: “it are the logical struggles of a pioneering movement, it is peoples work” (2016 PC). This describes what managing a societal innovation entails. Placing a wind turbine requires technical knowledge, procedural knowledge and financing. This is difficult, but the knowledge is available in the niche of LRWEOs. On the other hand there is a social side that is much more complex in niche building. This requires skills in bringing people together, getting people in action, aligning goals and interests and manoeuvring in a force field of political and environmental interests. These skills and an increase in resources will determine the success and impact of LRWEOs in the future. For now there is evidence of a growing movement that suggests a growing impact, but the real impact in Megawatts produced is still very small. Furthermore, the niche seems to develop in both forms or regime influence central to the theories of TM and SNM, which suggest that the Multiple Levels Perspective is the golden mean that suggests both alignment between niche and regime and some degree of take-over by the niche. This is also in line with the findings that the LRWEOs are not shocking the regime, but will slowly integrate into the regime, for which the main driver is the added value of LRWEOs: local support for on-shore wind turbines.

Discussion of the methods and data

The conclusions in this research are confidently drawn from the empirical data and an overall analysis of the niche’s ability to influence the regime was conducted. However, there are some points of discussion. As this was an exploratory research into the field the theories that were used were presented a bit more simplified than otherwise could have been done. The reality is more complex, with intermediate and overlapping drivers and barriers. This complexity also comes forth from the diversity of drivers and barriers that have been found as could be seen in chapter 6. However, by simplifying the theories, resulting in the conceptual framework used for this research, a clear analytical framework was generated that avoided drowning in an endless and confusing sea of drivers, barriers and forms of regime influence that served the exploratory nature of this research. In future research this complexity of the drivers and barriers and forms of regime influence can be further explored. When the exploratory work of this research can be used as a starting point.

Furthermore, the snowball technique that was central to finding key actors has resulted in a large amount of interesting actors, but it made it difficult to assess whether all key actors have been identified. For example, although the snowball technique has led to many key actors on niche level, some important actors on the regime level have not been taken into account. However, the regime actors that were interviewed were able to give a helicopter view and were representatives of the regime or were frontrunners. This means that the given helicopter views gave a generic view, while the interviews with frontrunners gave a more specific view on how regime actors deal with the cooperative niche. However, these views were from frontrunners, so this depicts a rather more positive view then when for example laggards would have been interviewed. On the one hand this is a problem, on the other hand it became clear that the frontrunners had little to do with cooperatives, which suggests that other regime actors would probably have nothing to do with cooperatives, much less have an opinion about these LRWEOs. Altogether, the main body of empirical data (21 interviews) has presented a clear view of the niche and the regime. In future research more attention can be given to the regime. The regime can have a major influence on the ability of the niche to influence it. It could for example inhibit the niche by lobbying against beneficial policies for the niche. In this research this perspective has been left out because too much time was needed to unravel the niche. The regime perspective would therefore provide an interesting addition to this research. However, as said, the regime must first acknowledge the niche as an actor and must know of its existence. This will probably be the case in the future, when the niche becomes more substantial.

Furthermore the fact that the niche of LRWEOs did not exist made it difficult to proceed with the initial set-up of analysing the influence of the niche on the regime. Therefore the results have gotten a more predictive nature, i.e. they predict the influence of the niche on the regime if certain processes continue or improve.
As a consequence the research also ventured into the factors that influence the success of individual projects to understand how much of these projects could support the niche in the future. These activities are however befitting the exploratory character of this research. Consequently this research can be used as a starting point for further analysis of the niche or analysis at a later phase.

Additionally, in this research ODEdecentraal was used as main representative of the niche of LRWEOs at national level. As it is now, ODEdecentraal also sees itself in this role, as does the national government. It is however not said that all the cooperatives see ODEdecentraal in this role. Nevertheless, it is likely that this will be the case in the future considering the status of ODEdecentraal at this stage. On the other hand,

cooperatives are still in the development phase. It is possible that other organizations will rise, that do not yet exist at present.

Lastly, getting interviews has proven to be difficult, because there was not much of a niche. Therefore it was hard to find people that had somewhat of an overview over this not yet completely formed niche. Interviewing experts that had an overview, but also had expertise on specific subjects of the niche has solved this problem. By combining the views of these different experts a complete picture could be formed.

Altogether this research ran into some difficulties pertaining the lack of a fully formed niche and the lack of existing literature on the LRWEOs in the Netherlands. This was however expected and reinforced the exploratory character of this research. Using this research as starting point for further research can more clearly focus on specific subjects.

8. CONCLUSION

At the beginning of this research it was noted that on-shore wind energy would contribute significantly to the energy transition needed in the Netherlands to overcome the position of the Netherlands as laggard in sustainable energy production in Europe. It was also noted that the upcoming niche of LRWEOs could contribute to realizing these on-shore wind turbines and overcoming the NIMBY-problem often associated with it.
Since little research had focussed on the niche of LRWEOs this research had to be exploratory in nature. By taking some intermediate steps to realize the final goal of this research and answering the main research question: *What drivers and barriers hinder or stimulate the ability of LRWEOs to influence the incumbent wind energy regime in the Netherlands?*

The intermediate steps have yielded almost as interesting results as answering the main research question. However, only the answer to the main research question will be presented here.

The drivers/barriers identified in literature
Many different drivers and barriers have been identified from the literature on Strategic Niche Management and Transition Management that were summed-up in six umbrella factors and matched with the empirical data. Furthermore a seventh umbrella factor was identified based on additional drivers and barriers found. Based on the empirical data and the conceptual framework the following seven umbrella factors were identified as having an influence on the ability of the niche to influence the regime:

1. Active Niche building
2. Cooperation between niche and regime
3. Active learning
4. Role of the government
5. Institutionalization
6. Ability of niche to influence the decision making level
7. Landscape factors

From the empirical data several conclusions can be drawn concerning these umbrella factors.

First of all it can be concluded that none of the umbrella factors identified in the conceptual framework were present in such a way in the niche that they led to concrete influence on the regime. However, the factors do present signs of some indirect regime influence and regime influence in the future through further development of the niche.
Consequently, the factor 'niche building activities' is one of the most important factors to be discussed. The niche needs to be further defined and goals and visions need to be aggregated. Although this is difficult concerning the pioneers and pioneering phase the niche is still in. Furthermore, relating to the factor 'active learning' the cooperatives need to better exploit the knowledge available and, moreover, share lessons. Because the knowledge is available within the niche, but not sufficiently shared. This can be done for example by introducing a standardised evaluation of projects and increasing the information flow. At the moment, the lack of learning and evaluating of each project, but also the lack of exploitation of the knowledge available in the niche acts as a barrier to the niche's ability to influence the regime, while it could be a driver because it could lead to a stronger and more robust niche.

Second, the three factors 'role of the government', 'institutionalization' and 'ability of the niche to influence the decision making level' have a great deal of overlap. This can best be summarized in the governance features 'initiating actor' and 'stakeholder position'. The authorities, or government, have been identified in this research as the initiators of policy. They determine the boundaries within which the cooperatives can develop. In the empirical data it was found that policies that allow for small-scale wind farms present better opportunities for cooperatives then policies that allow for large-scale wind-farms. Furthermore, the supportive standpoints of the municipality of Nijmegen and the province of Gelderland proved especially helpful for the cooperative Windpower Nijmegen. Especially the support in funds proved to be important. Furthermore the province of Gelderland invited cooperatives to take-part in policy making, which meant that the policy of Gelderland concerning on-shore wind energy was well equipped to support LRWEOs.
Gelderland and Nijmegen are examples where the authorities have a positive attitude towards LRWEOs, but the policies differ per province and per municipality. Altogether the attitude of the initiating actor, in this case the provinces and municipalities, is an important factor in determining the position of the LRWEOs and consequently their regime influence. This is also summarised in one of the themes described in section 6.8: opportunity for cooperatives. The aforementioned factors 'role of the government', 'institutionalization' and 'ability of the niche to influence the decision making level' are influencing the opportunities for cooperatives. Policies on the size of wind farms influence the opportunity to realize a wind farm and decisions on whom to integrate in policymaking influence the opportunity to take part at decision-making level.
The regime influence that could be identified from these factors was the fact that surrounding municipalities in both the case of Windpower and Zuidenwind actively started to think about on-shore wind development through cooperatives, hence a first step to institutionalization was being made.

Thirdly it can be concluded that the umbrella factor 'cooperation between niche and regime' did not seem to be very significant. At least it was not of any importance for the success of the case studies. However, the example of Raedthuys showed that cooperation between niche and regime could be a path that is taken in the further development of the niche. On the national level there is an increased cooperation between the advocator of the niche (ODEdecentraal) and regime actors, which has as goal to increase the influence of the niche. So in the case studies this factor did not seem to be a very influential factor, but on the local scale there are examples where it is an important factor, i.e. Raedthuys. Furthermore, on the national scale it was more important.

One additional umbrella factor was identified that was in line with the SNM and TM literature. This was: 'the landscape'. This factor was not mentioned in literature, but is logical since SNM and TM view the world as consisting of niches, regimes and landscapes. 'The landscape' showed that pressures from the landscape on the regime push the regime towards the niche of LRWEOs as a possible ally in relieving the pressures of generating more local support and speeding-up the transition towards renewable energy that is needed. This is an important factor in determining the influence of the niche on the regime.

Four themes that show the most important struggles of the niche
In section 6.8 it was mentioned that four themes best describe the struggles of the niche. These are:

1. Opportunity for cooperatives
2. Ground positions
3. Support
4. Niche building

The opportunities for cooperatives relate to the possibility for cooperatives to actually realize a wind turbine or small wind farm. This also shows the dependency on the authorities. If the authorities do not provide ample opportunities such as allowing small wind farms and allowing cooperatives to take part in policy-making cooperatives have little chance to succeed and support the niche.

The ground positions show the fact that the cooperatives actually developed to late. This is in light of the 6000MW target for 2020, which resulted in little space being left for cooperatives to develop wind turbines or a small wind farm. They therefore have to negotiate with landowners, which decreases their bargaining position. This also relates to the possibilities for cooperatives, because it decreases the possibilities for cooperatives to develop. Furthermore, the cooperatives look to the authorities to implement policy to overcome this deficit, which highlights the dependency of the cooperatives on the authorities.

The support is the most important bargaining chip cooperatives have in playing a part in the regime. The regime lacks local support for the exploitation of wind farms, something that is often associated with LRWEOs. This local support is not always generic, but it is a much-needed voice for authorities. Previously municipalities were struggling with wind energy plans, because there was no voice of local support and local opponents were always quickly organized whenever plans were made. The new positive voice of local wind energy cooperatives gives municipalities the support they need to pass legislation for wind turbines. The evidence suggests that municipalities are increasingly aware of this positive effect of local cooperatives being involved in wind energy plans and are consequently prescribing cooperative participation in new wind energy projects. This provides a bargaining chip for cooperatives within the battle for locations for wind turbines against the bigger project developers and wind energy organizations. This makes that regime actors are forced to look for new ways to ensure support, of which cooperation with LRWEOs is a viable option. However, regime actors are also trying to ensure this without LRWEOs, which might lead to a take-over of the niche by the regime.

Niche building is the last, but probably the most important one. Creating a strong and robust niche in which knowledge is shared, actor's support each other and goals and visions are aggregated makes it possible for the niche to establish a more meaningful place in the regime. For example, when each of the LRWEOs would be able and willing to support ODEdecentraal, this actor could greatly increase its lobbying practises to influence the national level decision-making.

Altogether this research started out to explain the (possible) impact Local Renewable Energy Organizations could have in the much needed energy transition. The conclusion is that although technology is in favour of decentralized energy production, energy cooperatives are, for now, not well enough organised to have a meaningful impact. They need to build a stronger and more robust niche to compete with the regime.

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APPENDIX 1 THE COMPLETE FRAMEWORK OF MODES OF GOVERNANCE:

		Centralised governance	Decentralised governance	Public private governance	Interactive governance	Self governance
Actor Features	**Initiating actors**	Central gov't agencies	Subsidiarity	Private sector is granted a preconditioned role next to central gov't agencies	Multiple actors from public, private and civil society	Private sector and/or civil society
	Stakeholder position	Stakeholder autonomy/ Involvement determined by initiating actor	High likelihood of stakeholder involvement	Autonomy of market stakeholders within predetermined boundaries	Equal roles for all stakeholders	Self governing stakeholders determine the involvement of other stakeholders
	Policy level	(supra) national	Lower levels of gov't	Local to international level	Multiple levels	Local to international level
	Power base	Coercion, authority, legitimacy (democratic representation on national level)	Coercion, authority, legitimacy (democratic representation on lower levels)	Competitiveness (prices), contracts and legal recourse, legitimacy (agreement on relations and procedures)	Legitimacy (agreement on roles, positions, procedures and process) Trust knowledge	Autonomy, leadership, group size, social capital, legitimacy (agreement on relations and procedures
Institutional features	**Model of representation**	Pluralist election and lobbying	Pluralist election and lobbying	Corporatist (formalised public private governing arrangements)	Partnership (participatory public-private governing arrangement)	Partnership (participatory public-private governing arrangement)
	Rules of interaction	Formal rules (rules of law, fixed and clear procedures)	Formal rules (rules of law, fixed and clear procedures)	Formal and informal exchange rules	Institutions in its broadest form (formal and informal rules)	Informal rules (norms, culture), self crafted (non imposed)
	Mechanism of social interaction	Top-down command and control	Sub-national governments decide about collaborations within top-down determined boundaries	Private actors decide about collaborations within determined boundaries	Interactive; social learning, deliberations and negotiations	Bottom-up social learning, deliberation and negotiations
Content Features	**Goals and targets**	Uniform goals and targets	Uniform and level specific goals and targets	Uniform goals; targets actor specific	Tailor made and integrated goals and targets	Tailor made goals and targets
	Instruments	Legislation, permits, norms and standards	Public covenants and performance contracts	Incentive based instruments such as taxes and grants; performance contracts	Negotiated agreements; trading mechanisms; covenants; entitlements???	Voluntary instruments; private contracts; entitlements; labelling and reporting
	Policy integration	Sectorial (policy sectors and levels separated)	Sectorial (policy sectors separated)	Sectorial (branches and industries separated)	Integrated (policy sectors and levels integrated)	Sectorial to separated (depends on problem framing)
	Policy-science interface	Primacy of generic, expert knowledge	Primacy of generic, expert knowledge; room for issue and time and place specific knowledge	Dominance of issue and time and place specific knowledge; expert and lay (producers and consumers)	Transdisciplinarity; experts and lay knowledge in networks; emphasis on integrated and time and place specific knowledge	Dominance of issue and time and place specific knowledge, expert and lay (citizens)

Table 1: Key features and governance modes based on the framework of Driessen et al., 2012 p.146

The five governance arrangements are described as follows:

1&2: Centralised and decentralised modes of governance

These modes of governance are similar in the workings, agreements, power base etc., but they differ on the policy level in which they take place. They are characterised by governmental bodies (national or regional/local) taking the lead and create policy where the market and civil society are nothing more then recipients of that policy. With the small difference that in decentralised governance there is a little bit more room for collaboration with market parties, but the governmental body still as decisive leading actor.

3 & 4: Public-private and interactive governance

A second cluster of modes of governance are the public private and interactive governance modes. In these modes partnerships among actors from civil society, market and the public domain is leading. When the main actors are from the market and public domain it is called a public-private governance mode. In this mode there is still a hierarchy between the actors where the governmental bodies determine the boundaries within which market entities can act. This differs from the interactive mode of governance where there is more an equal partnership among actors. In this mode also the civil society is an actor in decision and policy making.

5: Self-governance

The last mode of governance described by Driessen et al. (2012) is self-governance. This mode of governance is characterised by far reaching autonomy of actors from the private and civil domain. This mode of governance often aims at achieving environmental goals through private action. This mode of governance supports new approaches outside the governmental sphere. However, policy and legislation from a central government will always be of relevance.

APPENDIX 2 SUBDIVISION OF THE UMBRELLA FACTORS

The following eight umbrella drivers/barriers are identified:

1. Active niche building
    a. The articulation of expectations, goals and visions (SNM)
    b. The building of social networks (SNM)
    c. Aggregating rules (SNM)
    d. Creating routines (SNM)
2. Cooperation between niche and regime
    a. Cooperation with outsiders of the niche (SNM)
    b. Regime actors in the network (SNM)
    c. Tight network and interwoveness of the regime (TM)
    d. Process coordination to combine regime actors with innovative actors and to converge transition paths. (TM)
    e. Reaction of regime actors towards niche actors (Inhibiting/Enabling/ Reacting) (TM)
    f. Regime actors as providers of capital for the niche (TM)
    g. Sharing knowledge between niche and regime (TM)
    h. Willingness of regime actors to reflect on the basics of their practices (TM).
3. Active learning
    a. Learning processes at multiple dimensions (SNM)
    b. Learning from diversity (SNM)
    c. Willingness to learn (SNM)
    d. Direct knowledge sharing among projects (SNM)
    e. Competition among niche actors (SNM)
    f. Intermediaries in network (SNM)
4. Role of the government
    a. Facilitating role of the government (TM)
5. Institutionalization
    a. Explicitly managing of the learning process write lessons down and communicate them/structured and codified learning processes (SNM)
    b. Coordination among experiment or grassroot innovations for systematic knowledge sharing (TM)
    c. Co-evolution of institutional structures and grassroot innovations (TM)
    d. Embedding in the institutional sphere (SNM)
    e. Standardized model of funding (SNM)
6. Ability of niche to influence the decision making level
    a. Niche actors included in the new system (TM)
    b. Framing of the problem along the lines of reasoning and logic of the old regime by the government. (TM)

Regime Influence

The following conceptualizations of regime influence have been identified in the previous chapters:

TM:

1. Alignment between regime and niche actors
4. Representation of the niche at the policy making level
5. Niche coordination

SNM:

1. Niche building activities
2. Alignment with the regime
3. Increased learning
4. Networking
5. Improving the innovation
6. Getting resources
7. Increase knowledge
8. Increased learning
9. Pull-out of knowledge

APPENDIX 3 INTERVIEWEES AND RELEVANT FUNCTIONS

Contact	Relevant Functions	Datum interview
1. van der Stappen	– Independent Advisor spatial planning, nature and landscape projects and energy – Council member in the municipality Weert – Member of cooperative Zuidenwind – Manager of the membership recruitment campaign for cooperative Zuidenwind	8 April
2. Zomer	– Chairman at ODEdecentraal – Chairman at the Windvogel – Secretary at REScoop.EU – 2012-2015 project coordinator at ODEdecentraal – Ex-board member at cooperative Zuidenwind	29 April
3. de Backer	Communications advisor wind Eneco	2 May
4. Schwencke	Independent researcher on energie – Relevant publications are: – Stichting HIER Opgewekt/ ODE decentraal, Lokale Energie Monitor 2015, projectcoordinator, - uitvoering, juni 2015 - januari 2016. – Stichting DOEN, marktanalyse duurzame energie en financiele sector (voor energie), augustus 2014 (rapport niet openbaar) – Planbureau voor de Leefomgeving, Energie cooperaties, and gemeenten, met Hans Elzenga, maart 2014. – NetbeheerNederland: energy cooperatives and regional grid operators, met Maya van der Steenhoven, Arthur Wendel, rapport oktober 2013. – REScoop 20-20-20: European research: Best Practices European energy cooperatives, met Siward Zomer, 2013. – Eigen titel: Essay: Energieke Bottom-up in Lage Landen, augustus 2012	9 May
5. Doorenspleet	Cooperative developer and IT fellow at Rabobank	10 May
6. Harmsen	PHD student at the University of Twente. Researching different organization models of energy cooperatives	11 May

7. de Ridder	– Freelance project manager of wind energy projects – Project manager for cooperative Windpower Nijmegen	13 May
8. van Ginkel	Senior advisor on spatial planning and energy at the municipality of Nijmegen	18 May
9. Verbeek	Advisory board at Yard energy group	17 May
10. Geenen	Initiator of wind farm Zuidenwind	19 May
11. Warbroek	PHD student at Universty Twente. Researching energy civilian initiatives in Friesland	23 May
12. van der Gaag	Program Manager Interprovincial Cooperation on Energy transition and Economy (IPS2E) at Interprovinciaal Overleg	26 May
13. Vermeulen	– Member of Board at the Dutch wind energy association (NWEA) – Managing Director Wind Energy at Raedthuys Group	31 May
14. de Greeff	Board member at cooperative Windpower Nijmegen	8 July
15. Harmsen	Branch specialist on-shore wind energy at the Dutch wind energy Association (NWEA)	20 June
16. de la court	– Advisor sustainable development – General secretary at the Gelderse energy agreement – 2006-2014 alderman on sustainable development at the municipality Lochem – Board member at ODEdecentraal	6 June
17. Bruggink	Project manager energy transition at the province Gelderland	23 June
18. Raven	Full Professor Institutions and Societal Transitions at Utrecht University Some publications are: – Strategic niche management in emerging economies: experimenting for sustainability in India. Environmental Science and Policy, 13(4), 272-281 2010 – The development of solar PV in the Netherlands: a case of survival in unfriendly contexts.(Link) Renewable and Sustainable Energy Reviews. 19, 275-289 2013 – The multi-level perspective and the scope for sustainable land use planning in Chiang Mai city.(Link) Environment and Natural Resources Journal. 10 (2), 21-30 2012 – Space and scale in socio-technical transitions.(Link) Environmental Innovation and Societal Transitions. 4, 63-78 2012	29 September

19. Roodenrijs	Sustainability science lecturer & Solar energy advisor	6 October
20. de Meijer	– Policy officer and project manager Gelderland Nature and Environment Federation – Area manager Wind farm Nijmegen Betuwe (Windpower Nijmegen)	30 September
21. Hoppe	Associate professor at TU-Delft focussing on policy implementation in the domains of energy- and environmental policy. Relevant publications are: – Hoppe, T., F.H.J.M. Coenen, and M.M. van den Berg. (2016). Illustrating the use of concepts from the discipline of policy studies in energy research: an explorative literature review. Energy Research & Social Science, 21, 12-32. doi: 10.1016/j.erss.2016.06.006. – Hoppe, T., Kuokkanen, A., Mikkilä, M., Kahiluoto, H., Kuisma, M., Arentsen, M.J., and Linnanen, L. (2016). System merits or failures? Policies for transition to sustainable P and N systems in the Netherlands and Finland. Sustainability, 8(5), 463. doi: 10.3390/su8050463. – Hoppe, T., Vegt, A. van der, P. Stegmaier. (2016). Presenting a framework to analyze local climate action in small and medium-sized cities. Sustainability, 8(9), 847. doi:10.3390/su8090847. – Mdivani, K., and T. Hoppe. (2016). Experience with LEDS and NAMA Low Carbon Strategies: The Case of Georgia. Sustainability, 8(6), 535. doi: 10.3390/su8060535. – Niemann, L., T. Hoppe, and F.H.J.M. Coenen. (2016). On the Benefits of Using Process Indicators in Local Sustainability Monitoring. Environmental Policy and Governance. Accepted. – Hoppe, T. and E.M. van Bueren. (2015). Guest editorial: Governing the Challenges of Climate Change and Energy Transition in Cities. Energy, Sustainability and Society, 5(19), 1-9. doi: 10.1186/s13705-015-0047-7. – Hoppe, T., A. Graf, B. Warbroek, I. Lammers, and I. Lepping. (2015). Local governments supporting local energy initiatives; Lessons from the best practices of Saerbeck (Germany) and	5 October

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