

UNIVERSITY OF GRONINGEN

Realizing solar power projects

a perspective on creating solar parks by
municipalities from the province of Groningen

Colofon

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Preface

For many years, my interest in geography and spatial planning has always been on issues related to sustainability, innovation and citizen participation in planning projects. During my bachelor thesis my focus has been on the realization of digital infrastructure on the countryside in the Netherlands. Starting in the summer of 2017, I first considered doing my master thesis on the rising societal push to realize solar parks, specifically in the north eastern part of the Netherlands. What piqued my interest wasn't just the realization of the projects themselves but the accompanied reaction to them both during the planning process and afterwards. As more and more projects finished and larger projects keep being proposed to this day, the resistance seemed to get more intense because of its spatial impact on the landscape. I knew then that I wanted to find out if there was more to be known about the reasons, consequences and how to deal with them from a planning, environmental justice and societal perspective. Through these perspectives I wanted to see if municipalities are currently doing a good job in managing the different interests at stake when realizing solar park projects. These factors made me to decide to make that my topic for this study. Finally on a more personal note, I'd like to thank everyone who helped me to get through the more difficult periods when working on doing the research and eventually finishing the study. It has been a long road in getting there and it would never have been possible without your support and for that I'm eternally grateful.

Roelf Hijlke Groenewold
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Abstract

The world is currently experiencing its next energy transition towards sustainable methods of energy production and a circular economy. This time the current energy transition has been kicked off not just by a combination of greater efficiency of the new energy paradigm and scarcity caused by the previous dominant energy paradigm but also by sheer necessity of avoiding subsequent negative consequences. One such negative consequence, the onset of human induced climate change, has increasingly put our global civilization under threat by causing rapid unstable changes to the world's climate. This in turn leads to a number of negative global and local phenomena which, for the Netherlands in particular, translates into rising sea-levels and more extreme weather patterns being the main causes for concern. By removing non-renewable energy sources from the energy system and replace those with renewables such as wind, biomass and solar, the country hopes to do its part in limiting climate change. Furthermore, of the renewable energy sources currently being pursued, solar power techniques have rapidly risen to prominence of which the use of photovoltaics or PV is of particular interest for different scales of energy production for municipalities and local inhabitants on the countryside. Because of said applicability across different scales and structures, from individual homes to entire acres of solar panels, implementation is relatively fast and gaining popularity. In opposition however, the increasing resistance against the largest projects is also becoming more noticeable which is what this thesis attempts to address by finding out why and what can be done about addressing this resistance from the perspective of local governance, specifically the earlier mentioned regime of the municipality. Which leads to the main research question of; *"How can municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?"*

This thesis aimed to provide an answer to this research question by performing a qualitative and comparison between projects from different municipalities in the eastern part of the province of Groningen. Each municipality had or has its solar power projects come together by different processes and backgrounds. By analyzing the process and this thesis hopes to shed some light on possible strategies that enable municipalities and other relevant parties to prevent or diminish any potential setbacks in realizing the aforementioned goals of solar power production within a municipalities borders.

Keywords:

Energy transition
Transition theories
Solar power projects
Environmental Justice

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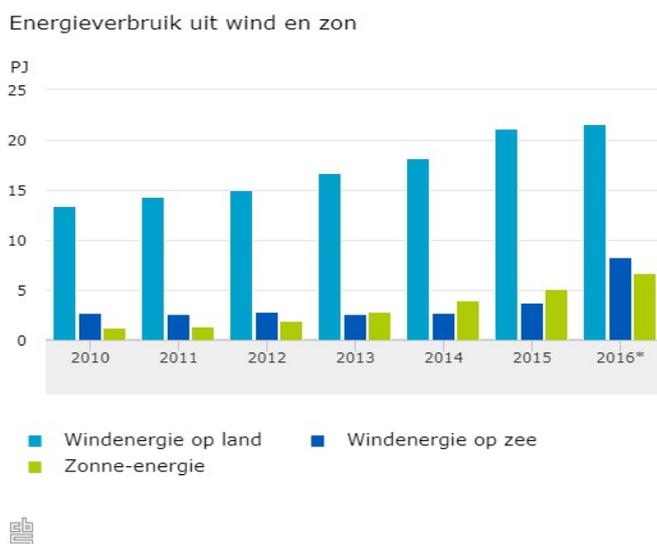
Abbreviations

CBS	Statistics Netherlands
CSP	Concentrated Solar Power
EC	European Commission
EEA	European Environment Agency
EU	European Union
HI	Historical Institutionalism
IEA	International Energy Agency
KNMI	Royal Netherlands Meteorological Institute
MER	Environmental Impact Assessment
NMF	Natuur en Milieufederatie Groningen - Drenthe
PV	Photovoltaics
UN	United Nations
WUR	University of Wageningen

1. Introduction

Our lives as individuals and our society in its totality are built on the consumption of resources from many different sources. In order to achieve that, any individual living organism or a society as a whole needs resources and/or energy to thrive (Conway et al. 2011). There are many forms of energy available to us and we use it in countless ways to maintain ourselves, our society and global civilization. For ourselves, we of course acquire it through consuming food and water. For our modern society we acquire it through the exploitation of biomass and fossil energy resources which we in turn transform into heat and electricity. And therein lays a problem; as we've continuously expanded our demand and have found new supplies to meet that demand, we have built our current consumption on non-renewable forms of energy such as oil, coal, gas and many other materials that are either non-renewable or overexploited. As we move towards renewable energy sources, the impact is increasingly felt by local communities as two of the most prominent renewables, wind and solar power require a lot of space. Furthermore, the call for local inhabitants to have a say in how these projects are realized and who should benefit have also been increasing (Schönberger & Reiche, 2010). The role of sub-national actors such as the provinces and municipalities as such become more important in ensuring participation is part of the planning process (IPO, 2018).

Further pushing local inhabitants and sub-national actors towards these changes are the consequences from exploitation and consumption of non-renewable energy sources, quickly becoming one of our most profound challenges yet, specifically that of human induced climate change. The consequences of this phenomenon are increasingly felt across the globe and puts environmental pressure on our environment and society (IPCC, 2014). In an attempt to counter these consequences we've started to globally diversify our energy production and exploitation. The European Union has set itself the goals of attaining 20% reduction of greenhouse gases by 2020 compared to 1990 and as high as 80 to 95% by 2050 (EU, 2018). In the Netherlands, the targets have been set at 14% for 2020 (Sociaal-Economische Raad, 2013). So over the years the Netherlands too has slowly started with shifting its focus toward renewable energy sources (see figure 1). The most prominent of which being biomass, wind and solar. Of wind and solar, wind



energy produced on land currently dominates while parks at sea as well as solar power derived regardless of the source are catching up. (CBS, 2016).

This 'catching up' however has consequences as both across the world and the Netherlands, the need to create more renewable energy projects has becomes all the more pressing. Something which is difficult to change as it will require extensive careful planning to integrate all new energy initiatives and take issues such as stakeholders, local interests and (political) power structures into account (Boer & Zuidema, 2015).

Figure 1: Energy consumption of solar and wind power in the Netherlands

Source: CBS (2016)

1.1. Anthropogenic climate change

Policies addressing anthropogenic climate change are currently being developed at a rapid pace in order to address the growing consensus that society needs to act in order to prevent the worst consequences. When talking about anthropogenic climate change the established consensus for policy usually bases around the collaborated findings presented in the IPCC rapports provided by the United Nations. The rapport is the most comprehensively agreed upon document on anthropogenic climate change and forms the basis for discussions and policy on the matter at hand (IPCC, 2014). After all, the concept is often described in the general media as 'climate change' or 'global warming'. While that is certainly part of the overall definition these concepts in themselves are nothing neither new nor controversial and in addressing the actual problem can be considered a misuse of the term(s).

First, the concept of climate change can be broken down to the very basics as a statistical change in weather patterns that shift from one stable equilibrium towards another within the climate system. The climate system itself is the complex and interactive landscape that comprises the atmosphere, hydrosphere, cryosphere, and the biosphere and of course all surface land of Earth (Holden, 2008).

Secondly 'global warming' is the trend of rising average of global temperatures since accurate measurements began. As mentioned before this is often used to describe human induced climate change and the general 'greenhouse effect'. It is in fact a normal and recurring effect that occurs within the atmosphere probably as soon as Earth started to have one. However it is the added greenhouse gasses by human activity what is rapidly accelerating the process to the point that we're now reaching global average temperatures not seen for even hundreds of thousands of years (Holden, 2008).

Lastly, as noted by the fifth assessment report released in 2014 of the Intergovernmental Panel on Climate Change, anthropogenic climate change is not only real, it is currently happening at a unprecedented level and as mentioned before on a scale not seen for over hundreds of thousands of years. As a consequence of this phenomenon the world now has to deal with rising sea levels and increasingly unstable weather patterns. Finally, the report recognizes that the longer we wait to implement changes to our society, the more expensive our predicament will become (IPCC, 2014). In other words, the longer we wait, the less able we as planners will be to act and stimulate positive sustainable change.

Translated to the context of the Netherlands the medium to long-term effects can be felt most strongly because of rising sea-levels and more extreme weather year-round while simultaneously we will have to plan for a future where land-use of renewable energy, food production and water safety management will have to be integrated. So in short, there is more than enough reason to not want this process to completely get out of control. These form a succinct scientific basis on which policymakers know to what standard any current and future policy will have to adhere to, and which results are likely to be expected depending on the chosen policies and success of the implementation of said policies.

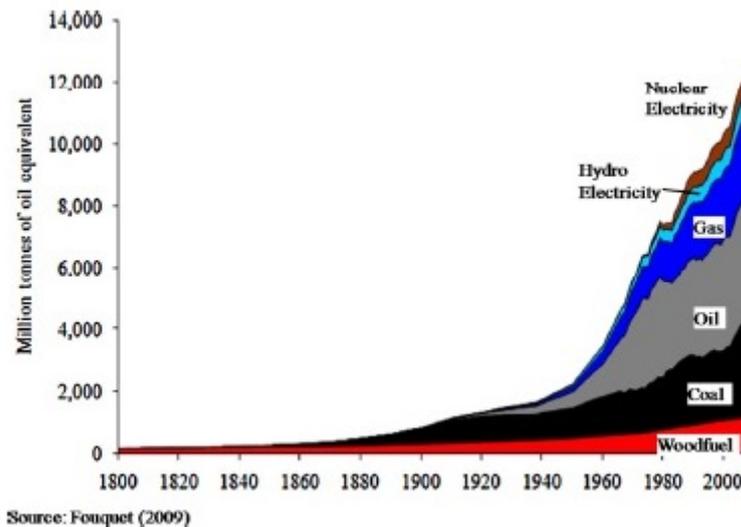


Figure 2: Global Primary Energy Consumption Source: (Fouquet, 2009)

1.2. The role of energy transitions

As explained above, our current ways of producing energy are outdated and inept do deal with the goals of sustainability at hand. In fact, we need to redesign and rebuild our entire energy infrastructure. The task at hand will be unparalleled in scale and scope (IEA IRENA, 2017). That in essence is what is referred to as the ‘energy transition’ (Rotmans et al, 2001). An energy transition is as such a complex process which can take decades to complete as it transitions from one state of equilibrium to another (Boer & Zuidema, 2015). In other words, the modern energy transition is perhaps defined as a shift away from a complex system dominated by finite energy sources towards an even more complex system using a majority of renewable energy sources, simultaneously maximizing the opportunities available from increased energy efficiency and better management of energy demand.

As with many challenges, urban areas are often the places in which the greatest progress can be made on energy transition. How cities grow and operate has a huge impact on energy demand as they account for 60 to 80% of global energy consumption and around the same share of CO2 emissions (UIA, 2017). However, implementing solar and wind on a large scale shifts energy production towards the countryside. This is further compounded with the fact that distribution for renewable energy production can be unequal depending on the geographical and climatological constraints (Smil, 2008).

Interestingly, the energy transition concept isn’t just a recent phenomenon although the consequences caused by the current paradigm are unparalleled. Throughout human history we’ve phased through several broadly applied techniques in generating the energy requirements we needed. Since the Industrial Revolution it has typically taken about half a century for new innovations in energy use and production to diffuse throughout society or a specific industry (Fouquet, 2009). Over time we’ve shifted from wood to coal, oil to gas, hydro and nuclear electricity and now have started to add sustainable sources such as solar and wind to our worldwide energy consumption (see figure 2).

1.3. The basic principles of using solar power as a renewable energy source

Using the sun as a source of energy and heat is something society has done for a long time. Today 'solar power' used world-wide mainly can be divided into two dominant techniques; concentrated solar power (CSP), photovoltaic (PV).

Concentrated solar power (CSP) basically works on the principle of combining a series of mirror sand/or reflective surfaces and uses that for creating a focal point. By focusing the collected light into a focal light the technique is able to concentrate heat and the subsequent produced thermal energy is used for a turbine producing electricity (DOA, 2018).

Photovoltaics (PV) produced solar power however has become the most important use of solar power over the last few years because of its rapid growth as well as the continued promise of additional innovation within this specific niche of solar power techniques. PV technologies work on the basis of converting light across both the visible and invisible part of the electromagnetic spectrum into electricity. This provides both large advantages as well as several disadvantages. As of 2017, renewable energy sources compromise about 5,9% of the total energy production in the Netherlands of which solar power is insignificant. In fact, biomass currently contributes towards 63% of the previous mentioned total. In order to facilitate a more rapid change, the national government, provincial government and local municipalities all encourage the development of solar power in various ways. So far the focus in the Netherlands on solar power based applications has mainly focused on heating and photovoltaic systems (CBS, 2016).

One primary advantage is the ability to integrate the technique across a wide range of infrastructure and landscapes. Another is the relative smaller impact solar power has on the landscape then in the case with wind power. However as solar parks have started to get larger in size, this argument has become less convincing and solar projects are now also prone to the 'not in my backyard' effect or NIMBY (Horst, 2007). Furthermore, local energy initiatives are not always fully integrated into the larger national network presenting an additional challenge. To counter these problematic situations, Boer & Zuidema (2015) call for an 'integrated energy landscape'. They argue for an landscape where renewable energy projects should not be seen as separate from the existing elements and socio-economic fabric which is already present but should instead become an integral part of it.

For example, in the Netherlands alone you can find experiments from integrating solar power into bicycle paths, to glass panels within the roof of major train stations such as Utrecht Centraal as well as Centraal Station in Rotterdam (ProRail, 2013). At the same time, even larger projects initiatives have been started by local inhabitants and/or municipalities so that they are able to produce their own energy needs and benefit from having these projects in their own neighborhoods. For this study, the focus is on these situations in the rural landscape of the north eastern part of the Netherlands and what better role sub-national actors such as the province and especially the municipalities could have to further facilitate the realization of local participation within an integrated energy landscape.

1.4. Structure of the study

This research has been designed in a format that aims to provide a clear description on addressing the main topic, issues and findings of the research. Hopefully this will have made for a comfortable reading. The entire document consists of in total seven sub-chapters dealing with these specific topics: an introduction of the thesis here above with some further background and rationale in chapter 2 and subsequently, the theoretical framework on which this thesis has been build, the chosen methodology and data collection techniques, the consequent findings and results and finally the forthcoming conclusions, discussion and possible recommendations.

First, in the next chapter we will discuss the research questions and give a schematic overview of the theoretic background of the study. In addition to clarifying additional pressures that move us towards a new energy transition.

Secondly, in the third chapter we will continue with the theoretical framework. Here the thesis will describe the most relevant theories that form the backbone on which the research is based. In addition to chapter will finish with a short synthesis of all that will be explained and described and provide a schematic overview of all the used theories, concepts and ideas.

Thirdly, in chapter four the focus will be on the used methodology of this thesis. As mentioned earlier this primarily consists of a literature study, semi-structured interviews with policy experts, policymakers and policy advocates.

Fourthly, in the subsequent chapter the findings of the used research methodologies will be presented and analyzed in chapter 5 in order to be able to answer the questions posed that are described here below in chapter 2.

Fifthly, in the sixth chapter you will find this thesis its conclusion(s) based on the theoretical background and findings gathered by the interviews and as well as its subsequent discussion and possible recommendations as it relates to the main and secondary research questions.

Finally, in the last and seventh chapter you will find a reflection on my thesis, the difficulties, successes and review of possible improvements for further research dealing with this topic.

2. Research questions and design

Simplified, the research objective of this study is to provide a small piece to the overall body of knowledge on citizen participation, environmental justice, institutionalism and the general variety of ways for sub-national actors to improve the success of realizing sustainable energy project in a (semi-) rural setting and realizing these projects in such a way that they are integrated within the ecological and socio-economic landscape that's already present.

The reasons for working on this particular topic are not just out of pure interest of the author in solar power development in the Netherlands alone. The subject was also chosen out of the perceived relevance and ability to add a small piece of knowledge to the local understanding of realizing solar park projects in the Netherlands. As well as to how best to deal with adding participation from the perspective of municipalities in the northern parts of the Netherlands where there currently are many different contentious situations between local populations and renewable energy initiatives, as such the relevancy of this research can be divided into two different perspectives; the scientific relevance and the societal relevance.

2.1. The scientific relevance

The current energy transition from non-renewable fossil based energy sources towards renewable energy sources can be considered to be a phenomenon that will involve "*substantial technological, material, organizational, institutional, political, economic, and socio-cultural changes*" to our society (Wirth, 2014; Markard et al., 2012). Of particular interest within the context of the energy transition are the new formal and informal organizational forms of renewable energy production such as a strong focus on the decentralization of the energy infrastructure and the involvement of the local inhabitants and/or communities within a renewable energy project such as a solar park.

Furthermore, what and who exactly the 'community' is to be in the context of renewable energy production and exploitation is also often a point of contention (Walker et al, 2010). It does however provide "*implications and assumptions about the nature and quality of relationships between people and organisations that are part of the 'community' and the social arrangements under which energy technology is to be implemented*" (Hinshelwood, 2001; Hoffman and High-Pippert, 2005; Walker et al, 2010).

This could be considered to be a bit vague and does not seem to be a particular straightforward process, in fact, the use and definition is currently rapidly evolving as participation of local communities is slowly redefined and integrated by formal regimes such as provinces and municipalities (Provincie Groningen, 2018; Loorbach, 2010). This study aims to add a slight piece of the larger puzzle to that understanding, so that it might provide some clarity in which direction municipalities could or should strive for when pursuing active participation with their local citizens within solar park projects.

2.2. The societal relevance

All life adheres to two biological certainties that define said organisms as being alive from a biological perspective: the ability to self-replicate (procreate) and having the capacity to undergo Darwinian evolution (Conway et al. 2011). That process needs energy, regardless of the source. For our society the necessity of access to resources, electrical power and heat is just as crucial in order to function. That basic knowledge of life translated towards our society means that the societal relevance of transitioning towards a sustainable and resilient energy production is not only useful but necessary as our needs create externalities or negative consequences such as a changing climate induced by our activities. We all need to adapt to said changing climate and prevent further damage to our environment. As noted by the fifth assessment report released in 2014 of the Intergovernmental Panel on Climate Change, human induced climate change is not only real, it is currently happening at a unprecedented level and scale not seen for hundreds of thousands of years. (IPCC, 2014) Nowhere does this affect us more than at the local level and that's where it often can get complicated as different actors, stakeholders and interests start influencing each other and effect the current *"socio-cultural, economic, ecological and institutional...equilibrium"* (Van der Brugge et al., 2005). In addition to an environmental imperative the energy transition away from fossil fuels is also encouraged by the energy dependency of the Netherlands and allies on sources elsewhere in the world that do not share the Dutch or general Western perspectives on the rule of law, democracy and basic human rights such as is the case with Saudi-Arabia (Boer & Zuidema, 2015; Correljé and Van der Linde, 2006). In short, finding (new) ways and knowledge that gives us a better perspective on how to accomplish a more sustainable, European interdependent future at the local level is considered crucial for this study's societal justification.

2.3. The main research question

Taking the personal interest, overview of the academic motivations and potential added relevance into account the main question can be summarized as:

"How can municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?"

2.4. Secondary research questions

- A) What is the current, normative and/or desired state of participation within the local energy transition among both the regime and niche level of governance in terms of policy and direction in the Northern Netherlands?
- B) What motives do the relevant stakeholders have in relation to the role they play within the realization of solar power projects?
- C) What role does the current structure of governance both formal and informal institutions play within the success and/or failure of realizing solar parks in the Northern Netherlands?
- D) How do historical institutionalism, cultural institutionalism and environmental justice influence the realization of participation within solar power and solar park projects in municipalities?"

2.5. Outline of the research framework

In figure 3 you can see the outline of the research framework chosen for this master thesis. The flowchart was designed with the tools of draw.io (2018).

What you see here is a schematically representation of how this research used several theories and designed it in such a way as to be able to answer the aforementioned questions above. Starting in the upper left corner you can observe the topics mentioned in the Introduction (chapter 1) as well as the current chapter that underscore the causes and relevance of the thesis. Secondly, the primarily used transition theory is divided into three main perspectives on how transitions occur spatially, temporally and between different (sub-national) actors. Furthermore, additional concepts that comprise part of the earlier mentioned transitions have been integrated for distinguishing different relevant factors that might influence the transition itself and actors within it. Finally, at the bottom, apart from the other concepts, is the perspective derived from environmental justice which allows us to analyze the state of the planning process in terms of the fairness and the degree of participation on a process and outcome framework as can be observed in chapter 3. This information furthermore provided the opportunity to ask the additional questions during the interviews and lead to analyzable empirical data. The policy documents as well as the notes gathered of the participants stances add to this as well. Finally, as expected, the data that has been analyzed in chapter 5 has been used to derive answers to the earlier posed research questions which in turn made it possible to draw conclusions on the state of the energy transition in the Netherlands at the local and/or participatory level.

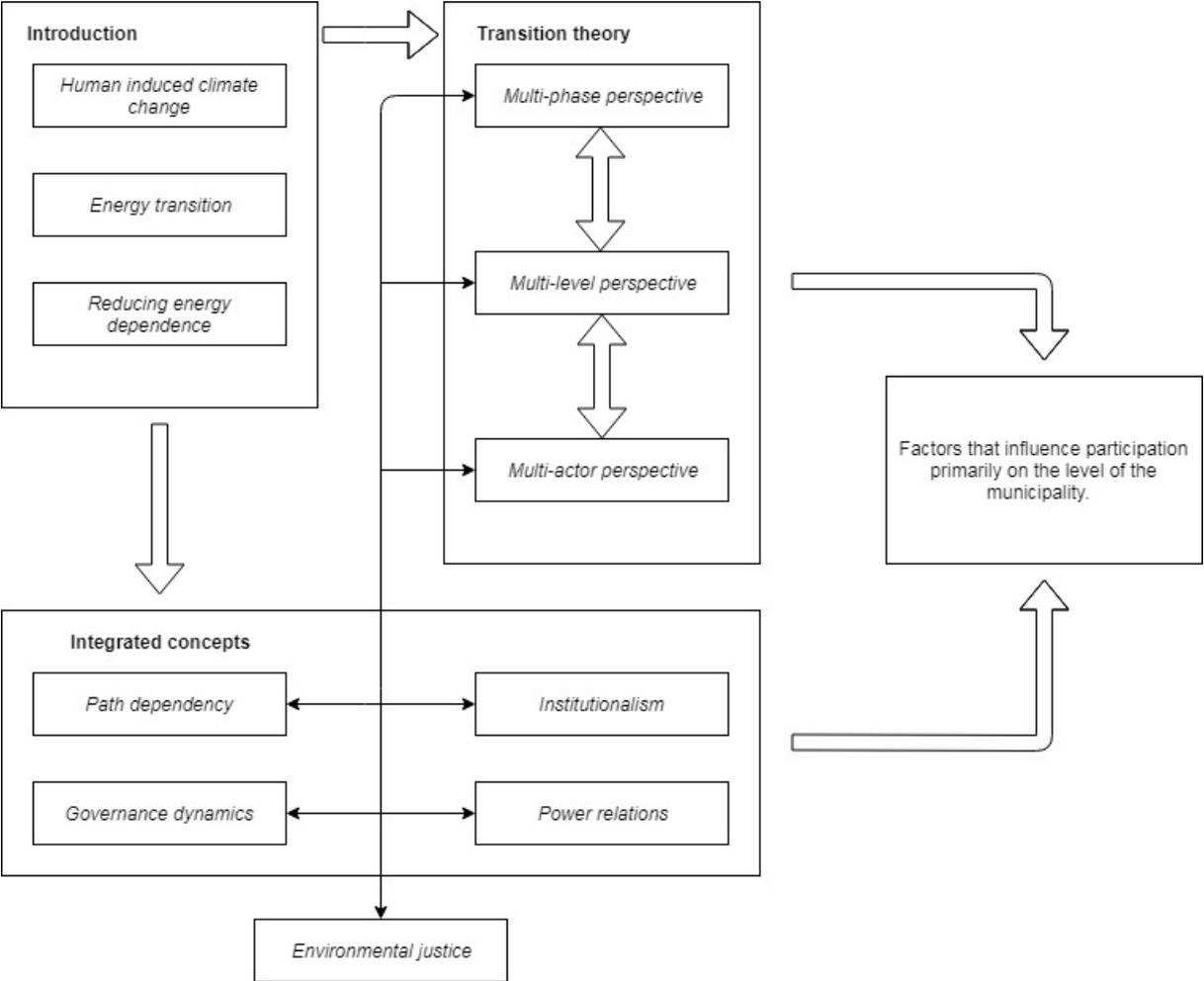


Figure 3: The main theories and concepts used in this thesis.

Source: Author

3. Theoretical framework

3.1. Introduction

As previously established in the introduction to the topic and both in the scientific and societal relevance, the energy transition is increasingly underway because of rising pressures from human induced climate change and undesirable energy dependency based on unstable regions and autocratic regimes. In order to underpin that within the scientific discipline of this study, the use of several scientific theories are required to be able to shed light on where we need to go and how to achieve the energy transition in the most preferable direction. This energy transition has to transpire across society, a concept that is getting increasingly complex to understand. This is, as Loorbach (2010) notes happening on three distinct 'levels'; one the level of the society itself, the scale of problems confronting society and the ability of society to deal with these problems. These are what Loorbach (2010) calls "*persistent problems*" that transpire across different time periods, scales and scope with a multitude of actors operating within these dimensions. As such it could be argued that in order to achieve understanding and maintain the ability to creating meaningful policies many different perspectives are required. These perspectives or theories are in short order; transition theories, governance dynamics, institutionalism within a historical and cultural context, path dependency, power relations, social and interpersonal trust environmental justice and the process versus outcome framework as established by Walker & Devine-Wright (2008). At the end of this chapter these topics have been combined to provide multiple categories that have been subsequently used to gather and analyze gathered empirical data.

3.2. Why environmental planning theory?

Spatial planning or planning in general is strongly related to realizing the energy transition as well as working on integrating infrastructure and society in a more balanced way with the environment both here in the Netherlands as well as abroad. Planning can be defined as a "*scientific discipline of which urban planning and all her theories, methods and techniques combine and allows to reflect on it*" (Spit and Zoete, 2009; Knox and Marston, 2010). Furthermore, a crucial point of planning is not to just focus on collecting and understanding spatial knowledge but also to use it to address issues posed in the social-spatial debate (Voogd and Woltjer, 2010). As such both fields are closely related to each other yet planning arguable has a more specific focus on human interaction with the built environment. In the context of the larger theoretical framework that focus is apparent when planning theory is viewed as "*a history of institution-building, as the development of a multifaceted system of decision rules, shared understandings, codes and organizations charged with regulating (city) building*" (Sorensen, 2005). In other words, planning theory can take a deeper look into the actual philosophical background of spatial planning in general. Planning theory within the theoretical framework of this study primarily concerns itself with environmental issues and local participation; as such the concept originating from theories related to social justice; environmental justice is added to the more well-known transition theories.

3.3. Transitions: the multi-phase, multi-level and multi-actor perspective

First touched upon in chapter 1, the energy transition currently underway is a shift from one state of equilibrium to another. A transition is what Van der Brugge et al. (2005) notes is ‘*a structural change in the way a society operates*’. It is by its very nature a long term process often twenty-five years or longer that consists of many factors and actors that all need to act together towards that new state of equilibrium in order for it to work. In other words it is a ‘*co-evolution*’ of different aspects such as institutions, policies, governance and evolving technologies that take place independently from one another (Rotmans et al, 2001). Aspects that influence a transition can be categorized in different contexts. One example in particular, is the framework devised by Martens & Rotmans (2002) as can be observed in figure 4. The framework makes a distinction between the social-cultural capital, ecological capital and economic capital. Within each dimension you can find further aspects that influence any transition within specific domains such as energy, culture and institutions but also the economy and ecology. Loorbach (2010) provides an additional reason as to why ‘community renewable energy’ is now able to exist; in the past, specifically during several long periods in the previous century, policies were set from a top-down approach with a strongly centralized government being present in everyday dealings. This has shifted towards what has in more recent times been replaced with decentralized, market-based, different decision-based (sub- and supra-) national structures and processes collectively known as ‘governance’ (Kooiman, 1993; Loorbach, 2010). Today, another shift is taking place that is neither focused on a centralized government approach or fully decentralized market based approach. Instead a middle ground is being sought for, one that is able to take the complex societal processes into account and is able to coordinate to such a degree that desired change is able to be effectively realized (Loorbach, 2010).

In order to better understand both the transitions that have occurred in the past as well as the one that is occurring now, multiple perspectives are useful. In this study three major interconnected aspects form the core of what is understood to be a transition: the multi-phase perspective, the multi-level perspective and the multi-actor perspective. The multi-actor perspective is derived from transition management; this will be addressed in chapter 3.3.3. In this study we focus on the multi-actor perspective while briefly discussing the general aspects of transition management before moving on and integrate these theories with the rest of the theoretical framework.

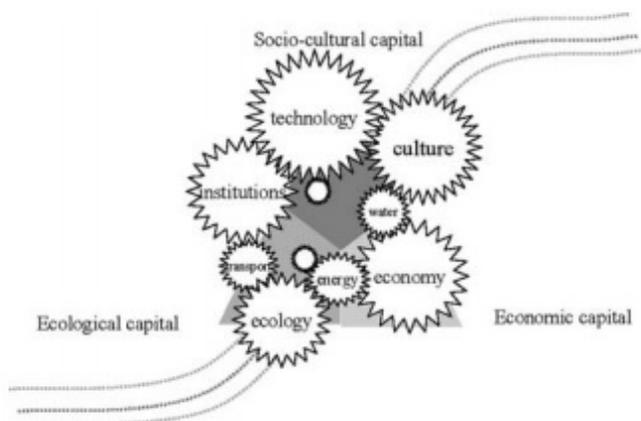


Figure 4: The different factors at play of a transition in a complex and evolving system (original adaptation Martens & Rotmans, 2002).

3.3.1. The multi-phase perspective

Understanding transitions within a planning science context requires understanding the changes that occur over time; the temporal dimension of a transition. A well-known framework to illustrate this is known as the S-curve as can be observed in figure 5 (Rotmans et al, 2001). The curve shows the evolution of an innovation in the broadest sense and in turn transition from left to right with the speed and size of adoption on the vertical axis and the passage of time on the horizontal axis. The illustration also highlights the three general aspects of a transition, those being the passage of time, the size of change taking place and the speed at which this change is occurring (see figure 6).

The multi-phase perspective can be divided into four different phases; pre-development, take-off, breakthrough (acceleration) and stabilization. Along this curve the pre-development phase is the era of an existing equilibrium. Any changes do not appear to happen noticeably except in specific niches. The second step is the take-off phase, which is when a complex system begins to noticeably change. This is also the era where a lot of difficulties and barriers are solved, encouraging even further change. This is consequently known as the breakthrough phase. This is when visibly changes in the landscape take place at a rapid pace as all factors related to socio-cultural, economic, ecological and institutional dimensions combine and reinforce each other. Finally we reach the last stage, the last phase known as the stabilization phase. This is when the speed of change starts to decrease and a new equilibrium has been reached within the system (Van der Brugge, 2005, R., Rotmans et al, 2001).

When applied to the energy transition and the use of solar power technologies, specifically the use of PV both world-wide as well as in the Netherlands, these patterns are arguably observable. For clarification, the innovation of solar power first emerged at the end of the 19th century after a long period of independent theoretical discoveries spanning all the way back to the mid-18th century. Continuing with small breakthroughs throughout the early 20th century the world finally saw the first silicon solar cells in 1954 (EPA, 2017). This can be interpreted as the predevelopment phase of PV technologies. The subsequent development was initially pursued by the satellite industry at the start of the Space Race between the United States and the Soviet Union. Quickly thereafter the technology began to be applied in an increasing range of different industries, with the first PV solar cells being integrated into real estate, electronics and some experimental transportation during the 1970's and 80's. The first solar parks started appearing near the end of the 80's and truly started to take-off during the early 00's of the 21st century. Now, because of the increasing ambitions of individuals, corporations and governments society is increasingly able to switch to renewables and the usage of PV is rapidly increasing accordingly, possibly moving onward to the breakthrough or alternatively known as the acceleration stage.

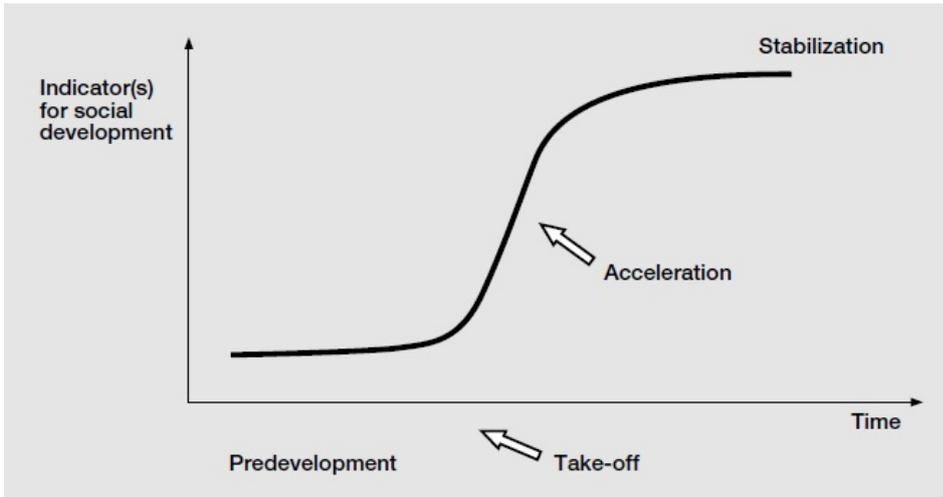


Figure 5: The S-curve of transitions (Rotmans et al. 2001)

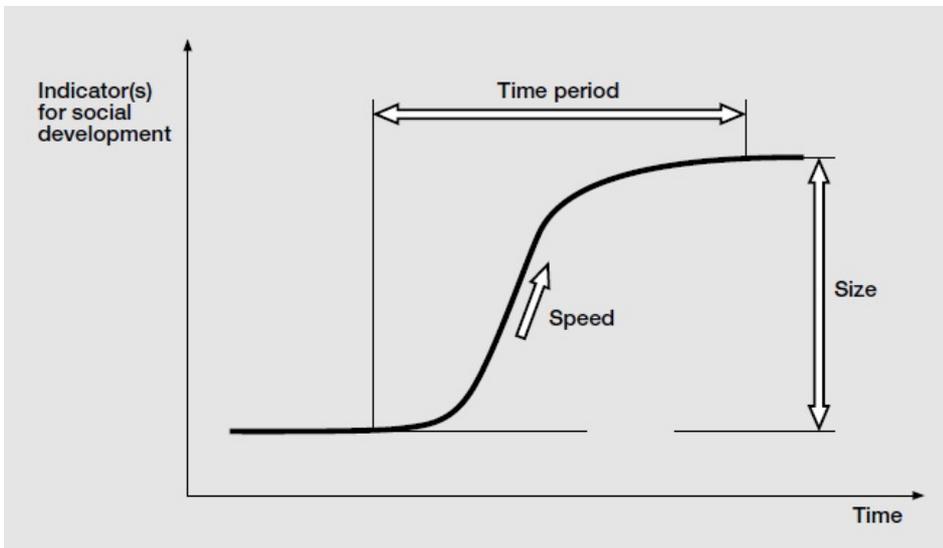


Figure 6: The three different dimensions of a transition (Rotmans et al. 2001)

3.3.2. The multi-level perspective

In addition to the multi-phase perspective, the multi-level perspective is relevant for understanding transitions. This perspective shows the often complex patterns and processes that take place between different existing levels. The concept was originally devised by Geels and Kemp (2000) and has found its place among the scientific discourse. The multi-level perspective according to Loorbach (2010) addresses the increasing complexity within society. As a transition is a set of complex patterns within a social-spatial system, which changes with the passage of time and across space, we can explain said changes by making use of the concept of different levels in tandem with the previously discussed multi-phase perspective. These three different levels are both interdependent from one another and continuously influence each other into and through certain pathways.

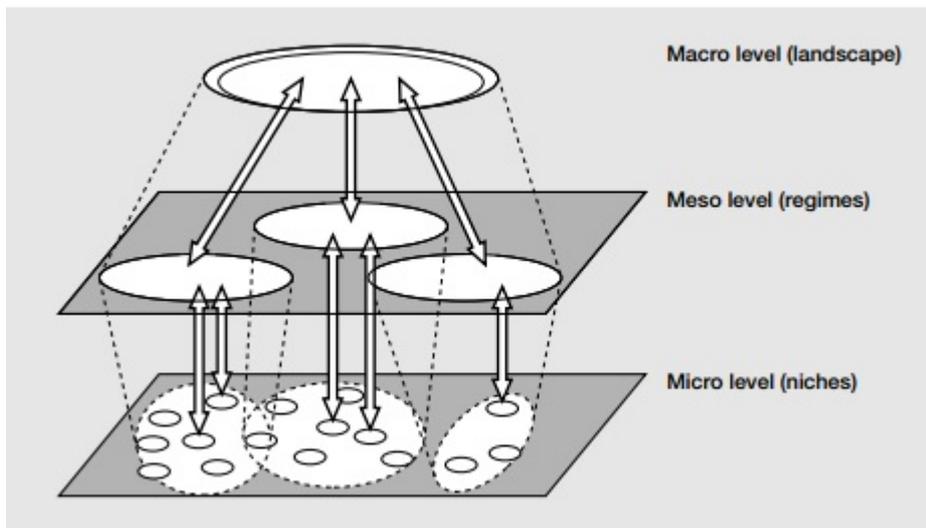


Figure 7: The multi-level perspective (Rotmans et al. 2001)

The macro level, otherwise known as the social-technical landscape, is considered to be slowly moving societal trends. It is often considered to be relatively unyielding (Van der Brugge, 2005). It corresponds to elements such as; “*political culture, social values, worldviews and paradigms...*” (Rotmans et al, 2001).

The meso-level is where the concept of ‘regimes’ presents itself. Regimes in essence are the established formal and informal rules and norms, institutions and organizational structures influencing existing economic and societal activities (Berkhout et al, 2003; Van der Brugge, 2005). Rotmans et al. (2001) concurs by stating that “*interests, rules and beliefs that guide private action and public policy*” together steer towards solutions that are more of an optimizing nature rather than a generally transformative one. As such regimes are commonly used to uphold the stability of economic and social activities throughout society (Berkhout et al, 2003). By their nature, regimes are generally focused on preserving the status quo instead of innovating it (Van der Brugge, 2005). As Avelino et al. (2016) for instance highlights the relation between transitions and the regime(s); “*Sustainability transitions are processes of fundamental social change in response to societal challenges...they reflect a particular diagnosis of persistent social problems, in which persistence is attributed to the path dependency of dominant practices and structures (i.e. ‘regimes’), whose resolution requires structural and long-term change.*” Not surprisingly that makes the focus on the ability of transitions within society and societal structures crucial in order to determine why certain projects succeed and others fail in relation to regimes their ability to change and adapt (Rotmans et al. 2001).

At the micro level we find the existence of the niches. Niches are broadly speaking the individual actors, alternative technologies and any local practice that is or has been implemented (Rotmans et al, 2001). It is at this level where today the goal of achieving a 'bottom-up' approach to transition takes place. When a transition first starts to take place, there is often a downward pressure from both the macro and meso level in working against a specific development because of the status quo being dominant in all aspects. However, at a certain point, things start to change at the meso level allowing for an experimentation period to take place as an innovation starts to spread (Loorbach, 2010). Van der Brugge (2005) further describes this pattern, noting that the regime is often the inhibiting factor. In concordance with the multi-phase perspective, a take-off phase can be reached when the micro-level is able to breakout because of changes by the macro-level or because certain regimes have become susceptible over time. Once that happens a period of uncertainty and struggle can occur with the danger of 'lock-in' occurring during this specific period. Once the paradigm shift moves into the acceleration phase, regimes often become an enabler by providing resources. Finally in the stabilization phase another relatively stable paradigm or equilibrium has been reached which over time will start the cycle once again (Van der Brugge, 2005).

3.3.3. The multi-actor perspective and transition management

In addition to the multi-phase and the multi-level perspective is the concept of transition management and the multi-actor perspective. Transition management focusing on governing transitions and long-term thinking of upward to 25 years, focuses on policies that multi-faceted, a flexible ongoing learning process, encourage continuous innovation and maintain a variety of options or contingencies available (Rotmans et al, 2001; Van der Brugge, 2005).

Furthermore, transition management focuses on establishing long-term visions which can function as a support for designing short-term objectives around (Rotmans et al, 2001; Loorbach, 2010). As such is it supposed to be, by its very nature, adaptive and anticipative (Van der Brugge, 2005). Transition management is further categorized into four different types of governance activities that are important to understanding societal transitions; strategic, tactical, operational and reflexive (Loorbach, 2010). Strategic governance activities include "*processes of vision development, strategic discussions, long-term goal formulation, collective goal and norm setting and long-term anticipation.*" The second governance activity, and perhaps most important for this study, is tactical. Tactical is connected to regimes and includes all actors representing interests of any socio-political structure. Operational governance activities in turn comprise of experiments or 'operational experiments' undertaken in order to stimulate innovation in the broadest sense possible and finally the reflexive governance activities consist of everything related to monitoring, assessments and evaluation of ongoing societal change, this is necessary in order to prevent certain 'lock-in' situations as well as other potential problems (Loorbach, 2010).

As previously established, the energy transition is in itself a complex process that is both resource and time intensive and it is important to understand the nuances at play within the different governance activities happening within transition management. These consist of different actors who each have their own ability to influence the societal transition. Indeed, what is often difficult to explain is how a civil society exercises its power in transitions as well as how other actors exercise that as well (Avelino & Wittmeyer, 2016). According to Avelino &

Wittmeyer (2016) we have to ask who exercises power, who is empowered and who eventually benefits from this. For realizing this transformation from one state of equilibrium towards another, you thus need to consider all the different parts playing varying roles along the way. Generally, these actors are categorized into different group such as the government, the public, markets, ngo’s and the traditional industry. These different actors can all be identified in the hybrid sphere as depicted in figure 8. The figure consists of several important different categories of actors. Namely the formal-informal, non-profit – for profit and the public and private areas. These different areas are not as strictly divided in the context of power and transitions as might be suggested by the figure; instead both concepts are more diffuse. For further clarification, the state is considered to be non-profit based yet a formal and public institution while the market is also formal yet private and profit focused. The community is focused on the private sphere while simultaneously being informal and not focused on profit. For this study, the role of community renewable energy is of most importance and as such that of community energy initiatives. In the case of community renewable energy a peculiar situation occurs according to Avelino and Wittmeyer (2016) as local community initiatives do not correspond to any group, instead this group sits in the hybrid sphere or ‘third sector’, as such, local community initiatives need to work their way through a variety of actors and power struggles in order to realize their own goals.

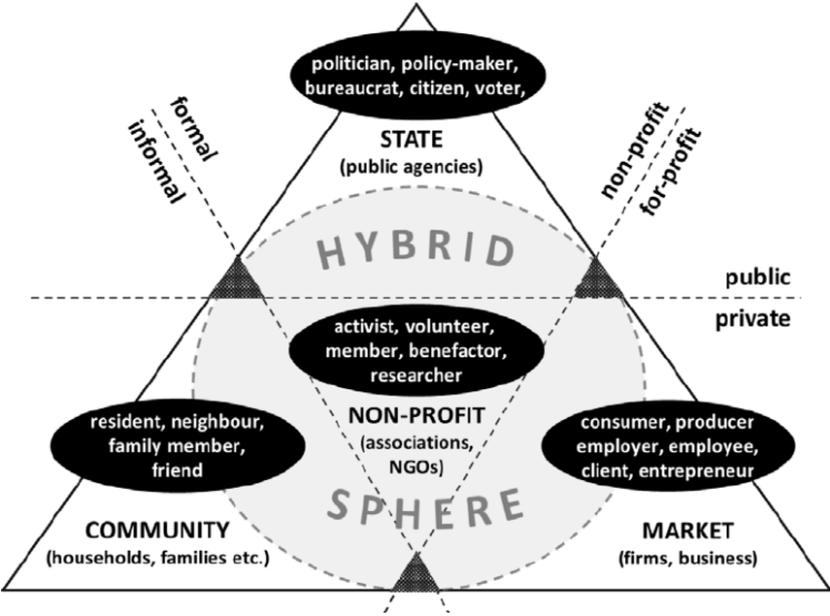


Figure 8: The multi-actor perspective from the perspective of organizations. (Avelino & Wittmayer 2014, adapted from Pestoff 1992)

3.4. Institutionalism, path dependency and power relations

As there are many factors influencing governance (capacity) based on the previously established theories of transition it is conducive to understand the roles organizations and social structures might play. Specific concepts of relevance are social, historical and cultural institutionalism. Institutionalism originated from the scientific discipline of sociology in the twentieth century. One definition of sociological institutionalism is Hall's (1996): "*the formal rules, compliance procedures, and standard operating practices that structure the relationship between individuals in various units of the polity and economy*". Sorensen similarly notes that institutions are in the strictest sense; "*collectively enforced expectations with respect to the creation, management, and use of urban space.*" Using this particular definition, institutions primarily refer to the formal sphere of existing policies, regulations and law that are enforceable by governments or governing bodies.

In addition to the broad perspective of social institutionalism, Salet (2018) identifies five main orientations or paradigms within institutionalism which have a particular usefulness for spatial planning research. These five main 'orientations' of Salet (2018) are historical institutionalism as primarily defined by Sorensen (2015), institutional-actor approaches, regime analyses, critical political economy and cultural institutions as primarily defined by Bourdieu (1984; 1991). Each provide a different perspective however the historical institutionalism of Sorensen (2015), and the cultural institutional context of Bourdieu (1984;1991) are of particular interest for this study because of each potential applicability for the target area of data gathering of the research design (see chapter 3.7 and the Methodology for further categorical explanation).

In addition of historical institutionalism, path dependency is integral to understanding the change of institutions over time. According to Sorensen (2015), the concept of path dependency is considered vital in comprehending historical institutionalism within the proper context of which it is used. Path dependency is, in essence the notion that when once a certain form of institution has been determined and put into practice, it becomes very difficult to change over longer periods of time.

Finally, the cultural institutional environment or 'cultural institutionalism' is nested in the informal world of internalized behavior patterns prevalent among individuals communicating with each other. In particular this causes meaning to be constantly being reviewed and reanalyzed to conform to new or other understandings through social interactions (Salet, 2018). In other words, cultural institutionalism is itself focused constant changing definitions of what constitutes 'certain' definitions and meaning and more importantly how these changes take places both between individual actors as well as among a large group such as an entire community or even society at the micro, meso or macro scale.

From these interactions flows the issue of power, or the underlying relations that of influence otherwise known as power relations. This is a particular difficult topic to as it is often a vague aspect within social interactions and among different actors (Avelino et al. 2016). At its most basic understanding, power relations can be understood within the context of power and rationality. Power within a democratic or political context is defined as the ability of capacity to perform or act effectively; including the situation where not to act is most effective. In democracies, such as the Netherlands, power is typically "*divided against itself*". This creates "*struggle and influences the ability to act*" (Flyvbjerg, 2003, Forester, 1982). As Flyvberg (2003) has rather philosophical take on the matter; "*Power produces rationality and rationality produces*

power, their relationship asymmetrical” in other words that is a basic explanation of how Flyvberg (2003) sums up the idea of power. But it is obviously more than that alone. Without going into too much detail, you can present the argument that democracy based on rational argument and rational planning is too weak to confront the challenges ahead because of the aforementioned asymmetrical relationship. Instead of upholding the institutions of a democratic society, political actors were more likely to try to bend or ignore the democratic playing field (Flyvberg 2003).

3.5. Environmental justice, trust and the process/outcome framework

Adding as final pieces to this study’s theoretical framework are the topics of environmental justice, understanding of trust in formal and informal institutions and the process and outcome dimensional framework. As the energy transition is like so many of our most pressing issues today an exercise in dealing with increasing complexity, it is also increasingly required to maintain a participatory environment in which renewable energy projects need to be realized, solar parks included. This is fueled by several processes such as issues as whether there might be problems with local trust in governance, the cultural and historical institutional context explained above within the social-economic landscape and the degree of which local inhabitants have to deal with the consequences of a realized solar power project that might not always be accounted beforehand (Walker & Devine-Wright, 2007). In other words, are local actors in a position that should be considered fair or justified within the context of renewable energy projects being realized in their neighborhoods.

Environmental justice is a concept that attempts to scientifically address that particular consideration. The concept originally appeared in literature in the middle to late 20th century. The concept is considered an offshoot of the ideas of social justice as well as being considered a social movement, the term is often perceived in two major different ways; from the perspective as a movement and as a combination of theories and ideas within the scientific field. The latter is relevant for this study and scientifically defined, environmental justice can be described as “*the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies*” (EPA, 2012).

First of all, it can be argued that ‘community’ is often defined as a “*local geographical entity with which an actor is potentially associated*” (Wirth, 2014). The term today is very popular among policy makers and is surprisingly vague in its usage according to Walker et al. (2008).

Secondly, despite the sometime ambiguous definition in policy documents, the role of community has come increasingly into play. For a long time, it used to be the case that new energy production was a strictly top-down affair within the energy landscape; however with renewable energy the energy production is now also realized at an individual and communal degree. In other words, it is now also increasingly happening from a bottom-up perspective (Loorbach, 2010). In order to realize these projects effectively at a local level and/or with a community a clear perspective on the quality of trust on both the interpersonal and social level is needed (Walker & Devine-Wright, 2008). Interpersonal trust as such is understood as trust being between different people at the interpersonal level and in society and institutions (at large) at the level of social trust. Walker et al. (2010) further argue that interpersonal trust is more important than social trust as the former is much more strongly associated with mutual respect and reciprocity than the latter.

It is also important to understand what is happening during the process as well the results and consequences of the eventual outcome. These two aspects are referred to as the process and outcome dimensions as devised by Walker & Devine-Wright (2008).

The process dimension is in short about who encompasses those involved with a certain project and is run by said individuals and has the ability to exert influence over it. The outcome dimension concerns itself with how the end results of a project are distributed across the social-spatial landscape. Combining aforementioned dimensions creates a schematic overview which allows you to showcase the degree projects are related to the degree of openness and participatory atmosphere vs. closed and institutional regimes as well as the degree of the project being realized by private stakeholders and/or a local collective (community).

As you can observe in the figure 8, viewpoint A is a situation that's predominantly focusing on the 'process dimension'. Any municipality that can be placed in this category can be considered to emphasize community projects needing a substantial involvement within the planning process. There is a strong preference for the entire project having been started by the local populace themselves.

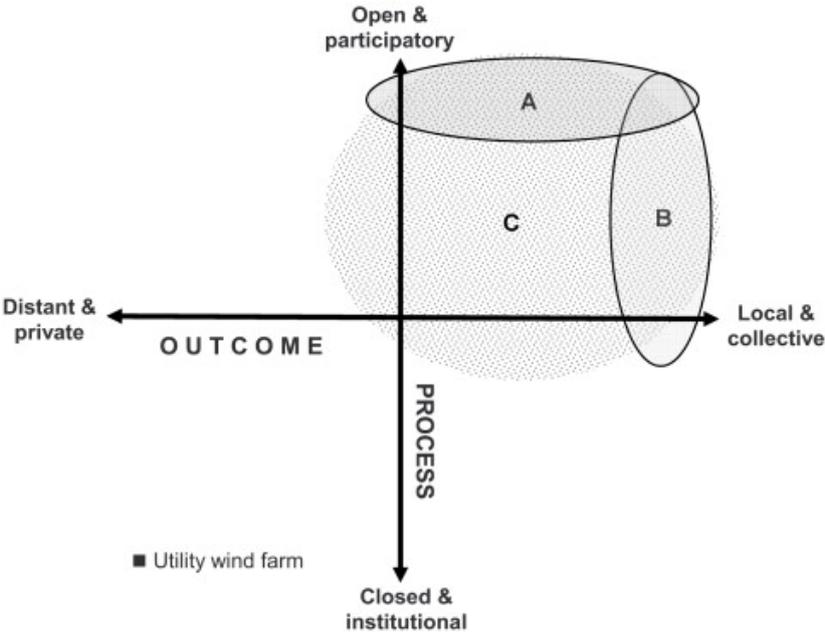


Figure 9: A schematic example of understanding a renewable energy project from both the perspective of the process as well as outcome dimensions (Walker & Devine-Wright, 2008)

The second category, viewpoint B, focuses on the 'outcome' dimension and that's the accurate category for municipalities that favor less emphasize on who is participating in the project than who actually benefits from the project and those that are disadvantaged by it.

Then there is one another dominant category present, viewpoint C which is considered to be a broader group. It is not taking a clear preference for either emphasize on the process or outcome as defined by the previous two viewpoints. This viewpoint primarily belongs to the municipalities where there is less concern for how the project is realized and whether participation played a significant role as long as the eventual result can be considered useful and beneficial overall for the intended goals that needed to be realized. In addition to these preferred outcomes for energy project to end up there is of course a far wider range of possibilities within this figure. In fact many projects are currently more likely to fall outside the boundaries of A, B or C as determined by Walker and Devine-Wright (2008).

3.6. Synthesis and the conceptual model

Condensing the theoretical framework into a single conceptual model leads to the results as observable in figure 10. The model 'starts' in the upper left corner, moving towards the different levels from left to right onwards to categories derived from the theoretical framework. These are;

The energy transition from a fossil-fuel based energy infrastructure towards a renewable one is one that is arguably in its take-off phase as presented by Rotmans et al. (2001) with the speed and size of the change increasing over time. This transition is in part occurring because of innovation of energy technologies such as solar and wind power and because of a complex and persistent array of problems that necessitate change. The most prominently being the consequences of anthropogenic or human induced climate change, the reliance on unstable and autocratic nation-states for fossil fuel requirements and the call for more local participation in energy projects. This call for action is increasingly integrated into policy frameworks across different societal levels. For this study the focus of relevance is the meso-level of otherwise known as 'the regimes' (Loorbach, 2010). Specifically the *regulatory framework* regimes design to incorporate participation into policy for the micro-level or niches. The regimes in turn pursue different governance strategies in order to achieve their aims, these different forms of *governance dynamics* are however constrained by certain *historical and cultural institutions* that might have caused certain embeddedness and *path dependencies* which are difficult to avoid or prevent. Furthermore, formal institutions and regimes are by their very nature conservative and prefer the status quo, often difficult to change in part because of existing *power relations* (Flyvberg 2003). Navigating these relations of power and institutional complexities requires trust, both *interpersonal and social trust* for realizing agreements and maintain committed to community ideals. In addition, *environmental justice*, that being "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" is of crucial importance in realizing a more participatory future but not without integrating that into a process and outcome dimension framework (EPA, 2012). The process dimension is in short about *who* encompasses those involved with a certain project and is run by said individuals and has the ability to exert influence over it. The outcome dimension concerns itself with *how* the end results of a project are distributed across the social-spatial landscape. Together form a technique to show the state of participation within a renewable energy project and as such allow identifying points for improvement (Walker and Devine-Wright, 2008).

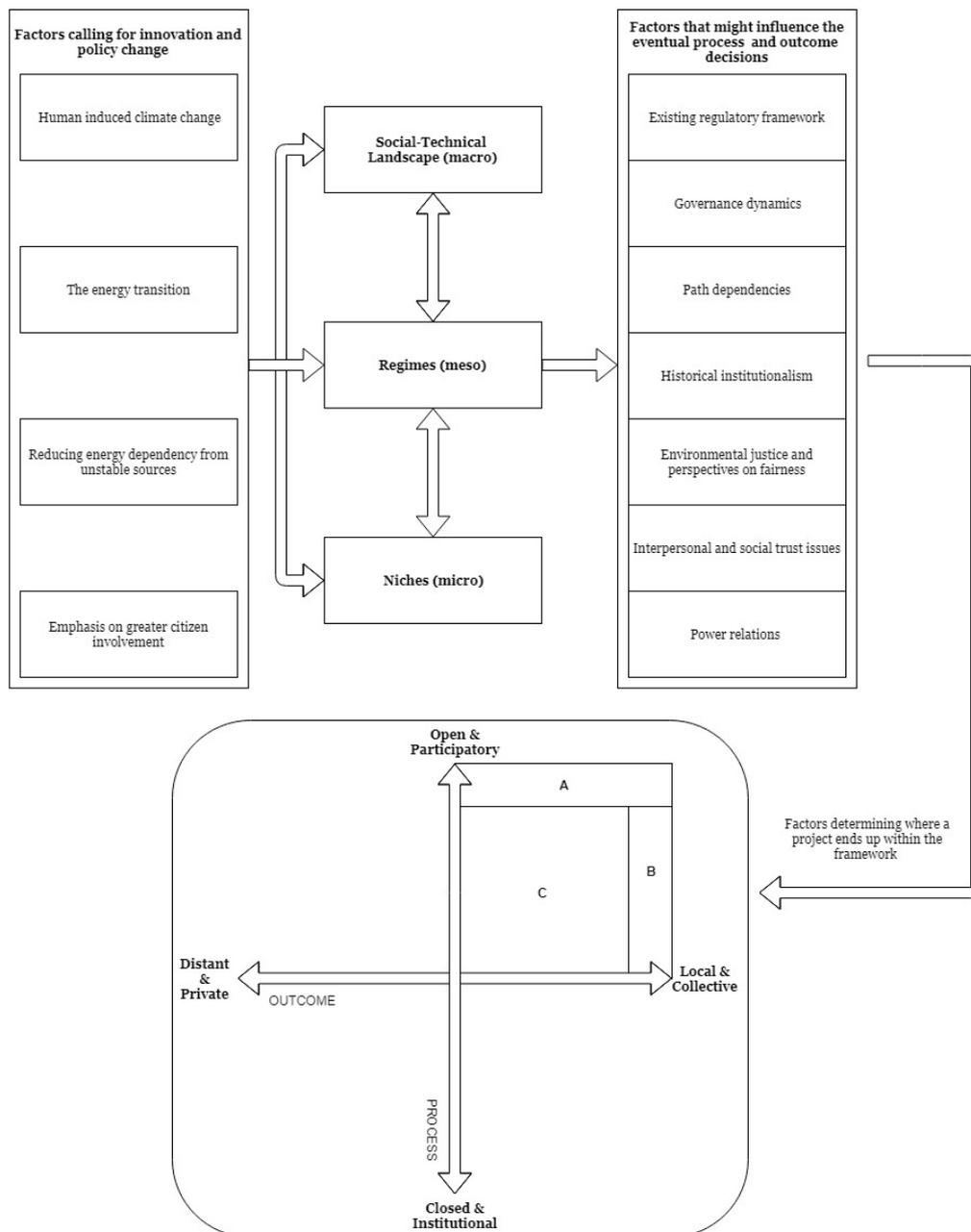


Figure 10: The conceptual model of this thesis

Source: Author

The main concepts used in this study and in the conceptual model can be derived from the works of the following researchers;

Transition theories:

Berkhout et al (2003), Van der Brugge (2005), Rotmans et al (2001), Loorbach (2010), Avelino & Wittmeyer (2016)

Governance dynamics:

González & Healey (2005), Loorbach (2010)

Path dependencies / pathways:

Sorensen (2015), Salet (2018)

Historical institutionalism:

González & Healey (2005), Sorensen (2015), Salet (2018)

Power relations:

Flyvberg (2003), Sorensen (2015)

Environmental justice:

Walker & Devine-Wright (2008), Walker et al (2010), Wirth (2014)

Main policy documents:

Province of Groningen (2018), Gemeente Stadskanaal (2018)

4. Methodology

For being able to answer the research questions outlined in chapter two this study focused on a qualitative multiple-case study oriented research approach and design. First, the introduction elaborated on the broader issue, initial background and specific context that created a set of factors that triggered the next energy transition. Secondly, the theoretical background delved deeper into the scientific theories underlying the processes through which the energy transition could and/or should occur. Finally, in order to provide a satisfactory conclusion the research needed methods that were able to combine this information with empirical data that is suitable for analysis with the used theories.

4.1. Chosen research strategy

In order to answer the main research question “*How could municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?*” analyzing the different options of doing research and why certain strategies are preferred above others was necessary and subsequently considered for the study. This resulted in the choices taken below with a further explanation as to why. First of all, the theoretical background provided the necessary academic literature needed to form a context and analytical capability for the gathered empirical data. The primary data or empirical data comprise that what was collected through the semi-structured interviews, direct observations and additional notes made by the author. Making use of both distinct forms of information made it possible to define scientifically argued answers to both the main and sub-research questions posed in chapter 2. Furthermore, the empirical data has the added benefit of having collected initially unexpected useful information by the chosen research methods (Flowerdew, 2009).

The study primarily focuses on multiple case studies between different municipalities and their approaches in realizing renewable solar energy projects because of the relevant phenomenon, the energy transition, existing at each of the possible case studies yet simultaneously is able to provide a variety of different potential outcomes from the differences in context at each geographical location (Yin, 1984). This is useful in gaining information that subsequently allowed the possibility of doing a meaningful analysis that have led to new insights for the study. Subsequently, in order to secure more context and different perspectives, the province of Groningen and several niche level organizations were also analyzed for the study. This specific strategy hopefully will provide the opportunity to do a follow-up study according to the research strategy known as the ‘systematic replication design’ (Yin, 2009).

4.1.1. The chosen research area

The region of the country known as north east Groningen has been chosen for several reasons. First of all, the north eastern part of the province is dealing with a multitude of complex issues that range from the social-economical, demographical and cultural that isn’t found elsewhere in the country to such an extent as it does there. Furthermore, the province of Groningen is committed to making the renewable energy industry an important part of the local economy as a possible solution in dealing with these issues. The province provides a lot of incentives to realize this (Provincie Groningen, 2018). Secondly, part of the region, specifically the municipality of Loppersum and to a lesser extent the municipality of Winsum, also deal with the fallout from man-made earthquakes cause by the fossil fuel industry in the region (Boer & Zuidema, 2015).

Finally, the region is relatively sparsely populated and the combination of earlier factors makes it an attractive region for renewable energy projects to be realized by both local parties as well as private organizations from both national and international origin. The municipalities and other organizations used in this thesis are:

The province of Groningen

As the main research area is the north eastern part of the province of Groningen in the Netherlands, the province of Groningen is the responsible provincial government for this region. In addition to the reasons mentioned in the previous paragraph this area has also been chosen for the current heightened interest of different local initiatives as well as private companies that want to realize large scale solar parks in the area or have already succeeded in doing so (Provincie Groningen, 2018; Gemeente Stadskanaal, 2018). While the main focus on the regimes side is the municipality, the province also plays an crucial role in determining policy and goals that the municipalities need to adhere too. The current ambitions, regulations and guidance set for by the province is bundled into several policy documents which will be further explained in concordance with the findings from the interview in chapter 5 as the documents were provided by the representative from the province during the interview.

The municipalities in the eastern part of the province

The reasoning for choosing the specific municipalities below has to do with the current interest for many parties to try to create solar parks in this region because of relatively cheaper prizes for land and a societal preference for solar over wind. Based on the initial research the most starkly contrasted municipalities however are Loppersum and the municipality of Stadskanaal with Loppersum focusing exclusively on small-scale initiatives while Stadskanaal emphasizes large scale solar park developments in their policy documents (Gemeente Stadskanaal, 2018). In addition, the municipality of Delfzijl is currently home to one of the largest realized solar parks in the Netherlands. The town itself is in combination with the nearby Eemshaven the largest and most important harbor in the province of Groningen. This allows the municipality to pursue different initiatives from both local inhabitants as well as companies in realizing sustainable energy initiatives. The municipality of Stadskanaal is currently in the process of realizing several solar parks within its borders as well as building a comprehensive and significantly more ambitious vision on providing room for realizing upwards to 400 hectares of photovoltaics based solar parks. The municipality is however dealing with a troubling issue of finding enough room on the Dutch power grid because of a lack of capacity in the north eastern part of the country (Gemeente Stadskanaal, 2018). In addition to those previously mentioned, the municipalities of Westerwolde, Veendam, Pekela, Winsum and Loppersum are also part of this thesis research area. Finally, it is important to note that one of the municipalities is currently undergoing a merger into a new, larger municipality. Starting the first of January 2019, Winsum will have become part of the newly created municipality of Hogeland. As this wasn't the case at the start of the research the old situation will be adhered to throughout this study.

Project developers and an ngo

As a counterpoint to the perspectives of current regimes from municipalities and the province this thesis also focuses on other organizations that are active within the jurisdiction of the province and municipalities above. Those that will be further elaborated on in chapter 5 and 6 are Solarfields, Powerfields and the Natuur en Milieu Federatie Groningen-Drenthe (NMF). The first two are both project developers with different perspectives on how large scale solar parks should be realized and integrated into the existing landscape. The last one, the NMF Groningen-Drenthe is an organization that's advocating for a more pro-active approach to realizing the energy transition as fast and comprehensive as possible.

4.2. The eventual chosen research methods

In order to provide meaningful empirical data for the thesis it remained crucial to obtain said data from different sources and methods (Flowerdew, 2009). This is also known as 'data triangulation'. The thesis makes use of several qualitative research methods which are; direct observations, gathering notes and semi-structured interviews collected for the thesis. The qualitative approach is preferred for this study over a quantitative approach as the design of the study does not lend itself well for a comprehensive statistical analysis.

4.2.1. Literature review

The theoretical background and framework comprises part of the first chapter till the end of chapter 3. The literature review provided the basis of the initial questions for both the first version of the interview guide that can be found in Appendix II. Furthermore, the relevant information for conducting the semi-structured interviews as well as a interview guideline for further analysis van be found in chapter 4.2.3. In addition to the theoretical background, policy documents provided by the organizations interviewed have also been added where relevant in chapter 5 in order to illustrate the current and desired policy decisions of both formal niches as well as formal regimes.

4.2.2. Semi-structured interviews

The questions put forward during the interviews have been designed based in part on the knowledge as displayed within the theoretical framework but also from knowledge known to the researcher inferred from the study program and from information available on the representatives of the organizations being interviewed. Taken these factors into account, the interview can be divided into several topics; stakeholders, relations amongst each other and the perception on the current landscape as well as the future plus the possible opportunities and constraints on eight main categories.

Furthermore, added to the interviews, the research methods of direct observations is useful because it allows analyzing behavioral attitude as observed by the researcher himself. Before the start of this research several meetings organized by the municipality of Stadskanaal were attended in order to compose a strategy. While this does not allow a direct comparison between the multiple municipalities strategies it was useful for identifying several potential issues in realizing solar power projects in general and solar parks in particular. In addition these meetings were used in forming an understanding of the policies municipalities might apply in realizing their solar power projects (objectives).

In the end, the amount collected for this thesis consists of in total eleven interviews, one of which was used as a test interview to further refine the questions used in the second interview guide. The original interview guide used for the test can be found in Appendix II. Furthermore, notes of each interview were used to determine the responses of each participant on understanding their perspectives on the current and desired state of the energy transition and policy at the organizations that they work for. The participants themselves consist of representatives that participate in realizing solar power projects specifically but also focus on broader sustainability issues. For instance, a sustainability representative from the province of Groningen, two participating project managers from private developers and a policy expert from an ngo as well as energy transition and sustainability experts from the municipalities. Unfortunately, despite having approached multiple different local energy initiatives and the GREK, none were either willing or able to participate for this research. Their role has in part been addressed by the information provided from the representative of the NMF Groningen-Drenthe. Finally, while originally planning to keep the interviews relatively short, after the test interview it became clear that it was preferable to let representatives more room in explaining their responses as the amount of potentially useful information was higher than anticipated. In the end, the shortest interview was just over 30 minutes while the longest interview took over one hour. Together the amount of interviews provided roughly 8 and a half hour of useful data for the thesis as can be observed in the findings and transcripts. The original version of these interview questions as well as the transcripts can be viewed in Appendix II and Appendix IV respectively. The original interview guide was in English while the second one is in Dutch. This decision was done so as it made it easier to pose the questions to those being interviewed.

The interviewed organizations can basically be divided into several different groups and associations as explained in the literature by Van der Brugge (2005) and Loorbach (2010); the province and municipalities as 'the regimes', the project developers as 'niches' and the ngo as a mixture for being both and an advocate for the energy transition as well as having the responsibility to represent dozens of local energy initiatives indirectly.

On the regime side the dominant form of formal regime is the province of Groningen and the municipalities of Delfzijl, Loppersum, Pekela, Veendam, Stadskanaal, Winsum and Westerwolde. Further along in the study, the municipalities of Pekela and Veendam will be referred to as 'Pekela-Veendam' as the representative of both is the same sustainability expert. Furthermore, both municipalities are in talks on eventually merging into a new municipality in the future and are already working closely together on many subjects.

On the niche side the project developers are represented by Solarfield and Powerfield. Both organizations either are or were involved in solar park projects in the municipalities above.

In addition we find the Natuur en Milieufederatie Groningen.-Drenthe on the niche side as well. It is involved in representing local energy initiatives within both the province of Groningen and Drenthe.

Organisation	When	How	Duration	Occupation	Level
<i>Interview used to refine initial questions</i>					
Municipality of Delfzijl (Test)	08-07-2018	Telephone / written notes	30 minutes	Sustainability expert (senior)	Regime
<i>Interview done with the interview guide as can be observed in 4.2.3.</i>					
Powerfield	10-07-2018	Telephone	62 minutes	Project manager	Niche
Municipality of Delfzijl	18-07-2018	In person	59 minutes	Sustainability expert (junior)	Regime
Province of Groningen	22-08-2018	In person	39 minutes	Energy transition expert	Regime
Solarfields	23-07-2018	In person	42 minutes	Project manager	Niche
Municipality Westerwolde	28-08-2018	Telephone	60 minutes	Sustainability expert	Regime
Natuur en Milieufederatie Groningen - Drenthe	31-08-2018	In person	52 minutes	Energy transition expert	Niche
Municipality of Stadskanaal	31-08-2018	In person	60 minutes	Sustainability expert	Regime
Municipality of Loppersum	05-09-2018	In person	59 minutes	Sustainability and an energy transition expert	Regime
Municipality of Veendam-Pekela	07-09-2018	In person	51 minutes	Sustainability expert	Regime
Municipality of Winsum	11-09-2018	In person	31 minutes	Sustainability expert	Regime

Table 1: Overview of all the interviews collected for the study.

Source: Author

4.2.3. Interview guide

For the original first English version please look at Appendix II.

Organisatie

- 1) Wat zijn de kerndoelen van de organisatie waar u voor werkt en wat zijn uw eigen taken ten aanzien van de realisatie van zonnestroom en zonneparken in Nederland/Groningen/Anders?
- 2) Wat zijn de motivaties van uw gemeente om zich in te zetten voor zonneparken en zonnestroom? Zijn er duidelijke ambities en/of doelstellingen besloten ten aanzien van duurzaamheid?

Stakeholders en burgerparticipatie

- 3) Wat vind u van de huidige rol die participatie in het planningsproces door lokale bewoners en andere stakeholders (coöorporaties, ngo's) hebben binnen bestaande projecten? Welke rol vervult de gemeente in dit proces?
- 4) Zou deze bestaande rolverdeling in de toekomst moeten veranderen? Waarom wel/niet?

De rol van gemeenten en de provincie

- 5) Hieronder vindt u een serie factoren die van invloed (kunnen) zijn op het realiseren van zonnepark projecten en beleid op provinciaal en gemeentelijk niveau in Groningen. Zou u bij elke factor aan kunnen geven of het momenteel als belemmering en/of kans wordt ervaren en waarom dat zo is? Kunt u specifieke voorbeelden geven? Alternatieven?
 - a) *bestaand beleid, regels en wetgeving*
 - b) *politieke wilskracht en actiebereidheid*
 - c) *discussie over verdeling van voordelen en nadelen lokale bewoners (environmental justice)*
 - d) *inpassen historische landschappen en culturele bezwaren*
 - e) *onderlinge vertrouwen van naleven afspraken*
 - f) *mogelijkheden tot het sturen van het publieke debat in de media*
 - g) *ecologische en milieu technische overwegingen (biodiversiteit, bodemgebruik, etc.)*
 - h) *overige factoren (bijvoorbeeld; netbeheerders, GREK, ruimte voor innovatie, etc.)*
- 6) Waaraan moeten gemeenten meer aandacht aan moeten besteden bij het realiseren van zonnepark projecten? En de provincie?
- 7) Zou er beter gecommuniceerd en/of samengewerkt moeten worden tussen de verschillende partijen (overheden/bedrijfsleven/coöorporaties/ngo's)? Waarom wel/niet?

Nationaal beleid

- 8) Wat vindt u van de huidige staat van de landelijke Nederlandse regelgeving ten aanzien van zonnestroom en zonnepark projecten? Waarom vind u dat? Indien relevant, hoe zou het anders moeten?

Overig

- 9) Tot slot, heeft u nog overige opmerkingen die relevant kunnen zijn maar nog niet ter sprake zijn gekomen in dit interview?

4.2.4. Analyzing the semi-structured interviews

In order to be able to analyze the semi-structured interviews for the research it was needed to define multiple categories on which given answers could be identified. The focus has been on using interviews that followed a coding strategy that also needed to work with themes that have been derived inductively and to a lesser extent deductively by the author through the theoretical framework and gathered knowledge from meetings and a single test interview. These themes have been defined as the opportunities and barriers in question 5 of the interview guide.

The responses themselves have subsequently been labeled by using a color coding strategy throughout each transcript. The subsequent results can be found in the next chapter for each of the different relevant categories as well as in tables 7 till 15 here below and in Appendix III in order to highlight some examples and used quotes in chapter 5. Bear in mind though that the original quotes are in Dutch as the respondents were all Dutch themselves. This also played a part in using a second Dutch interview guide instead of the original English interview guide which can be observed in Appendix II.

Sub-categories	Color + main category
Participation	Regulations, Environmental justice
Motivation(s)	Regulations, Environmental justice
Policy measures	Regulations, Environmental justice
Political encouragement	Political will
Political ability	Political will
Local involvement	Political will
Community	Environmental justice
Environmental fairness	Environmental justice
Historical considerations	Historical and cultural considerations
Cultural landscape	Historical and cultural considerations
Trust	Interpersonal and social trust
Media	Ability to influence local debate
Public debate	Ability to influence local debate
Environmental issues	Regulations, Environmental justice
Municipalities	All
Province	All
<i>Opportunity</i>	All
<i>Barrier</i>	All
<i>Measured</i>	All

Table 2: The used color coding and labels for analyzing the transcripts with additional categories

Source: Author

In addition to the color coding for each regular category, three separate colors were also chosen to illustrate and tally the answers given by respondents that could be considered an **opportunity**, **barrier** or **measured** position on the opportunities and barriers described in the next sub-chapter. Finally, it is important to note that the translated quotes from the transcripts are not literal descriptions of the entire Dutch conversations but rather as close approximation as possible to maintain the actual context of what was said.

4.2.5. Opportunities and barriers

By understanding the used concepts and theories in the previous chapter we've established several main categories for analyzing the collected data from the interviews. These chart the positives (opportunities) and negatives (barriers) in realizing solar power initiatives from the perspective of what municipalities can do better. As such several factors which influence the planning process itself and be able to codify them for further analysis later on in the research have been identified. The factors that can be considered opportunities and/or barriers, perhaps both, are; regulations, political will, environmental justice, historical and cultural considerations, interpersonal and social trust, and ability to influence local debate, environmental considerations and additional factors.

A) Regulations

This study focuses on the regulatory environment of policy choices made by the regimes such as the provincial and local government and which both formal and informal institutions make to encourage the realization of renewable energy projects within their borders or living area. This primarily focuses on existing policy documents and projects already established and the results of which can be observed in chapter 5.2 & 5.3 as the documents were provided by representatives themselves.

Sub-categories: *participation, motivations, policy measures*

B) Political will

The political will is a complex category that relates to the ability of local actors within local governance, primarily politicians, to be active in stimulating the realization of renewable energy projects and participation. Literature wise, political will relate to governance capacity, path dependency and/or pathways as mentioned by as well as power relations and governance capacity mentioned in the literature by Sorensen (2015), Flyvbjerg (2003) and Loorbach (2010) respectively.

Sub-categories: *political encouragement, political ability, local involvement*

C) Environmental justice

When considering environmental justice within the researched region this study is looking to gain further recognition of fair treatment and meaningful involvement of local participant and stakeholders. In practice this translates to an aim to encourage participation among local inhabitants in the planning process in order to achieve participation in the process and a broadly accepted and desirable outcome as defined by Walker & Devine-Wright (2008).

Sub-categories: *participation, motivations, policy measures, environmental fairness, community, environmental issues*

D) Historical and cultural considerations

Historical and cultural considerations comprise of both existing landscape elements such as landmarks, lines of sight(s), and real estate heritage. Furthermore, it also addresses issues rooted in historical institutionalism, path dependencies and cultural or social institutionalism. (Sorensen, 2005; Salet, 2018; González & Healey, 2005).

Sub-categories: *historical considerations, cultural landscape*

E) Interpersonal and social trust

Related to several other factors, trust is an integral component in realizing complex projects which require multiple actors to agree and act on established deals and formal and informal rules. The issue of trust corresponds with the topics of power relations, governance dynamics (González & Healey, 2005) and the process/outcome framework of Walker & Devine-Wright (2008) and Walker et al (2010).

Sub-categories: *trust*

F) Ability to influence local debate

The ability to influence local debate is something that might be considered when trying to persuade the local inhabitants of the benefit and/or necessity of a solar power project. The category has been derived from the literature on governance dynamics (Loorbach, 2010) and power relations (Flyvbjerg, 2003; Sorensen, 2015; within the theoretical framework (see chapter 3.7).

Sub-categories: *media, public debate*

G) Environmental considerations

Environmental considerations (and tools) such as the environmental impact assessment requirements and policy guidelines set forth by the province and municipalities that spark debate on responsibility and accountability to what solar power projects should adhere to depending on the dimensions of said project. The category is further distinguished from category A & C in order to define any additional formal policy on the environmental or ecological dimensions not anticipated beforehand.

Sub-categories: *regulations, environmental fairness*

H) Additional factors

Finally, there might be unforeseen factors at play that could only be discovered when collecting the data through interviewing experts in the field. This has been quantified as 'additional factors'. This can be any specific topic not considered or anticipated within the researched categories above yet are addressed by participants during the interviews and turn out to be of significant value for the analysis and eventual findings of this research.

Sub-categories: All (not-specified)

4.3. Personal rationale and ethics

There are several underlying themes or reasons for writing about the subject matter in this thesis as explained in the previous chapters. One of the main personal reasons however for choosing the current subject is the interest in how we as individuals and society deal with adversity caused by existing constraints in the governmental and institutional framework through which our society is governed.

As with any study or research project in general, ethics is a crucial part for researchers to consider when performing their work in the laboratory and 'in the field' as well as in their reporting and analysis. In general terms that means that the research done for the study is held to the standards of what is considered to be general value theory, normative ethics and meta-ethics as explained by Russ Shafer-Landau in (p. 33, 2015) *The Fundamentals of Ethics*. In short, value theory reminds the researcher to constantly question each action based on cultural and societal norms on what could be considered ethical and fair-use.

When collecting data in the Northern Netherlands, the importance of considering being an insider to the research area, specifically the local area of collecting data cannot be understated (Shafer-Landau, 2015). This opens up the negative possibility of dealing with an unconscious bias to the research (data) in question. At the same time it allows for the possibility of ascertaining knowledge which an outsider might otherwise miss. Either way, whether being an in- or outsider, the possible remedy for the situation is the necessity to communicate the goals of the research and the relevance of the data collection towards those that participate as can be observed in the Appendixes. Finally, the collected empirical data has been analyzed without the actual names of the participants in order to protect both the data security and the representatives who participated in the semi-structured interviews.

5. Findings

The empirical data for this study comprises mainly of direct observations and notes made by the researcher, multiple semi-structured interviews and a comprehensive literature and policy document review found both in the theoretical background (chapter 3) and here below. The literature review has been used to determine the different categories postulated in the methodology which in turn have been used to point out the possible linkages as well as potential opportunities and barriers present within the analyzed empirical data. The findings themselves have been divided into different sub-chapters; an overview of the current situation, an overview of the desired situation and a analysis on whether each category consists of a opportunity or barrier to participation within solar park projects.

The main focus has been on how the municipalities perceived their current approach to the realization of solar power and solar park initiatives within their borders as well the perspective provided by the province of Groningen, collectively defined as ‘the regimes’ as defined by Rotmans et al. (2001). This perspective is further correlated and contrasted by other views and present a different group’s perspective on realization of said projects, ‘the niches’. In addition, factors that might have influenced the planning process from the level of the socio-technical landscape will also be addressed were that applies (Loorbach, 2010).

5.1. The current situation according to the participants

This sub-chapter discusses the current situation within the boundaries of the interviewed municipalities when dealing with the state of accepted strategies in accomplishing the energy transition and improving participation.

5.1.1. Perspectives from the regimes on the current situation

These perspectives can be further divided into two separate groups namely the province of Groningen and the municipalities interviewed during this research. Their roles, goals and subsequent (political) instruments differ in what each formal institution is able to do in realizing self-described goals for renewable energy policy.

Perspective from the province of Groningen

Based on the responses given by the representatives of both on the regime side as well as the niche side, the province of Groningen has had an important and generally positively role in shaping the current state of solar power policy for the regimes and to a lesser extent for the niches. In particular, as noted by the representative of the province, the goal of their organization is now to monitor and realize large scale solar parks within their jurisdiction; “*a spatial coherent and any ground based or floating installation that can be used to produce electric or thermic energy from the sun with a scale of 200 square meters or larger* (representative Province of Groningen). However there are certain categories that interviewees definitely had a more outspoken opinion on such as the role of the province as it functions in the present, this includes the participant from the province itself. The province currently provides the basic framework all municipalities need to adhere to when considering allowing solar park projects being realized within the municipality borders regardless of whom might be interested in realizing aforementioned projects. The documents in question, the ‘*Handreiking; locatiekeuze en ontwerp zonneparken*’ and ‘*Vol ambitie op weg naar transitie: Programma Energietransitie 2016-2019*’ comprise the bulk of public information known on the current stance of the province as

explained by the policy expert of the province itself. Within the established policy it becomes clear that the province divides its policy preferences between two categories called the 'yes but' and 'no but' categories (Province Groningen, 2018). This separates initiatives between those directly positioned near existing urban landscapes and those that are proposed on the rural countryside. This particular distinction is done to allow for more flexibility and local solutions by those that take the initiative as well as the municipality. This approach is in line with examples put forward by Boer & Zuidema (2015) in their advocacy for an integrated energy landscape in the literature as well as a policy measure reflective of the interactions between the province and other institutions. By its own judgment, the provincial government seems to have already established a strong position on the issue of solar power project realization within its own borders while maintaining as much flexibility as possible. As the participant from the province noted; *"The province of Groningen is very ambitious in setting sustainable energy goals. We just want to generate a lot of sustainable energy, including solar energy. In that we strive to give the best advice ... for municipal policy. What we do not do as a province is just say 'over there and there is it allowed' but we just strive towards municipalities setting policy themselves and on the basis of that policy will we work together with the municipality as well as an initiator and then we will further analyze if such a solar initiative can be realized."*

In these documents the province of Groningen has put forward several key guidelines for current and future solar park projects to adhere too that are both straightforward as well as 'ahead of the curve' as both the interviewee from the province as well as several of the municipalities and niches interviews explain. The current key policy guidelines are divided into several main topics; the landscape, the allocated parcel, and any objects placed on the parcel themselves.

In order to determine whether or not the landscape allows for a large scale solar park the province has created additional sub-categories that can be used as a point of reference for determining whether or not a solar park project would be allowed. Those are the '*Small-scale mound landscapes, enclosed woodland landscapes, peet-colonial landscapes and the esdorpenlandschap*' (Provincie Groningen, 2018) Once a location has been found and the initial design has been approved to be in line with the required posed at the landscape level, additional requirements will have to be met for the parcel itself. Important aspects are any historical or cultural elements of value that might be present as well as a design that further respects the appearance of the location it is situated near or in. Finally a solar park is required to have a straightforward and visible entrance and address dependent on the local geography and context.

Once those requirements have been met any project will also have to adhere to certain rules that apply to the objects placed within the landscape and on the parcel itself. These requirements are flexible and comprise aspects such as height and orientation of solar panels, accomplishing infrastructure requirements and fences. Additionally used materials need to avoid having any reflective properties in order to prevent any park to become too visible both at ground-level as well as from the sky. As a final requirement any allocated solar park needs to have multi-purpose use in order to alleviate the loss of previous functionality (Provincie Groningen, 2018).

The representative interviewed for the province of Groningen highlighted how the role of the province initially could be perceived as motivating and encouraging for municipalities. Yet this is not always seen as such by the municipalities. As the interviewee from the municipality of Winsum notes; *“The province could be a little more flexible in its approach. The province wants a lot and has strong opinions but when push comes to shove at the spatial side of things you notice that there are not many options. So, you notice that at the provincial level you need some more flexibility in order to come to a further agreement.”* illustrating the perceived issue that for in order to reach the goals of renewable energy being produced locally, the province will have to become more lenient in giving approval to proposed projects and the approaches municipalities want to take. In addition the participant from the municipality of Stadskanaal also had a similar example, pointing out that *“...initially, the provincial policy measures were constrictive”* adding *“that apart from our own vision, they also had their rules on how a park needed to fit into the existing landscape and then you notice how the policy at the municipality level is less restrictive.”* This could be considered an example of friction between different regimes but also the entrenchment of both an informal and formal institutional framework. As explained by Sorensen, 2015; Salet, 2018) these can be difficult to overcome if these path ways have been embedded early on.

Perspectives from the municipalities

As this thesis primarily focuses on how the municipalities at the regime level can improve and/or better facilitate the deployment of solar power and solar park initiatives naturally most interviews consists of different perspectives by municipalities themselves. The perspectives of each municipality addressed relate to the situation(s) of the following municipalities; Delfzijl, Loppersum, Pekela, Veendam, Stadskanaal, Winsum and Westerwolde. Table 3 contains a brief summary of the responses and positions of each participant plus the participant of the province of Groningen on their current view on the state of the energy transition at their own organization and the state of participation in general.

As was the case with the province of Groningen, several different documents related to the current sustainability policy from these different municipalities were gathered for this research. Interestingly, the investigated municipalities approached the topic of sustainability and solar power quite differently. However the municipality that was able to provide the most policy information was the municipality of Stadskanaal at the moment of writing. In fact, the municipality of Stadskanaal currently has approved an ‘integral solar vision’ on solar power within its borders. The municipality addresses its ambitions in realizing a strong target of solar power production of upwards to a maximum of 400 hectares. Interestingly during the process of realizing this thesis the municipality council decided to put all further projects on hold until an additional review of the earlier approved vision has been established, as this renewed vision has not been published on the moment of finishing this thesis this document remains the main source material however. This information provided us with the knowledge that the municipality is pursuing solar power parks in part because of local concerns to the deployment of wind power initiatives right across the provincial border. These projects are facing enormous resistance and have shaped the urgency to realize sustainability targets in Stadskanaal before it would be decided for the municipality from a top-down approach by the national government (Gemeente Stadskanaal, 2018).

The municipality of Delfzijl also is pro-active in realizing a fully developed sustainable energy policy, including a solar vision. In the past the municipality of Delfzijl had already decided to help with both the province and national government realizing their own ambitions by allowing the development of windmills and eventually other large scale sustainable initiatives.

The participant of Delfzijl noted; *“I can say with absolute confidence that if there wasn’t a moratorium and the municipality didn’t have an alderman who would hold these projects back we would have had applications for over a 1000 hectares of solar parks within the municipality borders. That’s probably still putting it conservatively.”*

From the interviewed municipalities, Stadskanaal and Delfzijl appeared to be the ahead in developing preferred strategies as well as already reviewing previous policy. In the case of the municipality of Stadskanaal, the participant noted *“were currently working on a ‘Gebiedsfonds’...in the case of Stadskanaal-Noord that means you can provide additional funding for anything, for example investing in the local swimming pool.”* That is not to say the other municipalities weren’t busy but several were confronted with the issue of restructuring and local elections which have put several attempts at determining a comprehensive strategy on solar project on hold until these issues have been resolved.

The participant from Gemeente Westerwolde had a similar experience at the moment of writing, commenting that *“I can’t tell you yet what our ambitions are exactly as no concept version of our vision has been approved yet by the municipality council”*. As the participant of the municipality of Westerwolde further noted; *“I know that there are more initiatives in other municipalities. In our municipality there is one initiative, maybe another one in the works. I hope still will get better soon however that is not something we have much of a say over as a municipality government. These are initiatives initiated by local inhabitants after all. You can’t force people to participate in something if they don’t want too or don’t see any benefit.”*

The municipality of Winsum also had a similar yet slightly different experience as it too had no approved vision yet however it was at the front of being integrated into the new municipality of Hogeland in January 2019. As for the other municipalities, they are at varied stages of developing policy for realizing solar power and solar park policy. When viewing the current state of the municipalities several sub-categories can be recognized; pro-active, neutral and lagging behind the others. Specifically, Delfzijl, Stadskanaal and Winsum are pro-active, Loppersum being neutral and both Pekela-Veendam and Westerwolde playing catching-up in terms of local activity as well as integrating existing policy and devising new strategies for the future.

Level	Organisation	Current view of their own organization	Current view on participation
Regimes	Province of Groningen	A prime driver of the initial projects realized through ambitions set by the province by approving projects as well as setting policy. Now focusing more on a support and monitoring role.	Content that participation is going in the right direction. In the past it was necessary to encourage more municipalities to act. The province should maintain its assisting and monitoring role.
	Municipality of Delfzijl	Taking a pro-active and measured approach towards realizing solar power within its current municipality borders.	Believe future projects should only go forward when there is a certain measurable threshold of participation present.
	Municipality of Stadskanaal	Taking a pro-active approach towards realizing solar power within its current municipality borders.	Should be further encouraged than is currently the case in the municipality in order to reach goals set forth in the vision.
	Municipality of Westerwolde	Working out the consequences of the fusion between two separate municipalities.	Need to increase significantly. Very little participation is currently happening yet outside events organized by the municipality.
	Municipality of Loppersum	The municipality is dealing with the consequences of the man-made earthquakes. Any future projects needs to take those issues into consideration.	Similar to the position as the municipality of Delfzijl yet not as far ahead yet with designing the policy and vision (strategy). Argues working together with multiple municipalities is necessary.
	Municipality of Veendam - Pekela	Participation between the municipality and local inhabitants need to be further encouraged but there are difficulties in doing so.	Needs further encouragement. There are some initiatives present however the municipality should do more to involve its inhabitants.
	Municipality of Winsum	The municipality is going in the right direction setting forth its own policy as instructed by the province of Groningen however more freedom in defining own solutions would be desirable.	Participation is present and growing. Would qualify as it ' <i>going in the right direction</i> ' however a stronger focus needs to be present on participation right from the start with it being a requirement for any project to be allowed.

Table 3: Summarized overview of the current situation according to the regimes.

Source: Author

5.1.2. Perspectives from the niches on the current situation

The niches interviewed for the thesis consist of two companies and one ngo, namely Powerfield, Solarfields and the Natuur Milieufederatie Groningen - Drenthe respectively. Each interviewed organization provide different perspectives as well possibilities to analyze different aspects of the role municipalities currently have within the planning process and subsequent outcome for those participating in the realization of solar park projects.

Perspectives from the companies

The two interviewed companies, Solarfields and Powerfield have a slightly different perspective on the current situation though seem to agree on most aspects on the state of the current sustainable energy market. Both companies have participated in and/or have realized several projects within the borders of the municipalities interviewed for this research and interacted with those involved from said organizations.

Interestingly, the expert from Powerfield noted that current regulatory environment at the national level could be considered lacking, noting that there is *“little to none on solar power policy as opposed to wind power”* which as a consequence let to *“a certain degree of ‘uncontrolled proliferation’ across the country with municipalities and provinces having to pick up the pieces.”*¹ Which the expert further explained both the municipalities and the province of Groningen have done so admirably. In turn they have become an example to be followed and copied according to the participant from Powerfield. Additionally there are two additional reasons which are in the interest for both companies to invest in realizing solar park in the area *“One, the prize of land is relatively cheap here in Groningen. Two, the policy devised by the province is straightforward and clear.”* The project manager of Solarfields independently concurred with similar responses, mostly notable *“The province of Groningen and many of the municipalities have maintained an active approach in setting policy standards for solar park projects.”* As for existing issues with municipalities in the province, the participant from Powerfield noted that *“If there is a sudden increase of initiatives both the province and the municipalities will focus on first realizing local policies before continuing...which caused everything to be halted.”* Nevertheless, both project managers indicated not having had many problems with either the regimes or local inhabitants with realizing solar parks so far. The participant of Solarfields noted that participation is important as future projects depend on the public having a positive perception and attitude to renewable energy projects. This is important as it indicates an understanding from an actor who is not technically responsible for the local community yet realizes that working together with said community and the regime governing it ensures its own success as an organization, something which Loorbach (2010) noted in the literature is a potential strategic key for further innovating as realization of new projects. Furthermore, within that context, Wirth’s (2014) remarks on the institutional preconditions in the theoretical background seem relevant as well as both companies try to promote the ‘community spirit’ by allowing to let inhabitants participate in discussions as well as for the companies to participate in the ‘coöperative traditions’ present in the local region.

¹ The original Dutch quote referred to ‘uncontrolled proliferation’ as ‘wildgroei’. It doesn’t exactly translate however it seems to be closest approximation possible.

Perspective from the ngo

In the NMF Groningen and Drenthe’s main stated position on the issue of the energy transition, *Position paper zone- en windenergie 2017*, the main goals of the organization are promoting the energy transition within the Netherlands. This is pursued by involving local inhabitants through participation in the planning process and projects as much as possible. As the interviewed expert of the organization defined for why this is the case;

We want to accelerate the energy transition as NMF, we also have a strong support base that focuses on landscape and on nature and that it all remains very beautiful. They think it's important that we do not put all wind or solar parks within large scale projects. That has also ensured that we have drawn up a vision, two or three years ago when we saw that a lot of projects were coming our way.” In other words, there was a clear perspective that changes were about to happen and it would be a wise course of action to anticipate on these changes. Both the remarks made by the representative as well as the documents provided indicate a focus on adding value for the local inhabitants as well as incorporating the presence of solar parks in such a way as to maintaining the geographical qualities of the region. This incorporation of the locality and responsibility is recognizable as addressed by Wirth (2014) in the literature. Wirth (2014) further noted that by pursuing such a strategy, community based approaches can be improved.

Level	Organisation	Current view of their own organization	Current view on participation
Niches	Powerfield	Growing but not entirely sure about future projects. Thinks the company is well-suited in getting new projects as well as engaging in participation.	Is satisfied with the current structure and design of participation within the planning process. Province of Groningen and municipalities are ahead of the curve.
	Solarfields	Positive and ambitiously oriented. Expects continued interest in realizing large scale solar power projects albeit preferably with increased participation.	Could be further encouraged early on in the planning process. Otherwise current strategies are overall satisfactory.
	NMF Groningen	Strongly focused on a wide range of environmental issues. Energy transition becoming one of the biggest topics.	Should engage more with both the municipality as well as established initiatives.

Table 4: Overview of the current situation according to the niches

Source: Author

5.2. The desired situation according to the participants

In addition to analyzing the current situation, the participants also considered the required direction solar energy policy should strive towards. The distinction within this chapter is comparable with the approach applied in the previous chapter.

5.2.1. Perspective from the regimes on the desired situation

The different perspectives on what the desired situation should be for further encouragement in both local policies and practical strategies shows a certain overlap with what is already laid out by the province of Groningen. What is interesting is that the province of Groningen has shifted its role from an active institutional actor towards a more guiding and monitoring role for both regimes such as the municipalities to rely upon as well as niches that want to realize solar park projects according to both the available documents as well as the answers given during the interviews from both the representative of the province as well as from several municipalities and comments from the other organizations.

Desired situation according to the province of Groningen

The desired situation according to the province of Groningen is primarily framed in the documentation of both the *'Handreiking; locatiekeuze en ontwerp zonneparken'* and *'Vol ambitie op weg naar transitie: Programma Energietransitie 2016-2019'*.

The approved policy documents provide several key ambitions which the province and local government have determined they all need to work towards as well as what currently lays beyond the current temporal scope of the documents. This particular degree of collaboration is encouraging according to both Loorbach (2010) and (Sorensen, 2015) as in terms of transitional management that allows for a functional monitoring role while from the perspective of historical institutionalism this might mean that the presence of contingency and additional potential pathways for institutional policy measurements to take. However, when asked what needed to be improved upon the participant from the province of Groningen noted; *"Integral policy. You currently can see that policies for solar power developments either have or are being established but you have to understand that in the long run all renewable energy sources have to be integrated with each other. They all have to be coupled. That is a core goal for us now as a province. We need to combine it all and get rid of the current situation where it is still seen as separate parts."* The goal on integration of both policy and creating a so called 'smart-grid' has been tagged as one the major challenges for the province to realize, perhaps a possible critical juncture as determined in the literature by Sorensen (2015) on which direction future policy should take as both the province of Groningen as well as the rest of the northern part of the Netherlands is confronted with the issue of lack of capacity on the power grid (see chapter 5.3.8 for details).

In addition the participant also explained that *"Those core rules are all being added into our existing policies. As such we will be considering each park's it's design and ability to integrate into the existing landscape, the degree of participation and whether or not it provides an 'ecological plus' for the environment or at the very least if it's able to add to the local biodiversity."* Here the participant of the province of Groningen interestingly used terminology described by the participant of the NMF on ecological positives when considering placing solar parks in natural parks (see chapter 5.3.7. for details).

Desired situation according to the municipalities

As explained in chapter 5.2, all interviewed municipalities in the province of Groningen are working on realizing a sustainable energy future based on the policy already set forth by the provincial government. The differences arise between the degree of realized projects and desired direction the planning process and eventual outcome needs to go. As established by the province of Groningen that all municipalities need to create a vision and strategy on realizing solar projects within their borders, municipalities have been working on creating, approving and implementing the prescribed policy requirement to varying degrees (Province Groningen, 2018). In fact, as of the moment of this writing, each municipalities was either writing the required policy or has recently released it only for it to be reviewed again under further scrutiny. Summarized however, the municipality of Delfzijl explained their position best as;

“The province should give more options to the municipalities than is currently the case however at the same time the province should maintain its monitoring role. Furthermore stating that “Soon enough, all the municipalities will have devised their own visions on solar parks and solar power in general, once that’s the case it will be much easier for the entire province to reach their targets for sustainable energy.”

Level	Organisation	What should change to improve the role of municipalities
Regimes	Province of Groningen	A more pro-active role by municipalities and measured approach to solar park allocation and
	Municipality of Delfzijl	Redesign the availability within the municipality to adhere to the willingness of the local populace.
	Municipality of Stadskanaal	Realizing a more balanced approach than to the current large scale deployment of solar park allocation now that the municipality is ahead in attaining sustainability goals.
	Municipality of Westerwolde	Creating and encouraging local energy co-ops that are currently in the initial stages
	Municipality of Loppersum	Pursuing co-evolution with the local earthquake policy and emphasize a bottom-up approach.
	Municipality of Veendam - Pekela	Need to working together with other municipalities in establishing a proper solar park policy approach.
	Municipality of Winsum	Expand on the existing policy and encourage faster deployment of solar power within the municipality’s borders.

Table 5: Overview of the desired situation according to the regimes

Source: Author

5.2.2. Perspective from the niches on the desired situation

The required situation from the perspectives of the niches is actually straightforward in nature. Of the interviewed niches for this thesis, two are independent companies and one ngo, each of which has different interests in which a municipality could accommodate and as such has a different view on how a municipality could encourage further solar park deployment within its governing borders.

Desired situation according to the companies

The desired situation for the companies is the current arrangement as it is right now. This is evidenced by Powerfield as they were generally straightforward in their desired approach. The expert interview for this thesis was already highly positive about the currently established policy set forth by the province of Groningen and generally had a positive feedback situation on the projects that were being worked on by the company in the province. This is further evidenced by the positions on the different categories that could be either a barrier or opportunity as can be observed in chapter 5.3 and figure 10.

The participant from Solarfields partially agrees with this interpretation as well however the company also had several suggestions for improvement. While both participants commented affirmatively on whether or not companies like less rules by default, they also highlighted the necessity of realizing participation by local inhabitants as key. Having participation within the planning process as well as after the realization maintains the ability for companies such as Solarfields and competitors to move on towards new projects and grow the market in which they operate.

Desired situation according to the ngo

Simply put, local participation needs to be further encouraged within the planning process according to the representative of the NMF. In particular in a way that is consistent with the pursuit of improving participation as described in the literature by Walker & Devine-Wright (2008) and Walker et al (2010). The representative of the NMF considers participation in the context of the process/outcome framework most desirable with viewpoint A as can be observed and analyzed within the framework of Walker and Devine-Wright (2008) in figure 9 as well as by additional comments located in table 6, 9 and 10.

Furthermore, the NMF has a clear perspective on what needs to be improved at the level of governance and government of how the municipalities operate, as well as what both the province and niches actors such as (solar) companies, local inhabitants and initiatives should pursue. As previously addressed in chapter 5.1, the ngo already thinks outside the existing policy by having a pro-active attitude towards realizing solar park projects. As the participant from the organization noted, their chapter seems to be leading with creating and adoption policy initiatives related to solar power. The organization takes a very broad stance, currently going even further than the province in where solar park should be allowed albeit with a certain caveat; *“On principle, this means that we can deal with solar parks everywhere, even in nature reserves theoretically though we cannot always recommend it. We do actually want to keep the possibility though when a developer says ‘I have such a good idea; I want to develop in a nature reserve’. That developer then has to have a plan that creates a huge ecological plus. So much so that it not gets less, but maybe in such a way that we can even buy additional areas. Then we need definitely should consider room for that within our policy.”*

Finally, according to the participant from the NMF there are many strategies possible for improving the current state of the energy transition. However one of things that needs to change is the generally underutilization of knowledge within smaller municipalities as well as the lack of enough personnel. As the interviewee noted; *“I think it's weird that you have wind energy policy and solar energy policy, but that should actually become a very integral policy. They should not be separate things. In short everyone must sit together and work things out. That would make a lot of difference. Small municipalities cannot be blamed for this, they may have only one official and they are working on at least six or seven subjects simultaneously. That is incredibly difficult, even more so for smaller municipalities. Fortunately you now have the upcoming mergers so you might get a bigger jurisdiction, but even then it will remain difficult regardless. So it is a capacity problem. Furthermore, some officials are just very well informed and know a lot but you still need a lot of knowledge if you want to understand all this is good policy that needs to be followed through.”*

Level	Organisation	What should change to improve the role of municipalities
Niches	Powerfield	Generally satisfied with the current conditions as they are now.
	Solarfields	More flexibility within the planning process for both developers as well as local participation options preferred in order to design aspects they both are able to agree upon.
	NMF Groningen	A far greater emphasis on adding participation of local inhabitants into the existing planning process and subsequent outcomes.

Table 6: Overview of the desired situation according to the niches

Source: Author

5.3. Outcomes based on considering the chosen categories

In addition to separating both the current and the desired situation as seen by the participants this study also focused on addressing, analyzing and reflecting on each category individually. Afterwards all outcomes are combined into a graphic overview to illustrate potential patterns derived from the gathered empirical data. Furthermore, while the main categories have in turn been further divided during the analysis of the data, the analysis will keep to the eight main categories in order to not make the analysis overtly complex. For further details on the sub-categories please look at chapter 4.2.5 and for examples of the additional sub-categories as well as the original Dutch quotes from the interviews observe Appendix II, Appendix III and Appendix IV respectively.

Summarized, both the regimes and niches are defined in the literature by Loorbach (2010) actually agree on many important perspectives towards realizing a solar powered and generally sustainable future for both at the provincial and local level of communities. The difference can be found on a variety of nuances depending on the interests of each interviewed party and representative. Nevertheless these differences can have an important impact on what the eventual benefits from that outcome will be and how much actors were able to participate within the planning process in getting to that outcome. To see how that something like that might play out within the framework devised by Walker & Devine-Wright (2008), chapter 6.3.2. and figure 11 provide a potential example. For now, these differences or nuances will be exemplified by making use of the concepts from the theoretical background, the research tools provided by the subsequent considered methodology and perspectives provided by those interviewed to describe, analyze and provide their views on participation within the planning process and beyond.

5.3.1. Regulations

When considering the first category, the state of the current and desired regulatory environment is primarily designed from the formal policy framework set forth by the province of Groningen. These were mostly considered dominant but also positively perceived by both those on the regime as well as the niche side with the exception of the ngo who has a much stronger nuanced position. Four of the ten were positive with municipalities such as Stadskanaal and Delfzijl also having realized their own policies and solar visions for which both noted they've got considerable praise. Five of the ten responses however were more measured with highlighting the benefits while also noting some frustrations and suggestions for improvements. For one, a respondent from the municipality of Loppersum noted that the policy could be considered *"being too rigid in allowing where solar parks are considered desirable to be realized. For example; constructing one near a waterway or canal is discouraged as it might intervene with the existing landscape and isn't connected to the urban area or fabric in the region."* At the same time, these rules are also considered to be quite transparent and clear. The only participant that emphasized the situation being more hampered with barriers came from the NMF. The representative of NMF was on one hand praising the province for its role both in the past as well as presently pushing the municipalities in realizing sustainable goals; however, the participant also put forward the notion that the province should be more flexible as well, as further pursue the creation of a more comprehensive infrastructure that can accommodate the desired results for each of the municipalities. While multiple municipalities echoed those concerns most nevertheless heavily point out the positive role the province has played so far. On the municipality's approaches to regulations, the representative from NMF countered the other

responses by noting that while municipalities wanted decentralization, they too often had the impulse to rigidly adhere to established approaches to provide certainty. This is commented on in the literature by González & Healey (2005) on local governance's ability to adapt and change to new dynamics and the general resistance formal institutional rules might have within a government structure.

Level	Organisation of each participant	Defining position on regulations
Regimes	Province of Groningen	<i>"The province has made a policy for solar parks a number of years ago: 'the Guide' to the choice of location and design, this booklet, which I take it you have already seen. We are actually working on the basis of this booklet. The province of Groningen is very ambitious in terms of sustainability energy."</i>
	Municipality of Delfzijl	<i>"The municipality of Delfzijl is ahead of the curve when it comes of creating policy on wind and solar...currently were reviewing our earlier strategy to keep up with all the rapid changes."</i>
	Municipality of Stadskanaal	<i>"We have already established policies that we work with. That policy was the result of already decided policies by the province. "</i>
	Municipality of Westerwolde	<i>"We are now working on determining our policy. In that sense, the reflection period has already been this past year. At least we are working on it. We have a walk-in meeting for residents on the 11th of September and then they can think about how we could do this with us in the municipality."</i>
	Municipality of Loppersum	<i>"The provincial policy limits a lot ... but it is also good that it is there. ... At the municipal level it is more customized."</i>
	Municipalities of Veendam-Pekela	<i>"We have not yet established the vision. At the moment we are trying to make new rules regarding zoning plans that make it easier to grant a permit."</i>
	Municipality of Winsum	<i>"As a municipality you need to have a policy on solar regardless. That was also the reason for us to prepare a solar vision even before the reclassification, and for some reason it did not come through the municipality board and does not go to the council, but will in the new municipality. "</i>

Table 7 continues on the next page

Niches	Powerfield	<i>"Currently there is little to none on solar power policy as opposed to wind power at the national level. This led to a certain degree of unchecked proliferation across the country with municipalities and provinces having to pick up the pieces." Something which the province and municipalities of Groningen have done so admirably in our opinion."</i>
	Solarfields	<i>"We can do well with the environmental vision. Allowing solar parks only against adjacent urban areas does cause debate however."</i>
	NMF Groningen - Drenthe	<i>"Well, the barrier is often that municipalities have legal experts and they often want to be able to realize things up to the highest level so that a rule is being complied with. If you register participation, residents' participation must come first, but how do you record this? How does that play out?"</i>

Table 7: The defining responses on the barrier and/or opportunity of regulations by the participants.

Source: Author

5.3.2. Political will

The willingness of both those on the side of the regimes as well as the niches all emphasize their willingness to deal with the enormous task at hand as can be observed in table 8. As with the first category, the province once again plays an important role, however, at the same time municipalities have much more flexibility in setting forth their own priorities within the strategic visions that are currently being formalized. Considering the responses given, there seems to be a broad agreement that local politicians, policy makers, project managers and citizens are aware of the necessity of the energy transition. At first glance, no interviewed participant from any organization and/or formal institution indicated a genuine lack of political will within their organization or having a lack of intent, goals and ambitions. However on further questioning there is considerable difference between what each municipality is currently willing to pursue and how it wants to do so. For example, given the responses on the current realities present at municipalities such as Veendam and Pekela, certain potential actions and solutions seem to be out of reach and it could be argued that at a local level the constraints present might be construed as a case of institutional resistance on the account of the present political power structure, limiting the potential of an institutional critical juncture as elaborated on in the literature of Sorensen (2015). In other words, certain potential path ways might stay closed of political inertia. Furthermore, the views of the developers and the ngo provide further insight on the pressures the municipalities face in devising their visions. The developers both agreed that the provincial strategy is quite helpful in realizing their goals at the municipality level. The ngo however choose to emphasize the barriers, however, noting that while the political will and intentions are good, the actual outcomes for local participation within the solar park projects being approved could stand further improvement.

Level	Organisation of each participant	Defining position on political will
Regimes	Province of Groningen	<i>"What you often notice is that almost everybody is more than willing to participate. What you do sometimes notice however is that politicians can be a little cautious and that they don't want to really work on realizing solar park projects until a firm policy framework has been established though. Once that policy exists things tend to go fairly smooth."</i>
	Municipality of Delfzijl	<i>"The province of Groningen wants to be the most ambitious on the issue of sustainability. The municipality of Delfzijl agrees with that goal, albeit with its own twist on the matter."</i>
	Municipality of Stadskanaal	<i>"This is primarily a subject for a politician, I think; nevertheless the subject is widely accepted. If I remember correctly the current policy has been unanimously approved off. "</i>
	Municipality of Westerwolde	<i>"The perception that this is necessary is most certainly present. Last year we've had a council meeting where there was unanimous agreement that something needed to be done. However there is a strong difference of opinion on how, when and what needs to happen."</i>
	Municipality of Loppersum	<i>"A sense of urgency is present however there are a lots of different opinions at the local or level of municipality. In addition were about to reorganize with other municipalities into a new larger municipality."</i>
	Municipalities of Veendam-Pekela	<i>"In general, not really. With aldermen, they all have their own ideas of whether or not it is a good development. Use of agricultural land is a sensitive issue."</i>
	Municipality of Winsum	<i>"In Winsum the political willpower is certainly present with regard to the smaller solar parks and with the larger one we look at it on a case-by-case basis and it is currently on hold for a while, unless it is a location with which local residents also like it."</i>

Table 8 continues on the next page

Niches	Powerfield	<i>"Aldermen in the projects where we are involved are usually well-informed." However, in a broader context, aldermen and civil servants are often aware of the targets that are set and the goals. Council members, on the other hand, sometimes have an unfounded opinion...in my opinion."</i>
	Solarfields	<i>"No, we have not experienced any negatives in this regard."</i>
	NMF Groningen - Drenthe	<i>"Municipalities and the province definitely want to work on solar park projects. In fact, I suspect many employees at the municipalities are probably going a little bit crazy with all the proposals made by land developers. In addition, politicians also demand participation in these projects by local inhabitants. In short, I don't think anyone would have guessed that this change would have happened so quickly."</i>

Table 8: The defining responses on the barrier and/or opportunity of political will by the participants.

Source: Author

5.3.3. Environmental justice

Environmental justice is generally understood as the fair distribution of both the positive outcome(s) as well as the negative externalities of projects both being realized as well those already having been completed (EPA, 2012). Among the representatives of the different organizations exist several divergent perspectives and considerable nuances that could be recognized in context with the literature from both Salet (2018) as well as the process and outcome dimensions of Walker & Devine-Wright (2007). The emphasis on participation was evident by the responses given from those representing the municipalities, both on how participation should take form as well as what the preferred outcome(s) would be for the local inhabitants. This particular discussion has currently caused a moratorium on new solar parks in municipalities such as Delfzijl and Stadskanaal, at least until participation by local communities is even further integrated into municipality policy. Nevertheless the municipality of Stadskanaal was simultaneously not dissatisfied with the current distribution of privileges between the different stakeholders while Delfzijl was dissatisfied despite being one of the first pursuing policy on solar park projects. The participants from Delfzijl both attested that to the situation of farmers versus other local inhabitants on the topic of beneficial outcomes from realizing solar park projects. Furthermore, the representative of Delfzijl also noted that *"the local energy policies of municipalities is evolving so fast right now that it's hard to keep track of. What is seen as a good solution might two years later be hopelessly outdated."* This could be argued to be an example of breakthrough and/or acceleration phase of the multi-phase perspective (Rotmans et al, 2001) Finally, as a counterpoint the representative of the province of Groningen as well as the representative of Solarfields argued that while participation and the sharing of benefits is important, solar parks are at the same time often private investments and are need to run a profit in order to be interesting to continue to invest in.

Level	Organisation of each participant	Defining position on environmental justice
Regimes	Province of Groningen	<i>"That's something I find quite difficult to determine, on the one hand you have developers who were ahead of the curve and started developing when it still wasn't popular to do so. They've invested a lot of money in these early projects and these now provide their main source of income. On the other hand you have local inhabitants who get to deal with the spatial consequences of these projects."</i>
	Municipality of Delfzijl	<i>"The largest obstacle is finance, however when you decide to involve everyone from a perspective of equality within the planning process it will be possible to realize a lot."</i>
	Municipality of Stadskanaal	<i>"I'd never see it as an obstacle but as a right of the local inhabitants...I think these rights have been taken care of quite well in the Netherlands, it's very important that people are able to take part of the process. As a municipality it is your duty to represent the interests of your inhabitants to the best of your ability."</i>
	Municipality of Westerwolde	<i>"Participation should just be part of the process in order to create and maintain approval."</i>
	Municipality of Loppersum	<i>"Participation is very strong here on many different topics ... it may however sometimes be too much for people to handle."</i>
	Municipalities of Veendam-Pekela	<i>"We have looked at which areas can or cannot be developed ... that will also be a point of discussion among arable companies. Were also looking to realize a Gebiedsfonds."</i>
	Municipality of Winsum	<i>"We want participation at the beginning of the process, preferable even before the intent of building and once that is firmly entrenched start with the realization."</i>

Table 9 continues on the next page

Niches	Powerfield	<i>"In the region your analyzing we apply participation strategies such as creating a Gebiedsfonds"</i>
	Solarfields	<i>"The realization of a solar park is actually the creation of a company and that means a risk to do it. You have to do something back for the population, but I do see it as a being essentially a company."</i>
	NMF Groningen - Drenthe	<i>"... would be even more ideal...if you come up with an idea, then you get along with the local neighborhood to see what we can do with that idea and what you think together of all of this and how should that be completed. Only once that has been accomplished you start applying for a building permit. In the perfect scenario municipalities would take the total energy consumption as a base line and what would in turn be needed to realize a realistic plan for energy production within their own jurisdiction as much as possible."</i>

Table 9: The defining responses on the barrier and/or opportunity of environmental justice by the participants.
Source: Author

5.3.4. Historical and cultural considerations

The fourth categories of historical and cultural considerations were rather straightforward for both those interviewed from the regime as well as the niche's perspective. Furthermore it was sometimes difficult to maintain on the topic of institutions as those interviewed also contemplated the aspect of heritage within the context of the posed question. On the regime side was the province responsible for creating a comprehensive overview of what all solar power projects need to adhere too. These rules applied for all initiators of projects equally, regimes or niches. All those interviewed addressed this particular aspect of the province in positive terms. For municipalities, the topic quickly became more complex, even contradictory. This should come as no surprise as according to González & Healey (2005) certain *"cultural embeddedness"* can impede or enhance the change of policy at micro and meso interactions. From the perspective of the niches, the category is either properly addressed or successfully implemented within existing policy. This also shows another contradiction between the regimes and the niches. The position of the regimes seems more nuanced and strongly ingrained historical and cultural identity, highlighting the local environment in which they operate. This is addressed by González & Healey (2005) as possibly being an expression of a local sense of place and identity through both formal and informal structures. In addition, the province has rolled-out a policy that seems to have encouraged a positive feedback loop within municipalities starting to incorporate the ideas into their solar vision programs on further encouragement of the niches. It remains to be seen if this is a true path dependency or if it can be construed as the only viable option available (Sorensen, 2015).

Level	Organisation of each participant	Defining position on historical and cultural considerations
Regimes	Province of Groningen	<i>"Here at the province we take these issues into account with the 'bouwheerschap'. They call themselves the 'protectors of the land(scape)'".</i>
	Municipality of Delfzijl	<i>"A unique landscape is something you need to be very careful of...when seeing it from that perspective you'd not want to place another windmill period. However, one windmill is quite a bit more effective than a solar park. It's a trade-off. One that's very difficult as we've got a lot of historical landscapes within the province which you really shouldn't screw with."</i>
	Municipality of Stadskanaal	<i>"The issues of historical and cultural considerations is something that has not been given much attention in our vision so far in my opinion. Were currently thinking on adding these considerations for future solar parks of 200 hectares or larger."</i>
	Municipality of Westerwolde	<i>"We wanted to make a separate policy document on solar park development for both the municipalities before we would fuse into one new municipality. However because the municipality of Bellingwedde did not allow any solar park development before the approval of a vision on solar parks this proved too difficult to do beforehand."</i>
	Municipality of Loppersum	<i>"Loppersum primarily exists of a so called 'wierden' landscape. Once, we turned in plans at the province that got rejected for being too large scale for the surrounding areas."</i>
	Municipalities of Veendam-Pekela	<i>"We have drawn up a spatial development perspective for both municipalities. In it we have assigned areas that are very valuable. That also returns in our vision on solar parks."</i>
	Municipality of Winsum	<i>"There are very clear boundaries. There are 'wierden' areas and on those specific areas you are not allowed to do anything and we want to keep that the way it currently is. This also includes small projects that have to fit with the nature, culture and size of any village."</i>

Table 10 continues on the next page

Niches	Powerfield	<i>"We have to stick to the visions made by the Provincial Government of the province."</i>
	Solarfields	<i>"When we are approached we always make a 'quick scan' to see if we see bread in it. ... It is an important element within the licensing procedure."</i>
	NMF Groningen - Drenthe	<i>"By definition this subject now has to be properly addresses in every policy and vision document designed by municipalities within the province. Also if you're a proper project developer you will let yourself get informed by the authorities on their desired visions in order to be able to take those into account."</i>

Table 10: The defining responses on the barrier and/or opportunity of historical and cultural considerations by the participants. Source: Author

5.3.5. Interpersonal trust and social trust

On the topic of interpersonal trust and social trust, a particular complicated category as it became apparent during the interviews, there were varying degrees to which those being interviewed were able to elaborate on the current tasks they were working on. Nevertheless on the issue of trust one of the participants at the niche side, Powerfield, noted that trust between the municipalities and themselves is perceived as quite good however between local inhabitants and municipalities towards the company's paints a more nuanced situation. This is strongly dependent on preexisting conditions such as previous project realization having been realized beforehand. In the case of Stadskanaal and Delfzijl both pointed out that the interests of inhabitants haven't always been put front and center in the past while in the municipalities of Veendam and Pekela there is a general sensitivity issue on using arable land for renewable energy production. Finally, the representative noted that the issue of trust is a complicated one as is in concordance with the literature set by Walker et al. (2010). After all, trust is determined on a degree of cohesion, mutual respect and understanding both in other people (interpersonal) as well as in institutions (social trust) in which the success of projects seemed to depend more strongly on interpersonal trust than social trust.

Level	Organisation of each participant	Defining position on interpersonal and social trust
Regimes	Province of Groningen	<i>You've got this triangle relationship between those that take the initiative, the municipality and the province. The sooner you are aware and get to know one another, the faster it's possible to realize something. That's very important with these kind of projects and issues.</i>
	Municipality of Delfzijl	<i>"Trust is a barrier or issue. The local inhabitants' welfare should come first in whatever task or project the municipality chooses to pursue. However this has definitely not always been the case in the past. The trust in the municipality has definitely been diminished because of those actions, especially on the topic of allowing windmills. You could even think we're doing a lot better now, however given how fast the field of renewable energy is changing its quite possible we'll have to revise our policies again in two years' time."</i>
	Municipality of Stadskanaal	<i>"We have created a lot of mistrusts against the municipality because of certain actions made by the municipality of Stadskanaal in the past such as approving the biomass installation near Refaja over objections of local inhabitants. That should have been done better as these actions created a lot of suspicion."</i>
	Municipality of Westerwolde	<i>"There are always people where a lack of trust is an important issue. However, usually that's confined to the sphere of local politics. The interactions of the municipality itself is to always maintain the presence and influence of local inhabitants as much as possible."</i>
	Municipality of Loppersum	<i>"I do not think towards the municipality. There is a lot of suspicion due to the earthquake situation, but the awareness among residents is that we have to get started."</i>
	Municipalities of Veendam-Pekela	<i>"Difficult to name generally. This is very different locally. Because the policy is not there yet and there are many questions you get some 'ruis op de lijn' and occasionally grumbling."</i>
	Municipality of Winsum	<i>"We do think that we really need to take the citizens with us and need clear agreements to be made and need to communicate as such."</i>

Table 11 continues on the next page

Niches	Powerfield	<i>"The trust between the municipality and the developer is actually always there. You spend a few years together and you work somewhere, you build a bond and have the same goals."</i>
	Solarfields	<i>"We haven't had much resistance in realizing our projects because of lack of trusts issues."</i>
	NMF Groningen - Drenthe	<i>"You do often see lack of trust issues from past experiences unfortunately. Overcoming these is a slow process but fortunately these are slowly improving."</i>

Table 11: The defining responses on the barrier and/or opportunity of interpersonal and social trust by the participants. Source: Author

5.3.6. The ability to influence locale debate

As all the representatives of the organizations were working with policy design and project management they were only able to talk on a certain degree on the influences being present as well as the relations existing between different stakeholders. The topic of public messaging was as such of a more limited applicability than anticipated. Nevertheless, the general responses were either measured or consisted of useful examples of barriers being present. Based on these responses, the municipalities face the brunt of the complications as they were always in the public eye as opposed to the niches.

Level	Organisation of each participant	Defining position on the ability to influence local debate
Regimes	Province of Groningen	<i>"Previously solar parks would often have been described positively by the media yet now you often see the same media...only take about solar parks negatively...we are thinking hard about how we could better frame such issues."</i>
	Municipality of Delfzijl	<i>"We've had a lot of trouble with wind power projects. For example, Jan Mulder was very vocal in his opposition. Furthermore many proponents as well as opponents got death threats."</i>
	Municipality of Stadskanaal	<i>"Haven't had many problems with the media with any projects currently being realized. However we did have a situation with a project from Powerfield which didn't exactly have the best coverage in the media. This didn't have any negative consequences for us though."</i>
	Municipality of Westerwolde	<i>"There have been multiple critical articles about Powerfield and when that happened we had to respond to question on what our stance(s) on this articles revelations were and what we were going to do about it."</i>
	Municipality of Loppersum	<i>"So far, this hasn't really played a major role."</i>
	Municipalities of Veendam-Pekela	<i>"Doesn't really apply right now, maybe once"</i>

		<i>we've determined our vision on solar."</i>
	Municipality of Winsum	<i>"For me it is very clear that when you have involved the local initiatives or involved the civilian population, I think it is not that bad. Then you have immediately taken them to the front and they are not faced with surprises."</i>
Niches	Powerfield	<i>"What sometimes happens in the media is that the most outspoken opponents are exemplified as the entire opinion while that in my experience isn't the reality on the ground."</i>
	Solarfields	<i>"We did not experience that much inconvenience ourselves. I do think that negative stories are written down with a lot of assumptions ... and that sometimes bothers me."</i>
	NMF Groningen - Drenthe	<i>"Articles in the media have changed over time towards being more critical but also less informed and opinionated."</i>

Table 12: The defining responses on the barrier and/or opportunity of the ability to influence local debate by the participants. Source: Author

5.3.7. Environmental considerations

The seventh category, environmental considerations is mostly perceived as being neither a barrier nor an opportunity. The requirements for ecological solutions is still on a predominantly voluntary basis as the MER isn't required for smaller solar parks and as such there are different perceptions on to what project initiators and developers need to take care of when considering the ecological implications. The issue is however increasing in importance among the province, several municipalities and the NMF. In fact, the representative of the province of Groningen, as well as the representative from the municipality of Westerwolde pointed out their experiment in collaboration with the WUR on biodiversity and multi-functionality on a solar park site. From the empirical data on this particular category and the scientific literature on transition management as noted by Loorbach (2010), this being a transition experiment seems to apply as the experiment specifically sought to explore points of multi-functionality as well as the potential for broader use and up-scaling. In addition, the NMF highlighted their opinion of being a proponent of the use of solar parks in nature reserves, granted only if it actually has value in creating what the representative described as an "ecological plus", meaning the potential ecological benefits need to outweigh the negatives. In addition with other examples given in table 13, it could be argued that the topic of biodiversity and multi-functionality is an emerging example of a pro-active approach by both regimes and niches with regimes providing the monitoring role as the niches perform the initial experiments (Van der Brugge, 2005; Loorbach, 2010).

Level	Organisation of each participant	Defining position on environmental considerations
Regimes	Province of Groningen	<i>"We're currently working together with the University of Wageningen (WUR). Our main focus is the biodiversity and we hope that the research will result in significant results on which we will be able to report on."</i>
	Municipality of Delfzijl	<i>"You've got the 'formfree' MER which states whether you truly need to consider these issues or not. Most of the time that isn't the case. An example for integrating biodiversity however would be realizing new locations within a solar park where different species of birds have room to their nests. That's one way to add biodiversity within a project."</i>
	Municipality of Stadskanaal	<i>"Were now working on a project of over 200 hectares, furthermore were researching whether a MER study is absolutely necessary...Realizing biodiversity is very important for the province...that is definitely something we will have to take into account."</i>
	Municipality of Westerwolde	<i>"We've looked at how to realize multi-functionality within the project. For example, alongside the solar park we've also realized a berry farm. This was in corporation with the University of Wageningen whom did research on the multi-functional use of crops but also flooded acres and farm animals in co-junction with a solar park."</i>
	Municipality of Loppersum	<i>"We haven't really thought about it that way because all our projects have been on a small scale so far."</i>
	Municipalities of Veendam-Pekela	<i>"Although not established, this will become part of a business case of a solar park. You can also solve this with the finances of the Area Fund. As a municipality, we are going to indicate that there are also issues and consequences in the realization of solar parks."</i>
	Municipality of Winsum	<i>"... even solar parks are multifunctional. That is of course fantastic for the environment because when you have actually realized a piece of nature under and around that solar park."</i>
Niches	Powerfield	<i>"You do have a 'MER judgment obligation' for park above 125 hectares however none of our current projects are bigger than that."</i>
	Solarfields	<i>"At first there was some unclear but nowadays, in my opinion, everything under 100 hectares does not require an MER"</i>

		<i>study."</i>
	NMF Groningen - Drenthe	<i>"There are a lot of possibilities to realize solar park projects. For example, you could realize parks in nature reserves. Or maybe you could combat peat oxidation by flooding former farmlands and place a solar park on top of it."</i>

Table 13: The defining responses on the barrier and/or opportunity of environmental considerations by the participants. Source: Author

5.3.8. Additional factors

The last main category, additional factors, is as previously addressed a very broad but necessary factor so those interviewed could express influences which might not have been considered or foreseen beforehand. During the interviews it became clear that there was one prevailing topic of contentiousness; the ability of Tennet and Enexis to maintain the national power grid with all the increasing energy production happening in the north eastern part of the Netherlands. Not a single participant wasn't concerned about this particular issue although there was a strong variation between how serious each participant considered the situation in regards to realizing the local sustainability targets for 2020 and beyond. For example, the representative from Loppersum noted the preference for more flexibility to experiment as well as having more financial resources to pursue the sustainability goals as not each project would be subject to the current limitation of the power grid. Based on the literature this could be considered a current

In addition the interviewee from the municipalities of Pekela and Veendam emphasized the concerns from the municipality council's on the loss of arable land if multiple solar parks were to be realized. Finally, there also needs to be a stronger focus on innovation. As the participant of the province of Groningen explained; *"Our main focus is solar-pv however, you could also focus more intently on solar thermal solutions. In other words creating heating with solar energy in addition to add hydrogen storage solutions."*

Level	Organisation of each participant	Defining position on additional factors
Regimes	Province of Groningen	<i>"Innovation. Innovation is definitely something which the province should focus more intently on. Our neighboring countries are currently more innovative than we are."</i>
	Municipality of Delfzijl	<i>"The power grid is definitely not ready for accommodating our future ambitions that we as a municipality have set for ourselves."</i>
	Municipality of Stadskanaal	<i>"Adaptations to the power grid play a big role. At the moment it is not possible to add new projects on the power grid...We will need and large 'koppelstation'. Realizing this however might take up to three to five years."</i>
	Municipality of Westerwolde	<i>"The power grid companies are very conservative in giving new projects their approval for connecting these on the power grid. Current capacity simply isn't good"</i>

		<i>enough yet."</i>
	Municipality of Loppersum	<i>"A stronger role for organizations such as the GREK would be a positive if there is a place for them at the table with project developers. Another positive would be more financial flexibility and availability. Finally, we need more flexibility within the provincial 'Omgevingsvisie' for more innovative policy measures."</i>
	Municipalities of Veendam-Pekela	<i>"A bottleneck in finding logical locations that can be connected to the grid. In addition, the open visor and ... the loss of arable land a sensitive point."</i>
	Municipality of Winsum	<i>"The province should be somewhat more generous. The province calls and wants everything but on the spatial side it is often the case that it is locked up. At the provincial level they would have to disown a bit more to be able to collect the total assignment together."</i>
Niches	Powerfield	<i>"There are additional opportunities in combination with nature reserves. Solar parks should be more combined...with ecological opportunities."</i>
	Solarfields	<i>"You see that our energy network is totally not equipped for the energy transition. We are moving from a network that was fed to a network at a couple of points, which is fed at every point."</i>
	NMF Groningen - Drenthe	<i>"The current state of the availability on the national power net is a significant obstacle."</i>

Table 14: The defining responses on the barrier and/or opportunity of additional factors by the participants.

Source: Author

5.3.9. Overview of all the categories

Based on the findings presented in sub-chapters 5.2 and 5.3 you can figuratively represent the data as can be observed in the many tables throughout this chapter from table 7 till table 15. This overview deals only with any additional findings that can be seen from gathering each category into one table as seen below. In this combined, comprehensive overview in table 15, the interviews of the representatives of each organization are on the vertical side while the categories can be found on the horizontal axis. As before, each response is divided in being a **barrier**, **opportunity** or an answer that doesn't clearly define as either, referred here to as a **measured position** (chapter 4.2.4.). The first findings that are noticeable are the generally more shared opportunistic attitudes of the respondents on the current state of the regulatory framework and the political will. In other words, the satisfaction with the state of both categories is relatively high, however as both chapter 5.3.2 and 5.3.3. noted, it is a bit more complicated than that. Furthermore, what is also visible are the different attitudes of the respondents to the questions, with for example D, E and F making mostly measured responses while A and J take opposite stances respectively. The last category, additional factors, can be

explained as each participant was focusing on pointing out an additional barrier which the municipality would not have the (full) ability to influence either way, namely the availability of network capacity/ availability on the power grid. Finally, another distinction is the difference between the regimes and the niches. The representatives of the regimes take more nuanced positions as opposed to those on the side of the niches. Of the niches, the companies seem satisfied with the current arrangements while the NMF is decidedly critical in the sense that the representative wants participation policy to continue to improve steadily, a position shared by several regimes as well.

		Categories							
		1	2	3	4	5	6	7	8
Regimes	A	Green	Green	Orange	Green	Green	Orange	Orange	Red
	B	Green	Green	Orange	Orange	Red	Red	Orange	Red
	C	Green	Green	Green	Red	Red	Orange	Orange	Red
	D	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Red
	E	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
	F	Orange	Orange	Orange	Green	Red	Orange	Orange	Red
	G	Orange	Green	Green	Orange	Green	Orange	Green	Orange
Niches	H	Green	Orange	Green	Green	Green	Orange	Green	Green
	I	Orange	Green	Orange	Green	Green	Green	Green	Red
	J	Red	Green	Orange	Red	Red	Orange	Orange	Red

A	Province of Groningen
B	Municipality of Delfzijl
C	Municipality of Stadskanaal
D	Municipality of Westerwolde
E	Municipality of Loppersum
F	Municipality of Veendam - Pekela
G	Municipality of Winsum
H	Powerfield
I	Solarfields
J	NMF Groningen - Drenthe

1	State of current regulatory environment
2	Political will
3	Environmental justice
4	Historical and cultural considerations
5	Interpersonal and social trust
6	Ability to influence local debate
7	Environmental considerations
8	Additional factors

Table 15: A simplified overview of the interviewees their opinion on the state of a variety of categories influencing the planning process of solar power & park projects. Source: Author

6. Conclusions, discussion and recommendations

This chapter is dedicated to providing a comprehensive overview of the conclusions that can be drawn from the data gathered in the field and subsequently processed and analyzed in chapter 5. Furthermore, these conclusions have been used to provide several points of discussion and finally recommendations for further research.

6.1. Conclusions based on all the sub-research questions

This sub-chapter contains the final summarizes and conclusions to each sub-question posed in chapter 2 as well as the main research question of this master thesis. In addition any further explanation outside of the conclusion will be addressed under the sub-paragraph of recommendations (chapter 6.2.). At the beginning of the thesis I stated several sub-questions for the thesis in chapter 2. The following is a concise answer to each of those questions separately.

Sub-question A; “What is the current, normative and/or desired state of the energy transition in the Netherlands in terms of policy and direction?”

The current state of the energy transition in the Netherlands can be summarized as a process that is, based on the multi-phase perspective, in its take-off phase (Van der Brugge, 2005; Rotmans et al, 2001). Locally, this can have accelerated to the phase of breakthroughs. Based on the findings, the argument can be made that this is in particular the case for the local north eastern region of the Netherlands. According to both the gathered policy documents as well as the responses from experts that participated for an interview, investment and deployment are rapidly growing each year. This is similar to the rest of the Netherlands. Simultaneously there are potential roadblocks or critical junctions, where any future step towards a more sustainable future will be fraught with expensive measures and will have a significant visible impact on the landscape within the country. The future direction of the energy transition in the Netherlands is however currently in rapid flux. Nationally the country has agreed to a renewable energy target of 14% by 2020. A target which it is still unsure if it will reach on time as such it will require an even faster transition and large scale deployment in the 2020 – 2030 period in order to come close to currently set targets for 2030 and beyond (Sociaal-Economische Raad, 2013).

Sub-question B; “What motives do the relevant institutions and stakeholders have in relation to the role they play within the realization of solar power projects?”

The institutions, those being the formal institutions of the province of Groningen and the municipalities within its governing domain and specifically the municipalities interviewed for this thesis, have many goals in common with what are subsequently categorized as the ‘niches’ (Berkhout et al, 2003; Van der Brugge, 2005). These niches in turn comprise of companies, ngo’s and community energy initiatives within the targeted geographical area, namely the northeastern part of the Netherlands. Based on the literature and the findings it is clear that the motives for such organizations are in part determined by policy set forth by the national government however as noted by both the province of Groningen as well as several municipalities the call for decentralization is strong and preferred over a more centralized top-down approach. In fact, the regimes currently pursue a strategy more ambitious than required by the national government as both the provincial and local governments want to improve the local economy in order to position the province as a job creator in the energy industry as well

doing their part in limiting human induced climate change. Furthermore, the combination of political, historical, social-economic and cultural factors drive a certain path dependency and positive feedback loop as mentioned by Sorensen (2015) & Salet (2018) in the literature as well as recognizing in the region that is now causing local governments and inhabitants to take a pro-active approach to realizing the energy transition. For example, local problems mentioned to be at play such as the issue of man-made earthquakes created an informal attitude that both the government(s) as well as local inhabitants need to be ahead of the curve in realizing the energy transition in order to determine both the process and eventual outcome of renewable energy projects so as to actually benefit this time (Walker and Devine-Wright, 2008). The fear is otherwise that the local environment will just be left with negatives consequences as happened before with the fossil fuel industry as well as is currently happening with the realization of larger windmill parks. This bears a strong similarity with what Walker mentioned in their research on windmill park situations in the UK. Taking a pro-active approach to developing the province is also seen as in the interest of the inhabitants of the province of Groningen. This pursuit is considered by all participants in this study on either side of the formal institutional environment as an exemplary case for both the rest of the Netherlands, perhaps even internationally.

Sub-question C; *“What role does the current structure of governance and institutions play within the success and/or failure of realizing solar parks in the Northern Netherlands?”*

The current role of institutions within realizing solar park projects in the Northern Netherlands can be summarized as being crucial and necessary in creating and maintaining support for renewable energy initiatives. Institutions, especially those formally embedded within the societal fabric such as municipalities are usually able to provide the strong support and encouraging role within the community needed for larger projects to succeed. This is supported by the active cooperation present between both the provincial and local governments; private stakeholders as well as local inhabitants. This conclusion can be drawn from several important factors. First of all is the current role the province of Groningen plays in encouraging the municipalities to realize renewable energy policies and projects within their jurisdiction. As addressed multiple times throughout the study by different participants the province initially had to pursue a strong and assertive role in setting up solar power projects within the province. This has however changed completely in roughly the last two to three years. Now there is a call for the province to have a stronger monitoring role in order to organize the enormity of new solar projects across the municipalities while simultaneously allow more flexibility for municipalities in choosing the locations for solar projects (Provincie Groningen, 2018).

Sub-question D; *“How do the historical institutionalism, cultural institutionalism and aspects of environmental justice influence the realization of solar power and solar park projects in the analyzed municipalities?”*

The region used in this study has a complicated past with many different processes making it perhaps more difficult to realize projects than elsewhere in the Netherlands. These include an ageing and declining population, lack of proper power grid infrastructure and lack of trust within government and private entities. Especially the latter is a factor that inhibits further project realization and policy creation in several municipalities. In addition while there is a consensus that everyone should be able to contribute as well as benefit from renewable energy

projects there is also a difference of opinion and perspective on how far this needs to go. Simplified many bottom-up initiatives and local governments prefer a strong benefit for the local populace while private entities question this as they consider realizing a solar park no different from a regular company's operations. Both perspectives emphasized the bottom-up approach as a way to come to an understanding and agreement on their vision on how solar parks should be positioned both in terms of inclusive policies as well as in the physical landscape.

6.2. Answering the main research question

The research for this study was performed in order to determine an answer on the main research question postulated in chapter 2; *"How can municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?"*

As the question has already been partially answered by the sub-questions the following conclusion will be as concise as possible. Based on the research from this study it can be argued that in order for the regimes, meaning the province and in particular the municipalities, to realize a more participatory future for local inhabitants the focus should be placed on several key areas; The province of Groningen wants the municipalities to determine a solar vision with strategies for participation in solar park projects realized as soon as possible. As only two municipalities had these particular documents available at the start of this study, it is strongly recommended that municipalities realize these visions as soon as possible.

In addition, based on the niches as defined by Van der Brugge (2005) and Loorbach (2010) the municipalities need to have a more collaborative role and work more closely together with both other municipalities as well as the niches themselves. This particular sentiment was also shared by several participants on the regime side during the interviews.

Furthermore, the combined municipalities should start a lobby to put pressure on relevant organizations to ensure that the power grid capacity is expanded before certain lock-in might occur because of the new constraints placed on the region's energy development. The region is currently transitioning towards a new equilibrium; together the regimes and the niches must prevent the potential negatives from the lack of capacity to get out of hand.

6.3. Recommendations

In addition to answering the sub-questions and main research questions above, the acquired material from the interviews, documents and subsequent analysis of said information created the opportunity to make several recommendations for further improvement of both solar power projects developments as well as other sustainable energy projects at the local/niche and regime level within the Netherlands. Taking all of that into consideration, the following recommendations might be useful for improving the role of municipalities helping to realize solar park projects in a desirable and more participatory way;

- More collaboration and communication along relevant partners

A recurring theme throughout the literature as well as by those interviewed for the thesis can be traced to the issue of collaboration and coöporation among relevant parties, stakeholders and participants. Communication between different partners is often considered crucial in realizing the goals each different party needs to attain yet trust issues did arise whenever parties didn't properly address any misgivings they might have had. As a participant of the province of Groningen explained, *"we all need to work together, which we can do so through the triangle of the province, municipalities and initiatives. There shouldn't be much difficulty if everyone puts everything on the table."* This is in line what Walker et al. (2010) determined in their research. Specifically when considering the importance of interpersonal trust issues. Based on the information gathered this is currently being done to a reasonable agree however at the same time multiple respondents did raised concerns, especially when dealing with project developers.

- More clarity on what needs to be achieved

The regimes analyzed in this thesis are, according to those interviewed, doing good work on realizing clear and sensible policy strategies that will allow niches such as ngo's, project developers and local initiatives to succeed. There is also a strong focus among municipalities to pursue a participatory future where both process as well as project outcomes are open as well as local and collective (Walker and Devine-Wright, 2008). Nevertheless there were several examples given on how the existing policy could be further improved. One particular point that stood out was the desire for more decisive direction on what a municipality does or does not want within its jurisdiction. This is something that needs to be addressed as soon as possible, especially by municipalities currently undergoing a restructuring into new larger municipalities in the province of Groningen.

- Incorporating multi-use and ecological dimensions into existing and future policy

Over these last few years the energy transition has started to shift into high gear. Several municipalities noted the desire to allocate more regulatory flexibility for municipalities to realize solar power projects within their own jurisdiction. This could be further realized in both the next *Omgevingsvisie* of the province of Groningen but also by pursuing several recommendations made by the NMF Groningen – Drenthe and the province of Groningen itself. These include a stronger focus on innovate projects highlighting the encouragement for operational experiments as explained in the literature on transition management (Loorbach, 2010). Furthermore, solar park projects should be predispositioned towards multi-functional use. To their credit, both the municipality of Westerwolde and the province of Groningen are doing just that in corporation with the WUR. These are the kind of innovations that need to be further improved and up scaled as to speed up the energy transition throughout the province of Groningen (Loorbach, 2010; Van der Brugge, 2005).

- Stronger focus on eliminating existing barriers

While there is still a long way to go until the Netherlands reaches a majority of renewables of the total energy production and consumption, what has become increasingly clear are the rapidly developing strategies to realize this transition. There are however several barriers that need to be eliminated to truly realize the rapid growth of renewable energy. Without a doubt, the primary concern is the lack of capacity on the national power grid for large scale solar projects in the Northern Netherlands. Several respondents noted that this could be addressed through a combination of investment in the power grid by either the national government or even investment from the European Union. Another solution could be further integration of the power grid along the border with Germany. As several participants noted, Germany has realized many large scale windmill farms along the border with accompanying infrastructure. Realizing more solar power projects along the Dutch side of the border would or should allow linkages with this existing infrastructure. In other words, creating an integrated renewable energy network as envisioned by Boer & Zuidema (2015) at the beginning of this study.

6.3.1. Suggestions for further research

During the research it became clear that there are several topics which could and/or should be addressed in future research. The most important potential possibilities for further research are;

- 1) A comparative research on a larger scale
- 2) A more in-depth research on the emerging consequences of renewable energy
- 3) Taking all strategic policies and 'solar visions' into account

1) A comparative research done on a larger scale

First of all, taking the research done in the study on a larger scale towards a national level or at least as a comparison between either several provinces or even comparable regions within the European Union could add to the existing body of knowledge on discerning more factors that might be of importance in improving both policy as well as the actual quality of solar park projects in relation to the environment and local participation. Furthermore, it could more comprehensively incorporate the socio-technical landscape (macro) level that was de-emphasized in this study.

2) A more in-depth research on the emerging consequences of renewable energy

Secondly, the field of solar power is currently evolving at an incredible pace in terms of technical innovation and policy strategies. Even during the process of completing this study several situations within the targeted area for collecting data changed and the conclusions that could be drawn changed with them accordingly. Anyone interested in researching the topic would do well to consider this in defining and/or refining the methodology to try to take these rapid developments into account.

3) Take all strategic policies and 'solar visions' into account

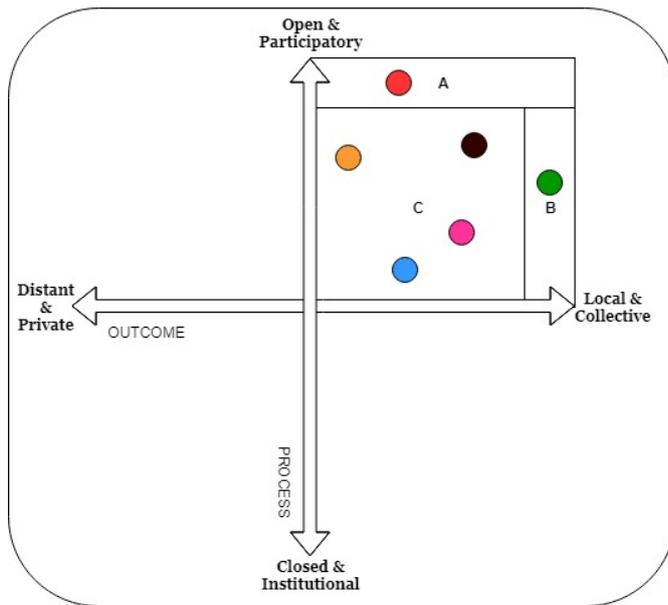
Finally, at the start of the study only the municipality of Stads kanaal, Delfzijl and the province of Groningen had comprehensive policy documents either available or approved by the local municipality council and/or provincial government. As all municipalities are obligated to design, approve and implement their own 'solar vision' in concordance with the policies set forth by the province it might be useful to review these visions once all of them have been established. Furthermore, the municipalities within the province of Groningen are currently undergoing

reorganization. Researching the policies might yield different results as the newly merged municipalities might have different priorities than before their merger.

6.3.2 Additional suggestion of applicability of used theoretical concepts

As an addendum to the findings, conclusions and recommendations presented thus far, a final perspective can be added that became particularly interesting to consider during the analysis of this research. As displayed in the literature, the process and outcome dimension framework allows for the possibility to determine where community participation within renewable energy projects could be positioned based on these two aforementioned dimensions (Walker & Devine-Wright, 2008; Walker et al. 2010). This raised the question; what if the policies of regimes such as the municipalities were placed within this framework instead of individual projects? Unfortunately, the empirical data gathered for this research was not elaborate enough to justify a full analysis for this particular question, instead a small thought experiment has been added below to present this for any future potential research or studies which want to tackle participation issues and the community within the context of the literature presented by Walker & Devine-Wright (2008).

When considering the municipalities current policies and place these into the framework you get something like which can be observed in figure 11. As none of the municipalities could be considered to be fully distant and closed off from its own populace in relation to involving them within the planning process of solar park projects based on the available policy documents, opinions and statements addressed in the interviews, they've all been placed within the upper right corner between being 'open & participatory' and 'local & collective'. However, the degree to which each municipality has realized participation both within their policy guidelines and enacts it into practice differs significantly enough to warrant highlighting each municipality in a different location within the framework. For example, the municipality of Delfzijl and Stadskanaal both have enacted a moratorium on allowing new large scale solar parks within their borders on the principal that a more participatory environment needs to be realized. However based on the speed at which the municipality of Delfzijl enacted these policies it could be argued that the concerns of its local inhabitants are more comprehensively met. Another argument is the fear or alternatively lack of trust by the municipality of Stadskanaal and its inhabitants when having to deal with more large scale wind power projects within the region if they do not pursue large solar park projects right now. This could lead to a situation where the need to incorporate participation during the process becomes less important as long as the eventual outcome does involve the local community. As for the other municipalities, all stated goals of participation and integrating within a complex energy landscape, yet simultaneously providing arguments as to why participation and project realization could not or should not necessarily be realized. This bolsters the case that even in municipalities that take a pro-active approach in realizing solar park realization the regimes still have to further refine their participation perspectives in order to encourage involvement in the long run.



- Municipality of Delfzijl
- Municipality of Loppersum
- Municipality of Stadskanaal
- Municipality of Veendam - Pekela
- Municipality of Westerwolde
- Municipality of Winsum

Figure 11: The process-outcome dimensions and framework by Walker & Devine-Wright (2008) with the analyzed municipalities added to illustrate their individual performance as a potential example.

Chapter 7. Reflection on the study

Being at the end of the thesis the researcher has some final thoughts on the study, the difficulties and what could be improved.

7.1. Starting with the study and personal progression

The initial search for a topic to research started of quite well with exploring several possibilities by attending meetings of local initiatives on solar park projects by several of the municipalities analyzed in this study. The search for relevant theories unfortunately presented a precipitously fast drop in activity which in turn presented a difficult challenge to get back on schedule despite me being reasonably familiar with several of the used theories. The combination of not being initially able to pin down the literature and events happening in the personal sphere made working on and finishing the thesis feel like an ever present 'sword of Damocles' hanging above my head with the eventual completion of the study feeling as difficult as trying to spot Pluto in the night-sky with a simple binocular; an impossibility (Koupelis, 2011). Consequently the gathering of relevant scientific theories was often marred by indecision as to what to put away and what to keep for realizing the high standard required for doing a study of this magnitude. In the end, it took quite some time, research and discussion in order to place the focus on several transition theories, institutionalism and environmental justice. Nevertheless, in my opinion I have succeeded in doing. In hindsight however, I definitely should have given more focus to addressing these difficulties earlier in the process in order to save more time. Once established what this study was about and where to draw the line, the work on the thesis improved somewhat as gathering the required interviews for the thesis wasn't difficult in itself. Another unfortunate consequence was several unanswered invitations for an interview and as such the lack of a representative of local energy initiatives in the study's empirical data. Fortunately, this perspective could be presented by the presence of a ngo that at the same time has local energy initiatives as members within their organization.

7.2. What could have been improved

As several periods during the research process and the finalization of the study proved to be quite challenging, there are in my opinion, several aspects that could have been improved upon on further consideration. Even more so if doing a similar study is considered on the subject matter. First of all, as already discussed in chapter 7.1, the realization of the theoretical framework proved to be quite challenging, as a consequence the detail of research and literature drawn upon for this study could definitely have been done in greater scope and detail if these troubles were dealt with in a more decisive manner.

Secondly, as the study only used several case studies within the eastern part of the province of Groningen, the ability to conclude and provide more generalized recommendations is somewhat limited than if the entire province would have been considered. A more comprehensive sample in tandem with a research strategy that allows for a statistical analysis could possibly have resulted in more quantifiable conclusions. In other words, pursue a strategy that is both qualitative and quantitative in nature would have allowed for more explicit results. Finally, a stronger focus on the local energy initiatives would be recommended even if the primary goal was to provide more insight for the municipality perspective. A larger group should as such have been consulted in order to secure at least several possible participants for the study. Unfortunately, this failed because the semi-structured interviews were gathered during the summer vacation period which should be avoided in future attempts in doing a similar research.

7.3. The lasting value of the study

This thesis consists of a combination between existing literature, policy documents and gathered interviews from multiple perspectives on the current formal regimes, primarily the municipality, and where and what the regimes need to improve upon in terms of policy and participatory encouragement regarding solar power and (large scale) solar park initiatives. The study's relevance will probably be most applicable in the fast changing world of local policy and communication strategies of rural municipalities in the Netherlands. However as the study is of a qualitative nature the conclusion drawn upon those findings have to be seen within the context of the region chosen for this study. They do however provide a potential stepping point for a larger attempt. Furthermore, the study sought to provide linkages between the theories of transition and the field of environmental justice through the lenses of community renewable energy development. Based on the findings in this study I think it will be useful to see if similar results can be achieved across different planning topics related to those aforementioned theories as well as in studies that take a larger and a more comprehensive scope than was done in this study.

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Appendix I: Invitational note for participants

Faculty Spatial Sciences
University of Groningen
Landleven 1
9747 AD Groningen



Date: 01 September 2018

Subject: Invitation for an interview on local participation in regard to realizing solar parks

Dear Sir, Madam,

Please let me introduce myself, my name is Robin Groenewold, I am a master student Environmental Infrastructure Planning at the University of Groningen. I am doing a study on whether it would be possible to allow more policy flexibility within the Dutch planning framework of governance and for stakeholders and actors operating at the municipality and provincial level of government. In other words, can and/or should local actors be more involved in order to realize renewable energy projects, specifically large scale solar parks within their neighborhood. The main research question that I am trying to answer is *“How can municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?”*

The interview itself can be done either by phone, Skype and/or face-to-face. If none of the previous mentioned options is doable it can also be accomplished by e-mail although the earlier methods are preferable. The interview should last between 15 minutes and no longer than 30 minutes depending on the available answers. The entire procedure is anonymously unless desired and instructed otherwise. Any recorded data, if given consent in the first place, can be retrieved on request afterwards. I hope you will consider participating with this interview for my master thesis on realizing solar parks, mapping the policy roadblocks and opportunities.

With kind regards,

(signature)

Robin Groenewold

r.h.groenewold@student.rug.nl

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Appendix II: Initial interview questions in English

Introduction

Please let me introduce myself, my name is Robin Groenewold, I am a master student Environmental Infrastructure Planning at the University of Groningen. I am doing a study on whether it would be possible to allow more policy flexibility within the Dutch planning framework of governance and for stakeholders and actors operating at the municipality and provincial level of government. In other words, can and/or should local actors be more involved in order to realize renewable energy projects, specifically large scale solar parks within their neighborhood. The main research question that I am trying to answer is *“How can municipalities realize a more participatory planning process for realizing solar power park deployment in rural areas in the northern Netherlands?”*

Opening remarks / questions

Thank you for participating in this interview!

At first I'd like to say that everything said during this interview will be used explicitly for the study and only for this study. Any responses will be processed anonymously.

Is it alright to record this interview for further use during the study?

- 1) What role does your organization play in the relation of solar power and solar parks in the Netherlands?
- 2) What are the driving motivations for your organization to participate in realizing said projects?
- 3) What role do you think local participation/stakeholders play in the planning and management process?
- 4) Do you think that the specific role / stakeholders have needs to be redefined?
- 5) Which stakeholder do you consider to be of crucial importance to the realization of the project?
- 6) Which of the following factors do you consider an opportunity and/or a barrier to the realization of a project at hand?
 - a) regulations
 - b) political will
 - c) environmental justice
 - d) historical and cultural considerations
 - e) interpersonal and social trust
 - f) ability to influence (local) debate
 - g) environmental considerations
 - h) additional factors
- 8) What matters most for you; the process of realizing a renewable planning project or the eventual outcome of the planning project? Why do you think so?
- 9) Finally, what do you think of the current state of the regulatory environment in the Netherlands at both the national as well as local level?

Interview vragen in het nederlands

Rewritten after doing the first interview to get more comprehensive responses

Organisatie

- 10) Wat zijn de kerndoelen van de organisatie waar u voor werkt en wat zijn uw eigen taken ten aanzien van de realisatie van zonnestroom en zonneparken in Nederland/Groningen/Anders?
- 11) Wat zijn de motivaties van uw gemeente om zich in te zetten voor zonneparken en zonnestroom? Zijn er duidelijke ambities en/of doelstellingen besloten ten aanzien van duurzaamheid?

Stakeholders en burgerparticipatie

- 12) Wat vindt u van de huidige rol die participatie in het planningsproces door lokale bewoners en andere stakeholders (coöporaties, ngo's) hebben binnen bestaande projecten? Welke rol vervult de gemeente in dit proces?
- 13) Zou deze bestaande rolverdeling in de toekomst moeten veranderen? Waarom wel/niet?

De rol van gemeenten en de provincie

- 14) Hieronder vindt u een serie factoren die van invloed (kunnen) zijn op het realiseren van zonnepark projecten en beleid op provinciaal en gemeentelijk niveau in Groningen. Zou u bij elke factor aan kunnen geven of het momenteel als belemmering en/of kans wordt ervaren en waarom dat zo is? Kunt u specifieke voorbeelden geven? Alternatieven?
 - i) *bestaand beleid, regels en wetgeving*
 - j) *politieke wilskracht en actiebereidheid*
 - k) *discussie over verdeling van voordelen en nadelen lokale bewoners (environmental justice)*
 - l) *inpassen historische landschappen en culturele bezwaren*
 - m) *onderlinge vertrouwen van naleven afspraken*
 - n) *mogelijkheden tot het sturen van het publieke debat in de media*
 - o) *ecologische en milieu technische overwegingen (biodiversiteit, bodemgebruik, etc.)*
 - p) *overige factoren (bijvoorbeeld; netbeheerders, GREK, ruimte voor innovatie, etc.)*

- 15) Waaraan moeten gemeenten meer aandacht aan moeten besteden bij het realiseren van zonnepark projecten? En de provincie?
- 16) Zou er beter gecommuniceerd en/of samengewerkt moeten worden tussen de verschillende partijen (overheden/bedrijfsleven/coöporaties/ngo's)? Waarom wel/niet?

Nationaal beleid

- 17) Wat vindt u van de huidige staat van de landelijke Nederlandse regelgeving ten aanzien van zonnestroom en zonnepark projecten? Waarom vindt u dat? Indien relevant, hoe zou het anders moeten?

Overig

- 18) Tot slot, heeft u nog overige opmerkingen die relevant kunnen zijn maar nog niet ter sprake zijn gekomen in dit interview?

Appendix III – Interview transcripts coding examples

The chosen coding categories in selected and analyzing the relevant acquired data from the interviews. On the next page you will find a few examples of quotes from the interviews on each used sub-category, most of which have also been used in chapter 5 of the thesis. These are all the unedited, original Dutch quotes. For the full transcripts please see Appendix II.

Sub-categories	Color + main category
Participation	Regulations, Environmental justice
Motivation(s)	Regulations, Environmental justice
Policy measures	Regulations, Environmental justice
Political encouragement	Political will
Political ability	Political will
Local involvement	Political will
Community	Environmental justice
Environmental fairness	Environmental justice
Historical considerations	Historical and cultural considerations
Cultural landscape	Historical and cultural considerations
Trust	Interpersonal and social trust
Media	Ability to influence local debate
Public debate	Ability to influence local debate
Environmental issues	Regulations, Environmental justice
Municipalities	All
Province	All
<i>Oppportunity</i>	All
<i>Barrier</i>	All
<i>Measured</i>	All

Categories	Examples for each category
Participation	<p><i>"Ja. Onlangs heeft de gemeente Emmen, die durfde op te schrijven dat er 20 procent participatie moest komen in hun beleid. Daar was ik al heel blij mee. Je hebt gewoon de stoute schoenen aangetrokken en we gaan het gewoon opschrijven. Dit vinden wij belangrijk dit gaan we gewoon doen."</i></p> <p>Interview NMF Groningen - Drenthe</p>
Motivation(s)	<p><i>"Wij willen de energietransitie versnellen als NMF, daarnaast hebben wij ook een sterke achterban die zich focust op landschap en op de natuur en dat het allemaal heel mooi blijft. Die vind het belangrijk dat we niet allemaal wind of zonneparken neerzetten. Dat heeft er ook voor gezorgd dat wij een visie hebben opgesteld, twee a drie jaar geleden toen wij al zagen dat er een hele hoop projecten aan zat te komen."</i></p> <p>Interview NMF Groningen - Drenthe</p>
Policy measures	<p><i>"Ik vind het ook raar dat je windenergiebeleid en zonneenergiebeleid hebt maar dat zou eigenlijk heel integraal beleid moeten zijn. Dat moeten geen aparte dingen zijn. Kortom iedereen moet bij elkaar in het hok gaan zitten. Dat zou al heel veel uitmaken. Kleine gemeenten kun je dit niet kwalijk nemen, die hebben misschien een ambtenaar en die zit op zes a zeven onderwerpen. Veel succes daarmee. Dat is gewoon ontegenwoordig lastig en is voor kleinere gemeentes heel moeilijk. Je hebt nu wel de aanstaande fusies dus krijg je misschien dat het een wat groter apparaat wordt maar dat blijven wel moeilijkheden. Het is niet altijd de onwillendeheid van gemeentes. Het is ook een capaciteit probleem. En sommige ambtenaren zijn gewoon heel goed ingelicht en weten heel veel maar je moet toch heel wat kennis in huis hebben wil je dit allemaal in goed begrijpen."</i></p> <p>Interview NMF Groningen - Drenthe</p>
Regulations	<p><i>"Van de gemeente aanwezig, van de buurgemeenten merk je wel verschil over hoe de visie is opgesteld. De Marne bijvoorbeeld heeft als uitgangspunt dat je alles eerst op daken moet realiseren en dan pas mag gaan kijken naar de grond. Dat gaat uiteindelijk denk ik niet tegenwerken in de visie zoals die nu klaar ligt maar het is wel een ander uitgangspunt. Wij hebben gezegd van 'als je de opgave wilt bereiken dan moet je zowel op grond als op daken gaan leggen'. Je ziet namelijk nu al aankomen dat niet alle daken volgelegd gaan worden dus daarnaast moet je ook gewoon gaan trekken aan die opgave om op grond te kijken hoever je daarmee komt."</i></p> <p>Interview municipality of Winsum</p>
Political encouragement	<p><i>"Dat is op dit moment ongeveer 1800 Terrajoule maar dat zegt natuurlijk nog niet heel veel want dat zegt natuurlijk nog niet heel veel want zoals je weet wordt er in het Klimaatakkoord gesproken over de RES, de Regionale Energie Strategieën, vanuit deze strategieën kunnen hele nieuwe doelstellingen overkomen. In die zin is het zo dat ook al maken wij hier beleid, het moet flexibel blijven want vanuit de RES kunnen er simpelweg weer hele andere dingen besloten worden."</i></p> <p>Interview municipality of Westerwolde</p>
Political ability	<p><i>"Van zonneparken zul je misschien wel al op de hoogte zijn, daar hebben wij vorig jaar een groot zonnepark vergund bij de Harpel van 100 hectare. Toen waren wij nog niet gefuseerd. Dit viel nog onder gemeente Vlagtwedde."</i></p> <p>Interview municipality of Westerwolde</p>
Local involvement	<p><i>"Mijn ideaalplaatje zou zijn dat gemeentes gewoon gaan kijken naar wat verbruiken wij nou en naar wat er opgewekt moet worden en daaruit een soort realistisch plan voor gaan maken over dit opgewekt moet worden en waar. Vervolgens met de bewoners gaan praten hierover van 'joh, jullie</i></p>

	<p><i>willen niet dat alles met windmolens invullen maar hoe gaan we het dan doen, is daar plek voor, vinden jullie het alternatief acceptabel'. Dus mogelijkheden bespreken over hoeveelheid hectares. Die dialoog zou moeten gevoerd worden. Heel vaak is het 'waarom' voor de burger echter totaal niet duidelijk." Interview NMF Groningen - Drenthe</i></p>
Community	<p>Robin: "Was het dan ook zo dat de gemeente eerst puur een aanjagende rol had?"</p> <p>D11: "Ja, we hebben in het begin geprobeerd om mensen bij elkaar te krijgen door voorlichtingsbijeenkomsten te geven, je had toen nog de tijd van de eco-teams, dat betekende dat burens dan samen met elkaar iets gingen doen. Dat zou kunnen uitgroeien tot energiecoöperaties tegenwoordig maar dat is toen niet gebeurd. Dat was toen een langzame dood gestorven. En dan kun je wel proberen als gemeente om energiecoöperaties op te zetten maar ze moeten wel willen en de bereidwilligheid was er op dat moment nog niet rijp voor."</p> <p>Interview municipality of Winsum</p>
Environmental fairness	<p>"We willen participatie aan de voorkant, het liefst zelfs de vraag aan de voorkant en dan pas de realisatie. Op het moment dat er een project langskomt dat wij wel sympathiek vinden en met name op het moment toen wij in de zomer nog dachten dat dit beleid nog zou worden vastgesteld hadden wij zoiets van 'laten we eerst eens gaan praten met de lokale bevolking, misschien dat je er een lokale coöperatie achter krijgt. We geven de tip ook aan iedereen mee, zorg dat je participatie in ieder geval geborgd hebt. Op dat moment kunnen wij met droge ogen mee gaan werken.'"(maar ook categorie Participation)</p> <p>Interview municipality of Winsum</p>
Historical considerations	<p>"Historische landschappen. Er zijn hele duidelijke grenzen. Er zijn wierdegebied en rondom en op de wierden mag er niks en dat willen we ook zo aanhouden. Ook met lokale kleinschalige projectjes wordt gezegd dat het moet passen bij de aard en de grote van het dorp en dat de landschappelijke inpassing van projecten moet passen bij hoe andere dingen binnen een dorp al zijn ingepast. Als je bijvoorbeeld een hoge beukenheg al rondom een begraafplaats hebt dan is dat bijvoorbeeld dan is dat al een logische manier om dat ook rond een zonnepark te doen. We proberen dat op die manier een beetje door te rekken met het al gedaan wordt in dorpen"</p> <p>Interview municipality of Winsum</p>
Cultural landscape	<p>"Wat gemeentes eigenlijk gewend zijn is om eigenlijk alleen ruimtelijk te toetsen. Ze zijn niet gewend om te toetsen van 'hoe is de business case?', hoeveel ruimte is er voor bewoners? Wat je nu ziet is dat het takenpakket van iemand die werkt in ruimtelijk beleid nu wordt uitgebreid met 'he, ik moet participatie beoordelen'. Terwijl deze mensen niet per definitie onderlegd zijn in economische factoren en hoe je dat moet uitrekenen, die zijn juist heel goed hoe je dat ruimtelijk moet doen. Daar gaat het al mis."</p> <p>Interview NMF Groningen - Drenthe</p>
Trust	<p>"Als we het van bovenaf zouden opleggen dan zeker. Dat is alleen al een reden om te zeggen dat je het samen met de bevolking wil gaan doen. Met energie speelt er ook nog het beeld dat de provincie Groningen wordt gezien als het afvalgootje van het land. We ondervinden de lasten van de gaswinning en we willen inderdaad niet dat een duurzaamheidsopgave ook opnieuw in Groningen wordt neergezet. Ik denk dat de burger er zo tegenaan zouden kijken. Aan de andere kant heb je natuurlijk wel vanuit de drie noordelijke provincies organisaties zoals Energy Valley en dat soort dingen waarbij we ons aanbieden om juist wel heel veel duurzame</p>

	<p>energie op te gaan zetten. Dit is op bestuurlijk en politiek niveau. Wij hebben wel zoiets van wij willen de burgers wel echt meenemen en er moeten duidelijke afspraken worden gemaakt.” Interview municipality of Winsum</p>
Media	<p>“Sommige dingen wel. Zo hebben we een pilot windenergie aangevraagd bij de provincie, de provincie zegt dat je drie kleine windmolens op een bouwvak van een boerderij mag plaatsen en als je meer wilt of op een andere locatie moet je daar pilots voor laten aanvragen. Dat ging onder andere over vier windmolens bij een sportpark en de enige reden dat we dat hadden aangevraagd was om het zo open te houden dat we eventueel daar windmolens konden gaan plaatsen. De provincie reageerde positief op onze aanvraag en die had dat vervolgens doorgegeven aan de pers. Op dat moment waren we nog in onderhandeling met mensen die verantwoordelijk zijn voor dat sportpark en erop zouden kijken. Vervolgens lezen zij in de krant dat er windmolens komen en dan moeten wij weer gaan zeggen van ‘nee joh dat is nog niet serieus in onderhandelin en er gebeurt nog helemaal niks. We nemen jullie mee’. Dat soort dingen gebeuren af en toe.” Interview municipality of Winsum</p>
Public debate	<p>“Ik denk dat het komt omdat hun uitgangspunt volledig verschillend is. Ze willen de ruimtelijk waarden bewaren en dat gaat geheid botsen als je daar een zonnepark of windpark gaat neerzetten of je moet gewoon zeggen dat een zonnepark ook een bepaalde ruimtelijke waarde heeft en laten we die juist gaan waarderen. Je zou het op een andere manier kunnen gaan waarderen” Interview municipality of Winsum</p>
Environmental issues	<p>“Een ander punt is dat wij in elk geval dubbel gebruik van de grond willen. Dus in hoeverre je dat met bijvoorbeeld biodiversiteit zou kunnen regelen...ik weet dat er verschillende mooie projectes zijn van alles en nog wat gebeurd. Waar zelfs zonneparken multifunctioneel worden ingericht. Dat is natuurlijk fantastisch voor de omgeving want dan heb je eigenlijk een stukje natuur gereliseerd onder en rondom dat zonnepark. Dat zou heel mooi zijn. Het is niet een eerste overweging. Maar dubbelgebruik in brede zin absoluut wel.” Interview municipality of Winsum</p>
Municipalities	<p>“Nou in Eemshaven zijn er wat minder coöperaties, die beginnen nu net een beetje op te borrelen dus die hebben zich nog niet heel erg hoeven te buigen over de vraag van de kleinere zonneprojecten en de grotere projecten, ja daar liggen de aanvragen meestal in de richting van de Eemshaven en daar ligt volgens mij vanuit de provincie ook een opgave voor wind dus dat kan elkaar gaan bijten. In Eemshaven zijn ze wat terughoudend als het gaat om grootschalige zon, de Marne krijgen niet heel erg veel aanvragen, dat valt tot nu toe heel erg mee en in Winsum en Bedum hebben we allebei een aantal aanvragen liggen. Dat zijn de vier gemeenten die het Hogeland gaan vormen. In Bedum liggen er ook aanvragen voor grootschalige zonneparken waarvan ook lokale energiecoöperaties enthousiast over zijn. Dan heb je ook nog een beetje een tussengebied die we ook in die zonnevisie wel benoemd hebben van wat we eigenlijk willen is dat de lokale coöperaties zonneparken gaan realiseren naar schaalgroten van het verbruik van een dorp maar als een lokale coöperatie zegt van ‘wij hebben wel belang bij iets grootschaligers park en we dat helemaal zitten want we delen mee in de winst etc’ dan vinden wij als gemeente dat wij dat ook niet op slot moeten zetten. Dan wilten we samen met de betreffende coöperatie en ontwikkelaar dan gaan kijken wat realiseerbaar is. Maar ook dat kan nu dus niet omdat we geen visie hebben en de provincie daar in ieder geval momenteel nog niet</p>

	<p><i>aan gaat meewerken.”</i></p> <p>Interview municipality of Winsum</p>
Province	<p><i>“Ja precies, de ene mens is de andere niet. Maar tegelijkertijd denk ik wel, en dat is dan wel een beetje vanuit mezelf, het moet bij de ene gemeente niet heel los zijn en bij de andere gemeente heel strict. Dat lijkt mij ook niet helemaal goed. Daar zou de provincie dan waarschijnlijk wel om de hoek kijken.”</i></p> <p>Interview municipality of Westerwolde</p>
Opportunity	<p><i>“Sowieso misschien wel inderdaad als je toch de grond gaat openleggen voor het doorleggen van kabels. Het zou kunnen. Ik weet dat er projecten zijn waar het wel gecombineerd word. Ik heb daar verder binnen de gemeente niet zo heel veel te maken ook al lopen er wel projecten. Er zijn wel zogenoemde zonneboeren die maatschappelijke beloningen geven aan de bevolking en dat kunnen dan inderdaad dat soort dingen zijn.”</i></p> <p>Interview municipality of Winsum</p>
Barrier	<p><i>“Bij ons is op dit moment één initiatief, misschien nog een half/bijna initiatief maar wel minimaal. Ik hoop wel dat dit beter wordt maar daar heb je in die zin natuurlijk niet heel veel over te vertellen want als het een burgerinitiatief is dan is dat zo en dan kun je burgers natuurlijk moeilijk dwingen om een initiatief op te starten. Dat lijkt me niet zo wenselijk ook. Als je kijkt naar onze gemeente dan zijn er nog bijna geen initiatieven. Eentje in oprichting dus en de rest eigenlijk nog niet.”</i></p> <p>Interview municipality of Westerwolde</p>
Measured	<p><i>“Voor mij is het gewoon heel duidelijk dat wanneer je de lokale initiatieven erbij hebt betrokken of de burgerbevolking erbij betrokken hebt het denk ik best wel meevalt. Dan heb je ze gelijk al aan de voorkant meegenomen en komen ze niet voor verrassingen te staan.”</i></p> <p>Interview municipality of Winsum</p>

Appendix IV – Interview transcripts

- 1) Interview Gemeente Delfzijl
 - 2) Interview Powerfield
 - 3) Interview Solarfields
 - 4) Interview Provincie Groningen
 - 5) Interview Gemeente Westerwolde
 - 6) Interview Natuur en Milieufederatie Groningen
 - 7) Interview Gemeente Stadskanaal
 - 8) Interview Gemeente Loppersum
 - 9) Interview Gemeente Veendam – Pekela
 - 10) Interview Gemeente Winsum
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