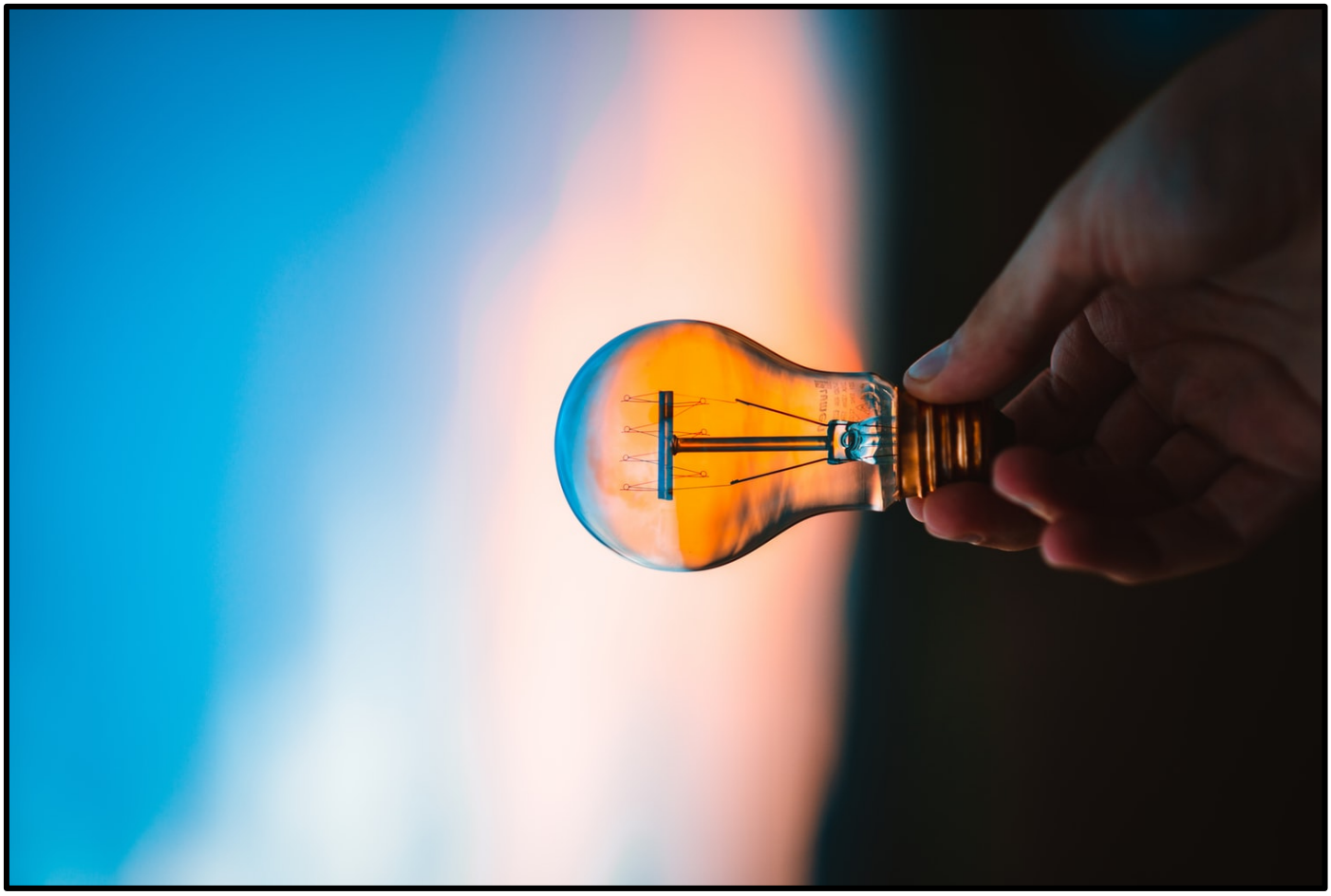


Energy Transition in Arnhem

Powered by homeowners?

Ankie A. C. Meijs

Master's thesis Human Geography

Urban & Cultural Geography

Radboud University Nijmegen

Nijmegen School of Management

July 2020

Radboud University Nijmegen

Energy Transition in Arnhem
Powered by Homeowners?

Author:	Ankie A.C. Meijs
Student number:	4455681
Master's program:	Human Geography
Specialization:	Urban & Cultural Geography
Institution:	Radboud University Nijmegen, Nijmegen School of Management
Supervisor and first reader:	Dr. R.G. van Melik
Second reader:	S. Haarbosch
Internship company:	Klimaatverbond Nederland
Date:	30 July 2020
Word count:	26.949 (excluding references and appendixes)

Foreword

Dear reader,

In front of you lies my master's thesis about the extent to which homeowners of Wijk van de Toekomst neighborhoods are willing to invest in sustainable home interventions in order to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy. The data that was collected was located in Arnhem, and the data was collected with the help of an internship at Klimaatverbond Nederland. This master's thesis is the conclusion of my master's in Human Geography, with a specialization in Urban & Cultural Geography at Radboud University. My time as a student at Radboud University comes to an end here. In the bachelor's program of Geography, Planning, and environment I was taught to have a critical worldview, of which I am very thankful.

Although writing a master's thesis is the final product of the master's thesis, I still faced some difficulties and I would like to thank some important people. First of all, I would like to thank my dad for supporting me in every possible way. I also would like to thank Fieke and Lotte for helping me out when I got stuck in writing my thesis, but also for bringing in some lightness by being the best of friends.

Second, I would like to thank my supervisors at Klimaatverbond Nederland for giving me excellent guidance in a topic that I was not so familiar with at the beginning of this research and for allowing me to get practical insights in the environmental policy world.

Third, I would like to thank my respondents for making time, sometimes even late in the evening, as without them I would not have been able to write my thesis.

And last of all, I would like to thank my thesis supervisor Rianne van Melik for her excellent guidance through the conducting period of my research.

I hope you enjoy reading my thesis.

Ankie Meijs

Nijmegen, July 2020

Executive summary

In July 2019, the government signed the Klimaatakkoord (Climate Agreement), which implies that almost all Dutch households need to be detached from the gas supply by 2050 for sustainable reasons. Housing corporations have the responsibility to detach their buildings from the gas supply, and homeowners have an individual responsibility to do this, but due to high maintenance and high costs, there is still a low percentage of homeowners who already did sustainable interventions in their home. The pace of the current energy transition is too slow, which is why there needs to be thought of ways for homeowners to become willing to invest in sustainable alternatives. According to Milieudefensie (2008), the high costs of doing sustainable home interventions lead to a desire to do collective investments with homeowners. In Arnhem, this has led to the rise of Wijk van de Toekomst-initiatives, where homeowners from neighborhoods can apply to become a Wijk van de Toekomst where they can receive expert guidance in becoming more sustainable. Arnhem encourages this bottom-up approach as the municipality is part of the Climate Active Neighborhoods subsidy program by the EU (Gemeente Arnhem, 2018). There is, however, a challenge faced in collective, bottom-up processes as there are multiple homeowners involved and this leads to the main question: "To what extent are homeowners of Wijk van de Toekomst neighborhoods willing to do sustainable investments to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy?".

This research is qualitative-oriented and has a case study design. First of all, empirical data was derived from six policy documents about community initiatives, complemented by eleven face-to-face, semi-structured interviews with homeowners in Wijk van de Toekomst neighborhoods in Arnhem. This provided a base for obtaining in-depth understanding of homeowners' willingness to do sustainable investments on the one hand, and policy vision on the other hand.

The empirical analysis has led to the conclusion of this research, where all sub-questions were answered and eventually the main research question was answered. This research has made clear that homeowners in Wijk van de Toekomst neighborhoods in Arnhem take the environment into account in their behavior when it comes to easily accessible adjustments, such as waste separation. When sustainable home adjustments become more intensive (i.e. home insulation), homeowners become less willing as there is a trade-off between sustainability and comfort that is focused on three aspects; aesthetic reasons, emotional reasons, and efficiency.

The role of NIMBY is prevalent here, as the individual benefit outweighs the collective benefit, such as the environment. Furthermore, homeowners do not have a feeling of urgency to do sustainable home investments, and according to them the municipality should persuade them more. The municipality, on the other hand, desires homeowner initiative and does not want to distort their initiated bottom-up process and states that a feeling of urgency could be created by a 'neighborhood trigger event', which is a radical environmental issue that leads to action with homeowners. The problem with this is that it is not controllable when these 'neighborhood trigger events' happen (i.e. downpours).

The lack of a feeling of urgency causes a laid-back attitude when it comes to possible co-operation with neighbors in a neighborhood initiative, such as Wijk van de Toekomst. Another important condition for successful collaboration in a neighborhood is the variable of 'trust'. Homeowners have a high level of trust in their neighbors, but this level of trust does not go deep enough to do collective sustainable investments with neighbors yet. Moreover, homeowners' personal ideas of the 'ideal' neighborhood collaborative initiative differs.

When placed into context of the Dutch energy transition policy-making, there is a mismatch between homeowners' desire for more government persuasion, but policy stakeholders think that bottom-up approach, where homeowners initiate the energy transition, is the most successful. This mismatch can form the base of a discussion about what approach is best fitting for an efficient facilitation of the energy transition in The Netherlands, as all actors in this case have different desires.

Table of Contents

1. Introduction

In July 2019, the Dutch Government signed the Klimaatakkoord (Climate Agreement), which contains the plans of the government to detach all Dutch households from gas connections and switch to alternative heat sources by 2050 to reduce 95 percent of national carbon emission compared to 1990 (Van den Berg, 2019). This means that from now until 2050 it is necessary to detach six million private homes and one million other buildings from the gas network, of which 1.5 million homes need to be detached by 2030.

There is criticism on these governmental plans, stating that these are fairly unfeasible: "When we keep developing at this pace, it will take another 280 years until The Netherlands is completely gas-free*"* (translation of Van den Berg, 2019). One of the measurements that will be taken to stimulate people to use less gas or even fully detach their homes from it is to raise the current gas prices and make more use of sustainable sources such as wind and solar energy. However, homeowners meet obstacles in planning to make their home more sustainable: the costs for, for example, installing a heat pump are relatively high, about 35,000 euro per household (Van den Berg, 2019), but there are more alternatives for detaching from the gas supply in Dutch homes, all having in common that these require relatively intensive home adjustments. Moreover, contrary to housing corporations that are responsible for making their buildings more sustainable on a larger scale, the responsibility for homeowners lies with the individual as they are private homeowners.

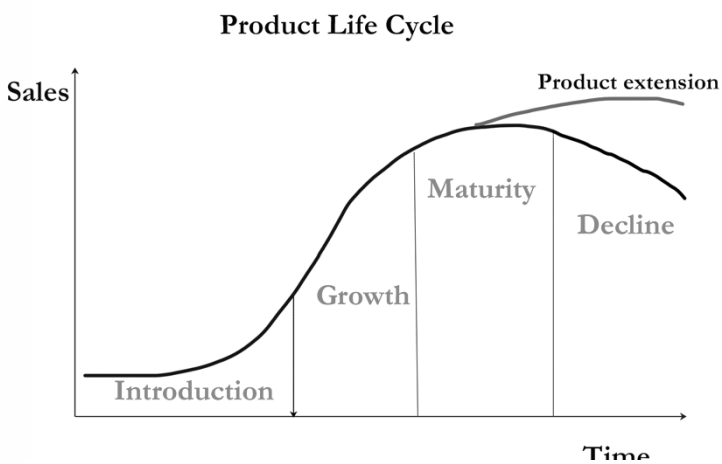


Figure 1.1: Product Life Cycle by Levitt (1965)

In the present day, some homeowners pioneered creating more sustainability in their homes, but this is still a small group according to Van den Berg (2019). One of the reasons is that the technology and knowledge of sustainable alternatives are new and that raises questions for people. This is a phenomenon that often occurs with newly developed technologies, as made clear in the Product Life Cycle curve by Levitt (1965) (Figure 1.1). The model explains that in the introductory phase of a product, for example, the heat pump, sales do not rise, but sales will grow as time passes, followed by maturity where sales are stabilized and the product is

'embedded' in society. After this phase, there is either a decline of sales as, for example, a result of innovative new products entering the market or there will be a product extension that leads to a growth of sales., Heat pump installation is an example of an individual approach to sustainable housing but it is not the only and ultimate alternative to gas-free housing as there are more alternatives.

1.1 Private homeowners

The time pressure and homeowners' skepticism about new alternatives leads to the fact that the process of Dutch energy transition does not take place at a high speed. As the plans in the Climate Agreement strive for gas-free homes by 2050 it is useful to look at homeowners' willingness of doing sustainable home interventions and how they eventually could be shifted towards investing in a more sustainable home. Therefore, this research aims to get insight into the extent to what homeowners are willing to do sustainable home investments to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy. Community initiatives and participation are key in the process of the energy transition, according to HIER.nu (2019), a Dutch non-profit climate organization. However, there is some resistance among Dutch citizen as HIER.nu's (2019) recent population poll made clear that 48% agrees to the Dutch government plans to cut off gas, compared to 57% in the year before. One of the questions in the poll was related to the desired involvement in the decision-making process for an alternative to gas, and only 28% of the respondents would like to be involved.

There is not one single approach that is fitting for all neighborhoods because of the respective dynamics, which complicates the matter. There is also a risk of the Matthew effect in energy transition: Households that can invest at this moment will benefit most, and households that cannot invest, will stay behind (Hulshof & Straver, 2018), which could cause persisting or growing social inequalities. This is why, according to Milieudefensie (Environmental Defense) collective investments are preferable, especially in middle- and lower-income neighborhoods. In this way, costs can be shared but it requires the active involvement of the community and this is not desired by the majority of homeowners (yet) (Milieudefensie, 2018; HIER.nu, 2019).

1.2 Wijk van de Toekomst

One of the programs that focus on more community involvement is Wijk van de Toekomst (Neighborhood of the Future) in Gelderland, which has been initiated by energy network server Alliander, the environmental and nature organization of Gelderland (GNMF), and

Klimaatverbond (Climate Alliance) Netherlands (Wijk van de Toekomst, n.d.). This program supports new neighborhood initiatives and guides participants in the energy transition process. Homeowners (or a group of homeowners) in a neighborhood can apply to become Wijk van de Toekomst, receiving guidance from (the network of) the previously mentioned experts to ensure that a neighborhood initiative is more likely to succeed. The municipality of Arnhem is involved in the network of Wijk van de Toekomst and attempts to implement energy transition with partnership experience of the Climate Active Neighborhoods (CAN) subsidy program of the European Union (Gemeente Arnhem, 2018). On its website, the municipality of Arnhem claims to look at what is necessary for realizing community initiatives and what role the municipality can have, emphasizing the acknowledgment of the different dynamics of neighborhoods in Arnhem. Here, Wijk van de Toekomst provides an accompanying role for neighborhood initiatives rather than a top-down approach and therefore stimulates bottom-up processes, supported by professional expertise. There is a challenge faced in collective, bottom-up processes as there are multiple homeowners involved with different norms and values, beliefs, and knowledge about sustainable homes but on the other hand, collective initiatives can be beneficial in reducing costs and labor, making it a more efficient way for sustainable transition in neighborhoods.

1.3 Research objective and research question

The implementation of the energy transition as included in the Klimaatakkoord (2019) related to sustainable homeownership is one of the driving forces for the research objective. As illustrated in the introduction of this proposal, there is growing awareness for sustainable homeownership in Wijk van de Toekomst neighborhoods in Arnhem and private homeowners in these neighborhoods face the challenge to put the effort in a more sustainable home. The objective of this research is to get insight into what extent homeowners of Wijk van de Toekomst neighborhoods are willing to invest in sustainable home interventions in order to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy. Therefore, the main research question that arises regarding this objective is as follows:

> **To what extent are homeowners of Wijk van de Toekomst neighborhoods in Arnhem willing to do sustainable home investments to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy?**

Sub questions are:

1. How is homeowners' willingness to do sustainable home interventions generated?
2. In what way are homeowners willing to co-operate with neighbors to realize a more sustainable neighborhood in the future?
3. How is homeowners' willingness to do sustainable home investments compared to the dominant policy vision regarding energy transition in Wijk van de Toekomst neighborhoods?

The answers to these questions are found through a selection of relevant theories, together with data collection to provide insight into the matter.

1.4 Relevance

1.4.1 Societal relevance

The societal relevance of this topic applies to the societal transition that occurs in the Netherlands. The plans of the government are, as of this moment, determinative and this means that Dutch homes eventually be cut off the gas supply by 2050. As stated earlier by HIER.nu (2019), consumer trust in current sustainable alternatives is decreasing whereas environmental urgency is increasing. For higher-income groups, the transition of energy becomes more accessible as there are options for individual home sustaining (i.e. heat pumps) as the relatively high costs are bearable. For middle- and lower-income groups these individual home sustaining alternatives are less accessible, which is why there often is talked about collective investment alternatives for the neighborhood. To avoid the Matthew effect as introduced at the beginning of the introduction, it is necessary to get insight into the extent to which homeowners are willing to do sustainable interventions and look at the possibility of doing collective investments with neighbors. In Van Zanten (2018), the importance of collaboration within neighborhood communities is stressed by stating that energy transition needs to move past the early adopters of Levitt (1965) and that the idea of making private homes more sustainable should grow.

Klimaatverbond Nederland (Climate Alliance Netherlands) is an association of members from municipalities, provinces, and water boards that embeds, exposes, and executes (local) climate policy (Klimaatverbond Nederland, 2019). Klimaatverbond Nederland is part of the Gelders Energieakkoord (Gelderland's Energy Agreement), which is committed to climate neutrality in Gelderland by 2050 (Gelders Energieakkoord, n.d.). Wijk van de Toekomst is one of the programs of Gelders Energieakkoord. Klimaatverbond Nederland is involved in the Wijk van de Toekomst neighborhoods as it can provide expertise and a network of stakeholders. As illustrated in the previous paragraph of this chapter, this research aims to get insight into what extent homeowners of Wijk van de Toekomst neighborhoods are willing to invest in sustainable home interventions to realize a more sustainable neighborhood that conforms with the Dutch energy transition policy. Klimaatverbond Nederland has a network of institutional actors and as Wijk van de Toekomst is focused on homeowners as well, this research can provide with requirements of homeowners to invest in sustainable alternatives. In this way, the requirements can be negotiated with other involved actors to make the number of sustainable private-owned homes grow and this can benefit in the process of the Dutch transition towards sustainable energy. To further embed, expose, and execute local climate policy in Arnhem,

recommendations about homeowners' willingness to invest can be done. Eventually, mutual understanding between actors in the energy transition process forms a basis for successful co-operation and this is also part of the vision of the Province of Gelderland (2018).

In the introduction section of this chapter, it was stated that the municipality of Arnhem is exploring its role in the realization of community initiatives. This research can help Arnhem in this exploration by exposing the willingness of homeowners in Wijk van de Toekomst neighborhoods and perception of the role of the municipality by homeowners.

1.4.2 Scientific relevance

Several studies claim that parts of energy transition take place at neighborhood level. Steg et al. (2015) stated in their study to human dimensions of sustainable energy transitions that it is unclear to what extent and under which conditions such bottom-up initiatives can be effective, and more effective than top-down approaches. In 2018, De Boer et al. concluded that linking the systems of energy and governance to the community is often characterized as strong and that initiatives create new cross-scale interaction paths in the three-layered model of Geels (2004, see 2.1 in theoretical framework). According to Oteman et al. (2014), community projects typically rely on voluntary contributions, intrinsic motivations, and collective action capacities of their members. In their research, they illustrate that there remains a need for a comprehensive overview of community initiatives, as there is a lack of reliable data on the activities of community initiatives that are important in the provision of renewable energy.

Consecutively, Hoppe et al. (2015) did a comparative case study between Lochem and Saerbeck to expose differences and similarities of community initiatives in both cases. One of their statements about community alternatives was that "Without close interaction, and a sound degree of mutual trust between local government […] and representatives of the local communities this would not have been possible." (Hoppe et al., 2015, p. 25).

This research will provide a comprehensive overview of a community initiative as described by Oteman et al. (2014), namely the Wijk van de Toekomst initiatives in Arnhem, and build further upon the 'mutual trust' which is described by Hoppe et al. (2015) by analyzing the case of Wijk van de Toekomst-neighborhood communities in Arnhem.

One of the findings in the literature about mutual trust is that it is an important factor in the realization of community initiatives, which will be further explained in the theoretical framework of this proposal. Doci & Vasileiadou (2015) found out that trust is one condition for realizing local energy projects, but that these are also driven by individual intrinsic motivation.

The neighborhoods in this study are Wijk van de Toekomst neighborhoods, which are focused on facilitating sustainable transition on neighborhood level. These neighborhood initiatives aim to become sustainable on a neighborhood scale, but at the same time, it is claimed in literature that participation in a neighborhood initiative is driven by intrinsic motivation and this is where a gap occurs. The realization of a more sustainable neighborhood happens when all homeowners join in, even the homeowners without intrinsic motivation. This research will

expose the extent to which homeowners are willing to invest, including homeowners who are not participating in Wijk van de Toekomst initiative.

Because of the actuality of this research, this research can also contribute to further development of theory in the energy transition field of study. One of the findings by Van der Heijden (2015) is that this new transition asks for a new role of governments and that alternative governance strategies need to be thought out. More knowledge about an efficient energy transition and the role of private homeowners is relevant because the topic will continue to prevail in the future.

1.5 Thesis outline

The first chapter illustrated the inducement of this study, followed by a deeper understanding of the study objectives and research questions that arose from there. The second chapter discusses existing theory concerning the main- and sub-questions and this forms a base for the conceptual framework that will be presented at the end of the chapter. Chapter three describes the methods that were necessary for data collection and analysis to answer the main- and sub-questions adequately. Chapter four introduces the empirical part of this study, where documents about energy transition policy-making in Arnhem are analyzed. The fifth chapter analyses the homeowners' willingness. In the sixth chapter, conclusions based on the results will be shown. The seventh and final chapter will finish with a reflection and recommendations for further research.

2 Theoretical debate on energy transition

This chapter discusses theoretical debates on energy transition and the role of the community in it. First, the topic of sustainable transition will be introduced by the framework of Geels (2004). To accent the role of the community and social relations, thereafter there will be looked at this model from a civil society perspective, as defined by Smith et al. (2012). The third, fourth, and fifth paragraphs zoom in to neighborhood level and these will discuss theory on intrinsic norms and values within the community and how they affect one's willingness to invest in sustainable home alternatives or to participate in collective investments. The sixth paragraph presents the conceptual framework based on the research questions and existing theory.

2.1 The context of the energy transition

The main research question is originated from the energy transition issue in today's society. The belief to remove fossil fuels as an energy source and to replace it with renewable energy sources is growing, as the impacts of high carbon emissions on the environment become more visible. In practice, this requires a completely different system of energy distribution. The shift from collectively using one dominating energy supply to a different energy supply requires effort on several aspects. When social change and technological impact play a role, the concept of energy transition becomes more complex and for a clearer understanding, this has been narrowed down by Geels (2004) in the concept of Multi-Level Perspective (MLP). Geels aims to benefit the understanding of socio-technical transitions and how innovations emerge from there. This theory is mainly focused on topics considering sustainability, including (sustainable) energy transition.

MLP approaches socio-technical transitions on three interdependent system levels through which transition occurs: the landscape (1), the regime (2), and the niche (3) levels.

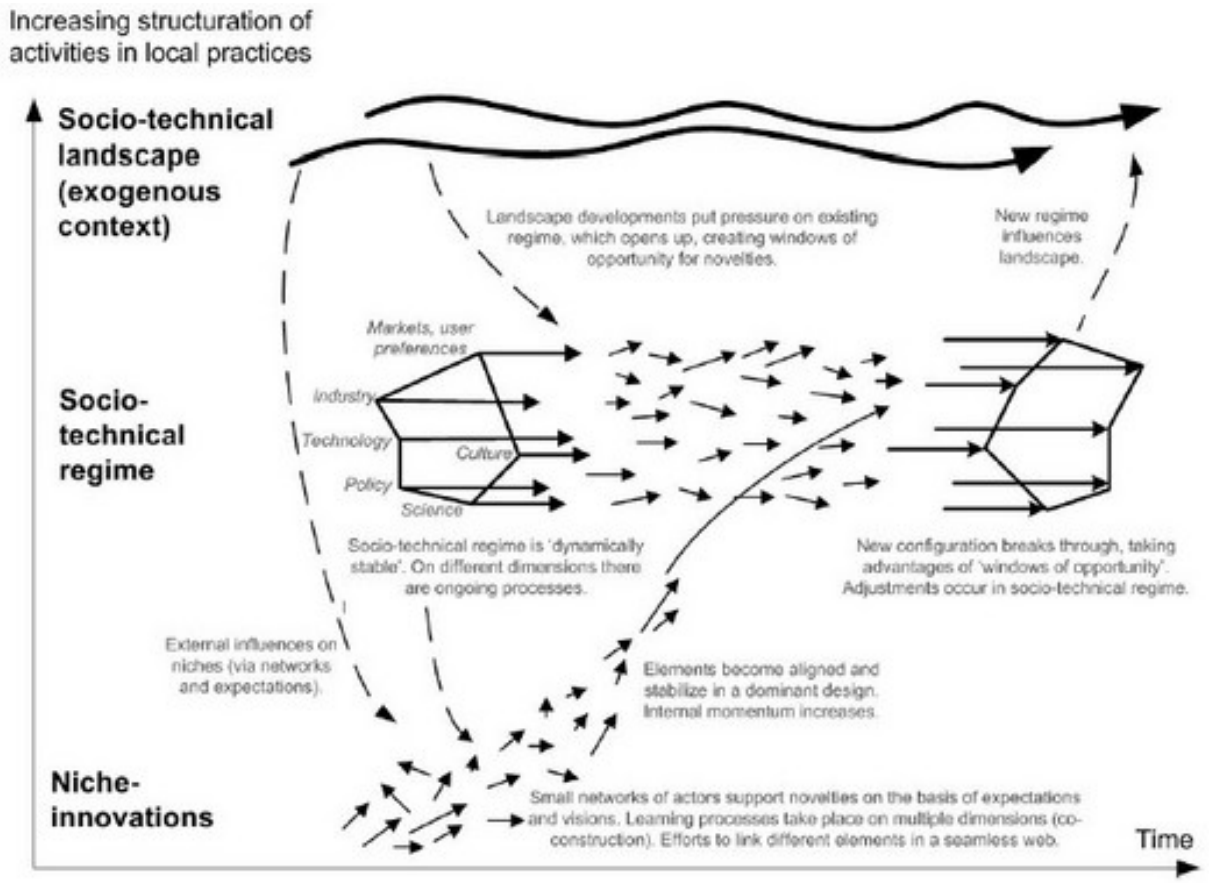


Figure 2.1: Multi-Level Perspective (Geels, 2004, p. 915).

Geels' (2004) landscape level (1) can be defined as the macro-level in MLP which represents the external processes and factors that impact the regime and is outside of the control of the meso-level (Dóci et al., 2015). Within this level, distinctions between slow changes (i.e. climate change) and radical changes (i.e. hazards) can be made. The model illustrates that the pace of transition from an old regime to a new regime is impacted by external factors.

According to Geels (2004), the socio-technical regime (2) in the meso-level is a semi-coherent set of rules put into practice by different social groups and located between the landscape and niche levels (Dóci et al., 2015, p. 89). It is the link between societal consumption and the provider of a certain societal function, such as energy services. However, Dóci et al. mention that regime is characterized by path dependence and lock-in, which reinforce the dominance of existing rules and practices that stabilize the regime.

The micro-level is presented as the niche level (3) in the MLP. The niches consist of young and innovative technologies. A large number of innovations occur in this level of the MLP, where niche markets arise and can grow and change the regime. Therefore, strong niches can act

between the meso and micro level, enabling to break through the regime (Grin et al., 2010). Community initiatives are an example of niche-innovation, however, there are different interests at stake when compared to commercial niche-innovations (Seyfang & Haxeltine, 2012). The role of the community in the energy transition will be further discussed in paragraph 2.2 of this chapter.

2.1.1 Energy transition and MLP

In recent studies, it has shown that MLP has gained dominance in approaching the concept of the energy transition. Osunmuyiwa et al. (2016, p. 146) claim in their study approaching energy transition in third world countries that "[…] strengths of this theory lie in the combination of approaching the technological scenario of the energy transition, alongside with the societal scenario of energy transition.", as both scenarios cannot be ignored according to Osunmuyiwa et al. (2016).

The complexity of trying to bring all socio-technical aspects on different levels into one single model has led to different adaptations of the MLP over time. Rotmans et al. (2007, p. 159) questioned the three levels in MLP by giving an example about the niche-regime level: "A key pattern is the following: niches emerge and cluster and by empowering a niche cluster a niche regime unfolds; the niche regime becomes more powerful whereas the regime is weakening and finally the niche-regime takes over the incumbent regime that is transformed.". They introduce the work of De Haan (in Rotmans et al., 2007, p. 160), where patterns of the different levels are described as possible outcomes of the model. These patterns can have three different orientations: micro-meso, meso-meso, and macro-meso:

> " […] (i) micro-meso pattern, where niches emerge at the micro-level, cluster and form a niche-regime that attacks the incumbent regime which ultimately is transformed into a new regime; (ii) meso-meso pattern, where niches emerge at the meso-level and form a niche-regime within the incumbent regime that gradually incorporates the niche-regime and evolves into a new regime; (iii) macro- meso pattern, where a massive, fast change in the landscape leads to a striking pressure on the regime that results in a regime-change." (De Haan, as cited in Rotmans et al., 2007, p.160).

The patterns that are discussed here can give insight into the effect of policy-making or government strategies on energy transition processes.

One of the main critiques on MLP, for example, as proposed by Smith et al. (2012) is that this approach might be too functionalist and rationalist and therefore does not conceptualize actors and agency. Furthermore, El Bilali (2019) states that there should be more attention to the interaction between cross-system boundaries and that MLP does not address social relations, participation, and power enough. When there are different power relations on a spatial issue, there is a chance that parties will operate side by side instead of with each other, even if that is not the intention of all parties. Such side-by-side operations possibly lead to a situation where decision-making lies with institutions of the regime, such as a municipality that decides for a specific area (for example, closing off the gas pipeline), without knowing about the interests of the citizens. There is a possibility that community initiatives do not break through the regime level and will remain on a niche level, without possibly changing the landscape level.

2.2 The role of Civil Society

One of the main critiques on MLP is that it does not address social relations, participation, and power enough. In Hargreaves et al. (2011, p. 4), civil society is understood as "an arena that encompasses the collective activities by which associations of people develop and assert shared values, identities and interests, without direct resource to market transactions or the authority of the state in the first instance". This approach pays more attention to the role of the community itself in society while taking social relations into account, instead of the rationalist and functionalist approach of the MLP. Moreover, Movisie (the Dutch knowledge institute for social issues) affirmed that the civil society approach can be desirable and beneficial for municipalities in The Netherlands as it can lead to more social cohesion, safety, and participation among residents (Movisie, 2008). To overcome the functionalist and rational approach to the role of the community in energy transition it is relevant to approach the concept of sustainable transition from a civil society perspective.

There is a difference between commercial innovations and community innovations, as the latter operates in civil society arenas as these often represent neighborhood groups or other social enterprises (Hielscher et al., in Cohen et al., 2013). To visualize the role of the community in sustainable transition, Smith (2012) derived the following model from the MLP model to approach the sustainable transition from a civil society perspective (figure 2.2).

Smith made use of the three-layered model of MLP. The micro-level is about innovating sustainable alternatives on the niche level; the meso-level is about factors that challenge the regime in the model; the macro-level concerns longitudinal efforts to change societal values.

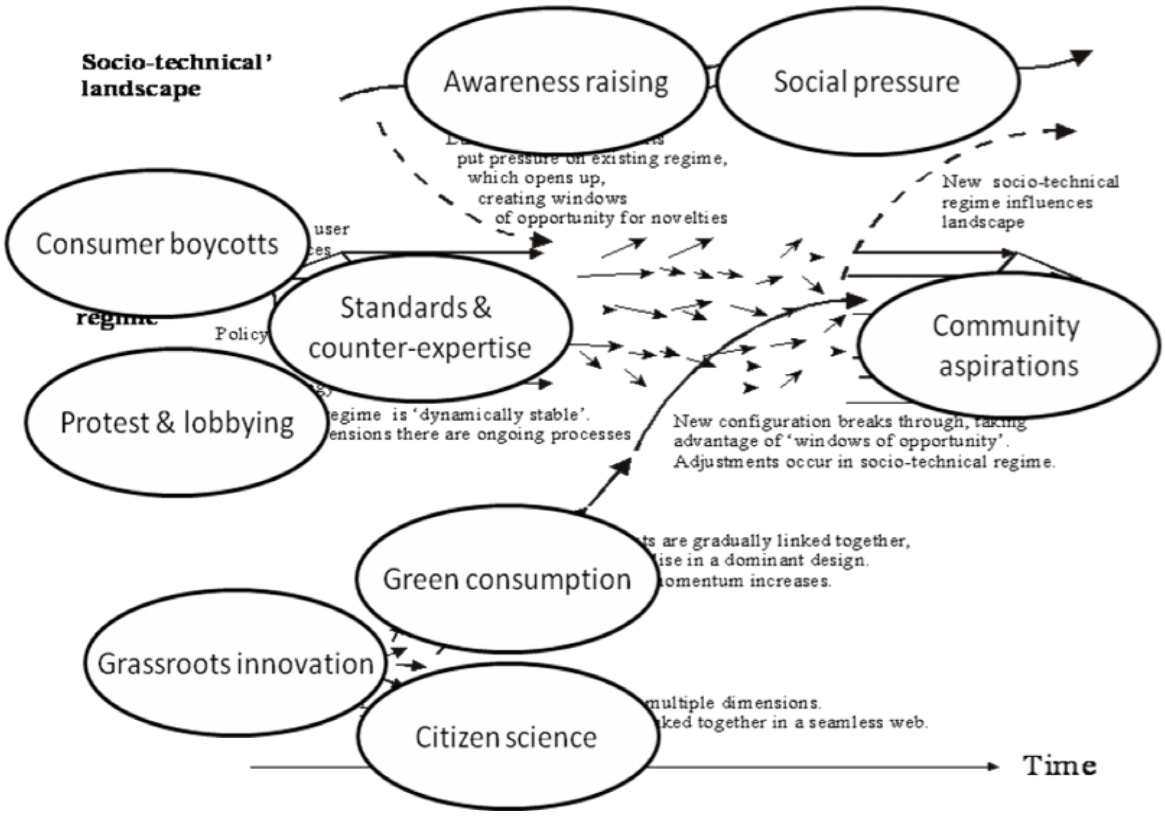


Figure 2.2: Civil Society & Multi-Level Perspective (Smith, 2012, p. 11)

Civil Society Theory (CST) as defined by Smith (2012) can be applied to sustainable energy transition. Civil society here includes heterogeneous, non-market activity operating outside the state, including social movements, NGOs, and civil rights organizations. Smith states that in the energy transition sector, civil society in the niche or micro-level continues to be an alternative or complementary means for innovating goods and services in the social economy, and therefore have the power to destabilize the meso-level, or the regimes, as well. Social networks that encourage small-scale, community-owned renewable electricity systems can be considered a niche alternative in civil society (Smith, 2012). However, Smith argues, civil society is never the ultimate factor in socio-technical systems and transitions, and that it is useful to see that it is not one singular presence in the model.

Smith's view on this model is that there are opportunities for the community to break through the regime and eventually change the landscape, and as social movements, NGOs, and civil rights organizations are included, their position should become more powerful.

There are some challenges to the civil society approach, which are indicated by Van Assche et al. (2013). As illustrated through the model of Smith, changes in the landscape are most successful when there is a high level of institutional transparency. Van Assche et al. (2013, p. 74) argue that in civil society regimes absolute transparency is impossible and give an example of the opacity of civil society regimes:

> "The tiny desk of government has only a few people at a time gathered around it, and sits in a tiny room with closed doors. Lobby discussions replace parliamentary debate or other forms of public debate in other governance sites. It is impossible to know who exactly talked to officials, who was left out, and which criteria of deliberation were used to determine influence on rule- making." (Van Assche et al., 2013, p. 74).

There are risks of undermining of the distribution of power or other forms of representation, as the power distribution and benefits are in that case likely to shift, without awareness of the community. This implies that the risk that landscape developments are made on behalf of unequal power constructions, without involvement and awareness of homeowners, has to be taken in account by all actors.

Another challenge that is illustrated by Portney (2003, p. 126) is that the communitarian character of sustainable cities in civil society regime specifically is mainly focused on political processes. Obstacles are predominantly imposed by political and civic leaders, originating from the tension between pursuing traditional economic development and following a different, more environmentally friendly, path. Portney argues that when the dominant social and political values turn out to be far more resistant to change than anticipated, and when sustainable projects have little success on the public agenda, interest sometimes confines. There are three 'deadly sins' that possibly hinder the progress in sustainability, namely 'tragedy of the commons', 'not in my backyard (NIMBY)', and the expansion of cities' ecological footprints that result from 'trans-boundary shifting' of environmental impacts (Portney, 2003, p. 130). Portney argues that these phenomena are driven by individualism, where the self-interest of individuals is the goal instead of the collective benefit of the community. There is a mismatch between what is beneficial for society and what is beneficial for the individual. Concluding, it is stated that in

civil society regimes the ‘common good’ for the community is not a sum of maximum benefit per individual only and that there will always be personal interests at stake in sustainable communitarian processes.

2.3 Everyday life and energy transition

One of the main driving forces for energy transition in the Netherlands is governmental policy. In the light of Schatzki et al. (2001), Social Practice Theory (SPT) can be used to study energy transition not just as a consequence of social systems but as an ingredient to social practice (Shove & Walker, 2013).

In SPT, practices are not solely social phenomena according to Schatzki, but are also intertwined with material, 'man-made', things (Schatzki, 2010). There is value in making a distinction between material arrangements and social practices, as this contributes to understanding different temporalities. When applying this to energy transition, it shows that various practices of everyday life, such as cooking, doing laundry or driving a vehicle, require a certain source of energy and therefore depend on the existence and availability of these sources (Shove & Walker, 2013). This makes energy demand part of the dynamics of social practice and should therefore not be seen as a separate component. Miller et al. (2013, p. 143) take this one step further by mentioning that energy is essential to how human life is exposed in the present day and therefore discuss the concept of 'energy justice', acknowledging a fundamental dimension that is often overlooked: "Energy justice addresses the serious and conflict-laden normative and ethical issues raised by energy production and consumption, including equitable access to energy, the fair distribution of costs and benefits, and the right to participate in choosing whether and how energy systems will change. Energy justice thus involves "choices about what kinds of energy systems to build for the future, where to build them, and how to distribute their benefits, costs, and risks." (Miller et al., 2013, p. 143). Here they argue that energy transitions are about the power of regulatory institutions, market structures and wealth distribution, having an impact on how all people work and live.

2.3.1 Energy practices

The concept of energy transition in the community together with its activities can be approached from a social practice perspective. Verkade & Höffken (2019) used this approach to assess different forms of civic energy communities and the energy system in The Netherlands itself. From the perspective of social practice theory, they question the rationality of how people relate to energy, and reframe energy as an invisible, but often necessary by-product of meaningful practices that were performed in our daily life. Here, 'energy practices' are a consists of various practices through which energy is: "[…] highlighted, made visible, problematized, managed, stored or discussed, which in turn produces insights that can be used to shape domestic energy

conditions." (Verkade & Höffken, 2019, p. 31). In terms of civic energy communities, 'collective energy practices' are not a sum of individual energy practices, but are there to benefit the community or to represent the community in local energy transition.

Verkade & Höffken (2019) distinguish three types of collective energy practices in the community: promoting individual energy practices (1), developing collective energy generation (2), and developing collective energy management (3).

The first type, promoting individual energy practices, is, for example, visible as widespread organizations of community schemes for collectively buying solar panels. Participants in such schemes have individual benefit and obtain knowledge about energy by monitoring usage, thinking about ways to save up energy. This form of energy monitoring is an energy practice that is promoted within the community.

The second type, developing collective energy generation, takes this one step further by collectively generate energy instead of collective buying alone. An example of this are collectively-owned solar parks in The Netherlands. This type of energy practice consists of different practices to set it up, such as generating knowledge about technical aspects, seeking loans, raising money, etc. Therefore, it is a more complex set of practices and can be more challenging to realize. Key elements for success here are equality and a democratic process, according to Verkade & Höffken (2019).

The third type, developing collective energy management, is formed by collective energy management practices that determine how the energy is utilized within the community. An example of this is community energy storage. Energy management practices are broader and therefore more complex than the second type, with collective grid management as the ultimate goal.

In their approach Verkade & Höffken (2019) illustrate that sustainable investments from the community can have different dimensions and these dimensions are linked to energy practices. In the case of this research Wijk van de Toekomst is focused on the possibility of the second and third type of energy, where co-operation is at the base, trying to move past the first type of Verkade & Höffken where individual energy practices are at the base.

2.4 Opportunities and barriers

The previous paragraphs explained the role of the community in sustainable transition, together with its strengths and weaknesses and how the community is placed in sustainable development of society. The following paragraphs look within the community and reflect upon different theories about conditions for co-operation between neighbors.

In general terms, a strong community niche has the opportunity to change the landscape, but there are challenges as individualism plays a dominant role there. When focusing on the role of the community in sustainable energy transition specifically there are some opportunities and barriers. Walker (2008) has demarcated an overview of these driving forces and barriers that are involved in community-based initiatives in energy transition. These incentives and barriers contribute to determination of success of new energy co-operatives (as proposed in the second and third type of Verkade & Höffken) and vary with the context and form of each project. Incentives for new energy co-operatives include (Walker, 2008, p. 2):

- Local income and regeneration.
  Return of investment can generate local income, which benefits local inhabitants of neighborhoods.
- Local approval and planning permission.
  According to Walker, community-based energy initiatives will be more locally acceptable and face fewer problems obtaining planning permissions.
- Local control.
  Local control contributes to the guarantee that local interests can be served, if necessary.
- Lower energy costs and reliable supply.
  This especially applies to renewable energy, where costs can be reduced and there will be strived to a constant energy supply.
- Ethical and environmental commitment.
  Ethical and environmental issues can be a driving force for action in neighborhoods
- Load management.
  In the case of large-scale renewables, the load on current energy systems can be higher and smaller-sized, local initiatives can reduce this load.

In Seyfang et al. (2013) there are three characteristics that support successful niche-building. First of all, realistic and detailed expectations of niche actors are key, as these realize a clear vision. Second, the level of broadness and deepness of perspectives and participation from members in the niche collective benefit a stronger social network. Third, the aspect of collective learning is relevant as the learning process should be focused on both primary data and facts and secondary data, such as experiences, cognitive frames, or different norms and values towards the niche.

In contrast to these incentives, Walker (2008) appointed barriers that communities face in the process. Smaller-scaled projects face complexities such as the establishment of economic and technical prospects, for which supporting expert advice is desired, predominantly from external professional expertise. In addition to this, the variable of 'trust' (see paragraph 2.5) is valuable within local community-based initiatives to make the project successful; it helps citizens to feel positive about their transitions and will benefit the development of the project.

In Seyfang et al. (2013), challenges regarding community initiatives are discussed. One of the reasons why community initiatives do not grow is because of a lack of support. Community-led innovations in the niche level had trouble with funding in the long term, where technological innovations have more stable support and opportunity to grow, eventually having the possibility to have a regime breakthrough. Furthermore, Seyfang et al. (2013) argue that community values differ from commercial values, giving the possibility of a clash between these two. For this reason, intermediary parties are desirable in overcoming this issue.

2.5 Trust

The prevalence of trust in co-operation within (neighborhood) communities was placed into analysis by Stern & Coleman (2015). In social capacities, the component of 'trust' is described as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party." (Stern & Coleman, 2015, p. 712). Here, 'trust' can be put into different dimensions: dispositional, affinitive, rational, and procedural, which are elaborated as follows:

- Dispositional trust is about one's natural inclination to trust an entity, which means that some people trust other entities earlier than other people.
- Affinitive trust is based upon emotional judgment of shared values, connectedness, and benevolence, meaning that trust is easier established with someone that can be related to, who has charisma, and who values similar things in life.
- Rational trust draws attention to past evidence, where it is attempted to determine future outcomes based upon a calculation on earlier events and experiences.
- Procedural trust is the belief that processes, procedures, and governing rules will ensure satisfactory outcomes, despite the integrity or trustworthiness of individual actors.

In order to collaborate successfully, trust provides a large fundament in social development processes, which has been made visible in a framework that illustrates its multidimensionality:

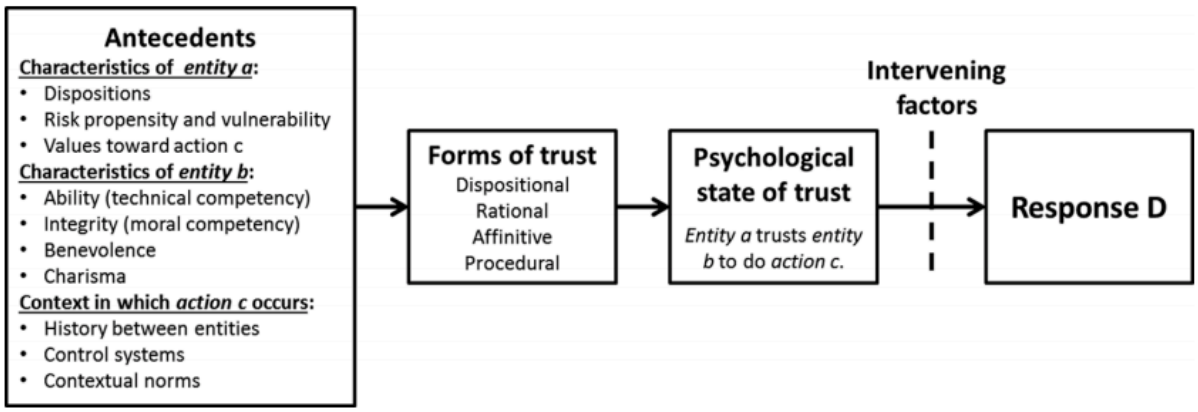


Figure 2.3: Multidimensionality of Trust by Stern & Coleman (2015, p. 712).

In this model, entity a can be seen as one individual or a group who trusts, 'the trustor', and entity b can be seen as the one to be trusted, 'the trustee'. The relation between these two components interacts with action c, the potential resulted action. The framework illustrates the antecedents for creating the four forms of trust that have been explained earlier. Stern & Coleman (2015) conclude their typology of trust by noting an important point of thought; though trust needs time to build, it can take only moments for it to be destroyed. Moreover, Ostrom (2000) concluded that action is realized when individuals (i.e. neighborhood inhabitants) experience real and perceived trust among their group members, meaning that social capital plays a significant role.

2.5.1 Trust and social cohesion

The influence of trust on the possible response has been made clear through figure 2.3, but the role of trust in neighborhood initiatives and collaboration is yet to be explained. Dekker (2007) studied the role of trust in neighborhood attachment, which leads to more neighborhood participation. The framework of Ostrom (2000) connects civic engagement to collective action, but also takes it the other way around; when inhabitants are actively participating within the neighborhood, more opportunity for building trust relationships arises. Social capital and trust are interconnected and therefore the prevalence of social cohesion in neighborhoods cannot stay unaddressed.

When zooming in to neighborhood level, a socially cohesive neighborhood is realized when shared norms and values of inhabitants are incorporated. The shared norms and values in the neighborhood will lead to a feeling of attachment to a place, alongside with identification to a place. According to Kearns & Forrest (2001), community initiatives will arise more and eventually be more productive in neighborhoods with a high level of social cohesion. Also, Manzo & Perkins (2006, p. 339) mention 'sense of community', where feelings of mutual trust, social connections, shared concerns, and community values—along with place attachments are at the base of bonding within a community. There is stated that that sense of community can be seen as trust in one's neighbors, which helps motivate both informal neighboring activity and participation in formally organized neighborhood groups. In this way, it can be concluded that 'trust' is one of the key factors in motivation for and this can be reached by having shared feelings of mutual trust, social connections, shared concerns, and community values. But in terms of community initiatives regarding energy transition, mutual trust in the neighborhood is not the only necessary factor in achieving collective motivation but trust in policy intervention

is relevant as well (Knack & Zak, 2001). The financial impact of community initiatives should not remain unnoticed: The World Bank (2002) illustrated that a lack of trust in citizen participation makes initiatives more likely to fail, and that trust plays a significant role in citizens' investment decision-making.

2.6 Conceptual framework

The concepts that have been introduced in the research objective can be placed into a model that can be seen as a guideline for the research process:

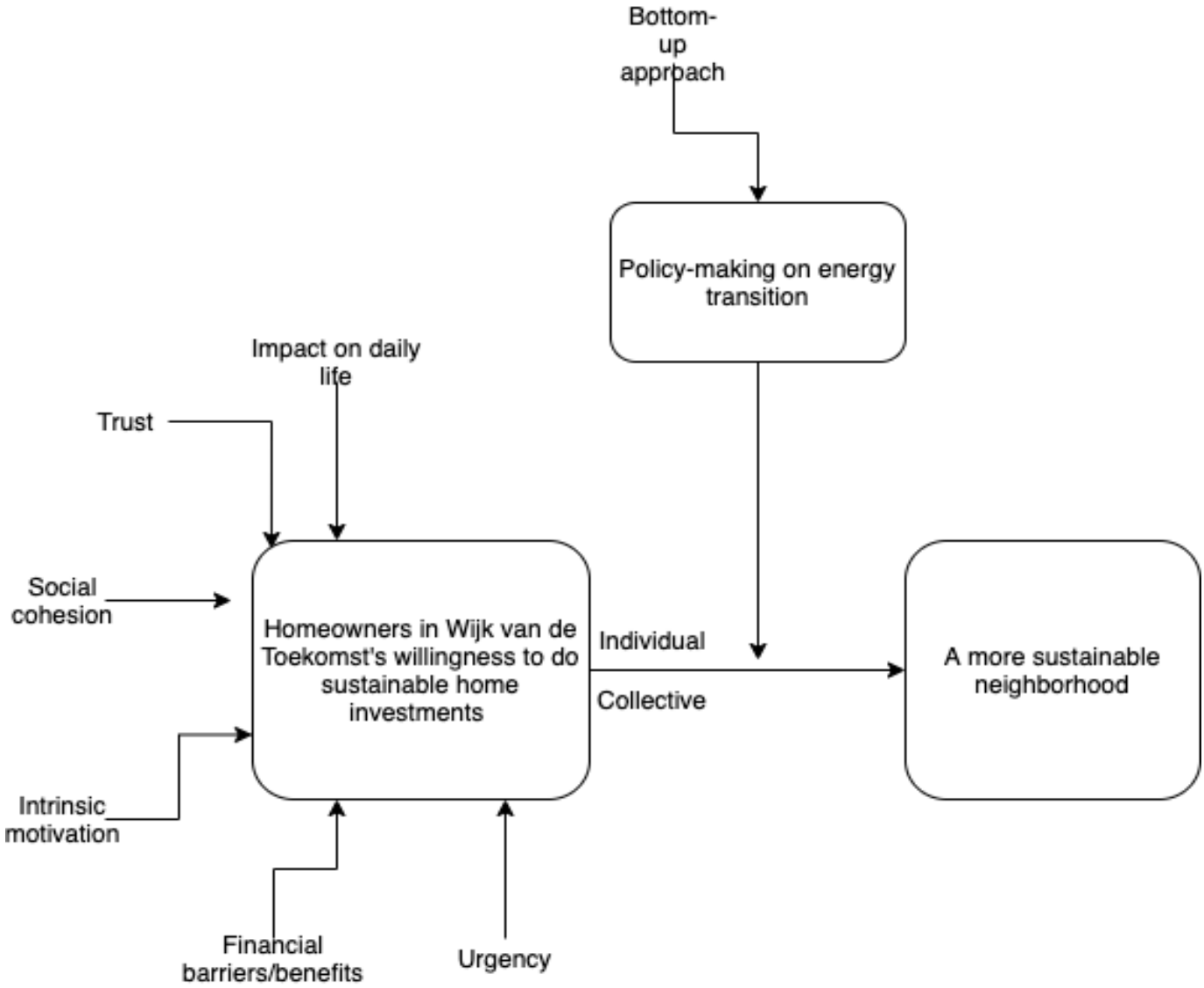


Figure 2.4: Conceptual framework.

In this conceptual framework, ‘homeowners in Wijk van de toekomst willingness to do sustainable home investments’ is conceptualized, where it depends on ‘trust’, ‘impact on daily life’, ‘social cohesion’, ‘intrinsic motivation’, ‘financial barriers/benefits’, and ‘urgency’. From the literature exploration it is clear that these factors might impact homeowners’ willingness, and it suggests a causal relationship between ‘homeowners in Wijk van de Toekomst’s willingness to do sustainable home investments’ and ‘a more sustainable neighborhood’. In this study, homeowner’s willingness to sustainable investments can be focused on individual investments or collective investments. There is a third variable that influences the relation between the first two variables, ‘policy-making on energy transition’ as a result of a bottom-up approach by (local) government.

These three variables will be operationalized but this study has an explorative character, which gives the research an open attitude. This means that this operationalization is assumed according to the prevailing literature research, but could change as a result of the research process.

3 Methodology

The following chapter explains the decision-making process in determining a suitable methodological approach for answering the research questions. For this research, there has been made use of policy analysis and interviews. In order to do this adequately, it is necessary to explore the possibilities of a quantitative, qualitative, or mixed approach. In qualitative inquiry, there are different methods for the researcher for constructing a research question and collect data (Creswell, 2012). Subsequently, the techniques for data collection and analysis will be discussed, together with a presentation of the research material and its context.

3.1 Research design

3.1.1 Qualitative research design

The objective of this research is to get insight into what extent homeowners of Wijk van de Toekomst neighborhoods are willing to invest in sustainable home interventions to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy. When considering a fitting method, it was useful to look at whether the objective of this study is more qualitative or quantitative. Creswell (2012, p. 36) described qualitative inquiry as " [qualitative research] begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problem". As qualitative research focuses on human elements in their natural setting, it can be useful in understanding social phenomena. An in-depth understanding was the approach here and could be facilitated through field notes, interviews, conversations, and photographs. Quantitative inquiry, on the other hand, had a different approach to the research objective, as it is focused on testing a hypothesis correct or false on a larger scale. Random sampling is used for surveys to create high representability. According to Verschuren & Doorewaard (2015), the main aim is to obtain quantified research results that can be made visible through graphics, tables, and numbers.

This research got initiated with a problem, namely the need for the energy transition in The Netherlands, and works its way into societal problems. The nature of the research objective and the main research question was not closed-ended and quantitative methods rely on closed-ended research questions, which is why it was not suitable for this research. Qualitative methods enabled the researcher to have an in-depth, context-specific, more open-ended approach to the

research issue. For this reason, qualitative methods were useful to get insight into the willingness of homeowners.

This research had its starting point in September 2019 at Klimaatverbond Nederland in Arnhem. Klimaatverbond Nederland introduced the Klimaatakkoord (2019), as well as the energy transition issue in The Netherlands that emerged from this agreement. Klimaatverbond Nederland (2019) embeds, executes, and exposes local climate policy and is involved in guidance of Wijk van de Toekomst-initiatives (Gelders Energieakkoord, n.d.). Wijk van de Toekomst-initiatives are located in different cities in Gelderland, but Arnhem had the largest number of Wijk van de Toekomst-neighborhoods (Wijk van de Toekomst, n.d). Moreover, because Arnhem is part of the European Climate Active Neighborhoods (CAN) program, the municipality received subsidy to support neighborhood initiatives effectively and for developing policy (Gemeente Arnhem, 2016). In order to realize effective support of neighborhood initiatives in the future, it needs to be exposed to what extent homeowners are willing to invest in sustainable alternatives for the neighborhood on the one hand, and how existing policy and vision of other stakeholders is shaped on the other hand. This research assists in the exposure local climate policy for this issue and contribute to further embedding, exposure and execution by Klimaatverbond Nederland in Arnhem.

3.1.2 Case study

Taylor (2016) defined case study research as a diverse range of empirical assessments and as a research strategy that facilitates flexibility. Because of the context-specific character of the research subject, a case study approach was chosen. According to Yin (2003), a case study approach is fitting when there are clearly identifiable cases with boundaries and the researcher seeks to provide an in-depth understanding of the cases. Yin (2003, pp. 40-41) introduced single-case studies where one specific case was selected and multiple-case studies, where multiple cases were selected to illustrate the issue. Creswell (2012) mentioned that when using a multiple-case approach it is desirable to use the logic of case replication, in order to generalize. This did not correspond with the aim of this research, as single-case studies can only be applied to the specific case and cannot be generalized to a wider population (Taylor, 2016). Besides, because of the context-specific circumstances such as local policies and organization of the energy transition issue in Arnhem, the results of this research were unique for the case. To get deeper understanding of the issue in Arnhem, instead of generalizing, one single case was used here. A single case study allowed the researcher to question existing theoretical relationships

and look for new theoretical relationships, to get a more in-depth understanding of the subject (Dyer et al., 1991).

3.2 Research material

One of the opportunities that case study research facilitates was the ranging data collection methods, such as interviews, observations, and documents (Creswell, 2012). Primary data was gathered through 11 semi-structured, face-to-face interviews with homeowners in Wijk van de Toekomst neighborhoods in Arnhem. These interviews were collected between November 2019 and January 2020. Secondary data was collected through document analysis and personal communications with expert stakeholders. The structure of the data analysis was introduced with desk research, where existing policies and documents considering the research object were analyzed. Secondly, the research object had a more in-depth approach, as interviews were held and documents were selected and analyzed. Finally, the research was complemented with additional fieldwork in order to answer the research questions adequately.

3.2.1 Wijk van de Toekomst in Arnhem

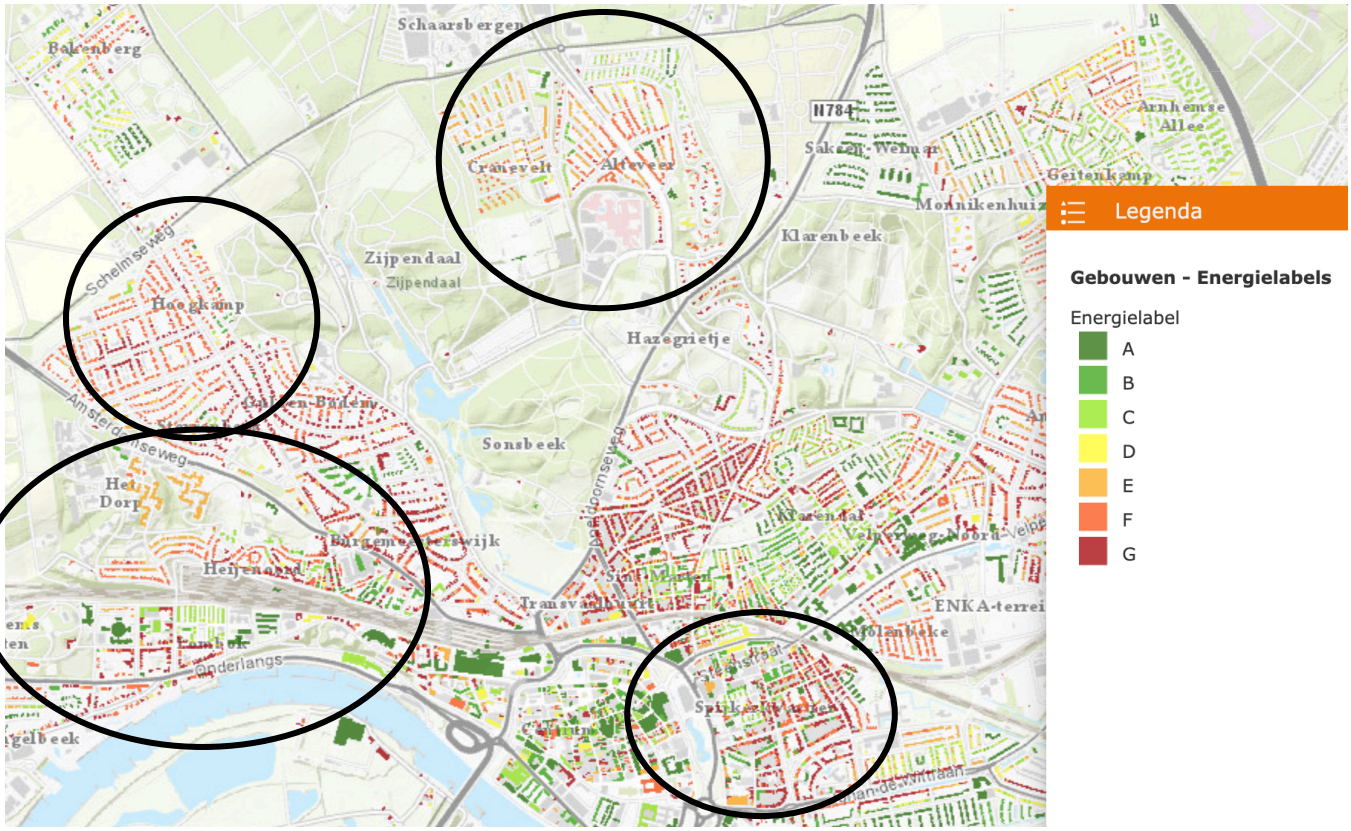


Figure 3.1: Energy labels in Arnhem' Wijk van de Toekomst neighborhoods. (Gemeente Arnhem, 2019).

In July 2019 there were four Wijk van de Toekomst-initiatives in Arnhem: Alteveer-Cranevelt, Spijkerbuurt, Hoogkamp, and Lombok-Heijenoord-Klingelbeek, of which some are a conglomerate of smaller neighborhoods (Wijk van de Toekomst, 2019). The inducement of becoming a Wijk van de Toekomst neighborhood was an initiative from within the neighborhood community; homeowners in the respective neighborhood were motivated to become more sustainable and applied to become a Wijk van de Toekomst neighborhood for more guidance of the process. The first step was to gather other homeowners in the neighborhood to join the initiative, the second step is to orient on possibilities of sustainable alternatives in the neighborhood and the feasibility of this, the third step is the planning phase, and the fourth step is the implementation of the plans. Wijk van de Toekomst is a program of the Gelders Energieakkoord involving experts in the field of sustainability, and in this way, Wijk van de Toekomst initiatives can receive support with the expertise of the involved experts (Wijk van de Toekomst, 2019; Gelders Energieakkoord, 2019).

The extent to which neighborhoods have concrete plans regarding energy transition differs, alongside the general characteristics and composition of the neighborhood. The map (Figure 3.1) visualizes Wijk van de Toekomst neighborhoods' energy labels (in the circles), which indicate the energy efficiency of buildings. In Appendix II it becomes visible that there was an overlap between social housing and a lower, more energy-efficient, energy label on the one hand, and a higher, less energy-efficient, energy label for privately owned housing on the other hand. Therefore, it could be stated that private-owned houses needed more effort to become more sustainable, or energy efficient. Becoming a Wijk van de Toekomst neighborhood could have been beneficial for the private homeowners in the neighborhood, as it provided access to the network of the Gelders Energieakkoord (GEA), which is an agreement of 250 partners in Gelderland focused on accomplishing a climate-neutral Gelderland by 2050 (Gelders Energieakkoord, 2019).

3.2.2 Target audience

As discussed earlier in this chapter, the research population of this research consists of homeowners in Wijk van de Toekomst neighborhoods in Arnhem. Homeowners have a relatively large responsibility for sustainability in their own homes, as the government desires that homeowners should invest on their own. This is different for renters, as the responsibility for improving the sustainability of the home lies with the landlord or housing corporation. There

is chosen for homeowners in Wijk van de Toekomst neighborhoods because these neighborhoods were on the road to becoming sustainable soon, which made homeowners' willingness more urgent. Moreover, the expectation was that the topic of living more sustainable is not new to this group, as the homeowners were aware of the fact that they lived in a Wijk van de Toekomst-neighborhood. For an in-depth understanding of the willingness of homeowners in Arnhem choosing a Wijk van de Toekomst neighborhood could have been beneficial.

3.2.3 Sampling

In October 2019, the target audience was approached for face-to-face in-depth interviews about home sustainability. First, the Wijk van de Toekomst initiatives were approached for setting out a call for neighbors to participate in this study. To avoid that only residents who are actively involved in the Wijk van de Toekomst initiatives were selected for interviews, the second form of respondent selection took place through advertising in local newspapers, supermarkets, and through personal networks. During the process of the respondent collection there was no response in Spijkerbuurt. One of the possible reasons for this was that this area is highly researched in Arnhem, according to neighborhood initiative Spijkerenergie, which was one of the reasons there was no access to the Spijkerenergie network (T. de la Court, personal communication, n.d.). Moreover, there was no response from residents in Spijkerbuurt through the other approaches of respondent collection. The absence of response in the neighborhood and the low percentage of homeowners in the neighborhood have led to exclusion from the data sample.

The respondents that were provided by the other neighborhood initiatives were approached for interviews, and at the same time, homeowners who have responded through the other calls were approached, as well as respondents through personal networks of the researcher. It has shown that the group of respondents that were not involved in Wijk van de Toekomst activities was more difficult to reach, which is why this group got expanded with the help of snowball sampling. This made it possible to gain access to a group of homeowners that did not respond to the other calls on their initiative. One of the main downfalls of this method is that it may have consequences of the randomness of the sample (Johnson, 2014). This is why, for this research, snowball sampling was only used to gather hard-to-reach homeowners. Johnson (2014) indicates that the use of snowball sampling with program participants is relevant when participants can identify persons similar to themselves who are not participating in the program.

In the case of this study, homeowners who were initially involved in Wijk van de Toekomst programs were asked if they could identify people who also lived in the same neighborhood but were not part of the Wijk van de Toekomst initiative, in order to expose this group that was more difficult to reach through the other data collection methods. Goodman (2011) commented that the snowball sampling technique was developed to complement the study of easy-to-reach populations with hard-to-reach populations.

The sampling process resulted in the following 11 respondents for face-to-face interviews. To guarantee each respondent's privacy, the names that are used in the table are fictional.

Name	**Age**	**Lives in**	**Since**	**Involvement**	**Living conditions**
Timo	28	Hoogkamp	1 year	Has not heard of Wijk van de Toekomst initiative.	With partner
Roger	57	Alteveer Cranevelt	17 years	Was part of the coordination team of Wijk van de Toekomst initiative in the past.	With partner and children
Ronald	67	Arnhem West	30 years	Is not part of Wijk van de Toekomst initiative, but from a smaller-scale neighborhood initiative.	With partner
Ernst	52	Hoogkamp	11 years	Attended one meeting of Wijk van de Toekomst initiative.	With partner and child

Henk	54	Arnhem West	23 years	Has heard of Wijk van de Toekomst initiative, but was not part of it.	With partner and child
Janneke	26	Hoogkamp	1 year	Has heard of Wijk van de Toekomst initiative, but was not part of it.	Alone
Jan	55	Hoogkamp	18 years	Has attended one Wijk van de Toekomst meeting.	With partner and children
José	60	Arnhem West	1 year	Has attended one Wijk van de Toekomst meeting.	Alone
Sara	36	Alteveer Cranevelt	5 years	Is thinking to participate in a collective solar panel project of Wijk van de Toekomst initiative.	With partner and child
Suzan	28	Alteveer Cranevelt	2 years	Has not heard of Wijk van de Toekomst initiative.	With partner
Marianne	67	Hoogkamp	35 years	Has heard of Wijk van de Toekomst initiative, but was not part of it.	With partner

Table 3.1: Respondents.

3.2.4 Interviews

According to Macdonald (2012), interviews are a commonly-used data collection method in qualitative inquiry. Interviewing offers the researcher access to people's ideas, thoughts, and memories, enabling them to clarify these through their own words. The interviews were based

upon general topics from the conceptual model which gave structure to the interview, with paying respect to the respondent's frames and structures. These general topics were provided by the research questions and conceptual model and are found in Appendix I.

As some of the questions for the interview were personal, as it considered the respondents' everyday living behavior, there was decided to have the interviews in the respondent's own home. In addition to that, the aim of having interviews with respondents at the research site (the respondent's home in the respective Wijk van de Toekomst neighborhood), was to lower the chance of normative answers to questions in the interview guide, such as about present sustainable interventions in the home. Elmir et al. (2011) stated that in successful interviews, especially about potentially sensitive topics, the venue should be thought out carefully. It was important that both the researcher and the respondent felt safe in the interviewing environment, and one of the key elements was guaranteeing privacy, which is the reason why in this research the researcher guaranteed the anonymity of the respondent before the interview took place. Preferably, the interview took place in the respondent's home but to guarantee a feeling of safety of each respondent there was always asked if the respondent agrees with it. This has led to ten respondents agreeing to this and one respondent preferring a different interview site, which eventually took place in public space.

As mentioned earlier in this chapter, the interviews were characterized as semi-structured. Given (2008, p. 1) describes semi-structured interviewing as " […] a qualitative data collection strategy in which the researcher asks informants a series of predetermined but open-ended question.". This allowed the researcher to get a holistic perception of the respondent's thoughts and ideas, but at the same time, the researcher had a guideline with central themes for every interview. This approach gave room for unexpected answers that were initially not included in theory, without affecting the reliability of this study.

3.2.5 Face-to-face conversations

Complementary to interviewing homeowners and doing document analysis, there were encounters with stakeholders of the research object, in formal and informal ways. As of the spontaneity and integrity of these encounters (i.e. conversations with family members of the respondent), these conversations were not recorded and transcribed but were written down as field notes where possible. The following conversations were included in the analysis:

- D. Willemsen, AANjager at ArnhemAAN

- M. van der Burght, policy officer sustainability at the municipality of Arnhem
- T. de la Court, policy officer at Klimaatverbond Nederland

3.2.6 Documents

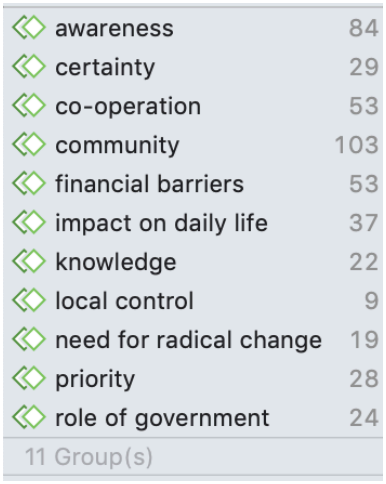
Chapter four of this research gets introduced with a document analysis, which provides an overview of the existing policies and institutional attitudes towards this topic. The analysis takes the national level as a starting point and works its way into the neighborhood. The aim of this approach was not only to create an inventory of existing vision but also to shape the context of the living environment of the respondents in this research. Contextual documents enabled the researcher to look for background information as well as historical insight (Bowen, 2009). For this inventory, the following 6 documents were analyzed:

- Klimaatakkoord (Climate Agreement) by the Dutch government.
- Climate Active Neighborhoods in Arnhem by Interreg Europe and Arnhem.
- New Energy Made in Arnhem by the municipality of Arnhem.
- Transitievisie Warmte (Transition Vision Heat) by the municipality of Arnhem.
- Report of the neighborhood meeting of Wijk van de Toekomst in Hoogkamp.
- Report of the expert meeting 'Niet willen investeren, toch profiteren' by Spectrum Elan, supported by personal notes.

3.3 Data analysis

Before drawing accurate conclusions from the collected data, a structured analysis had to be made. First of all, the recorded interviews were transcribed. Thereafter, the coding process of the texts was initiated in the analysis program 'Atlas.TI'. Bryman (2012, p. 568) defined the coding process of texts in case study research in three steps. The first step was focused on marking text fragments and coding of these text fragments, through the process of open coding (Strauss & Corbin, 1990).

Second, the open codes that need to be renamed in order to understand without context of the sentence or paragraph were renamed (Bryman, 2012). Hereafter, the codes were developed into categories that relate to the study. Every code is linked to one or more categories (families) and provides structure to the codes. This process is referred to as axial coding (Strauss & Corbin, 1990). In total, 461 codes were collected and assigned to 11 categories, as seen in figure 3.2.



Third, the coding process got concluded with the process of selective coding (Strauss & Corbin, 1990). The categories are linked to one another in order to expose underlying relationships. The links between categories are made visible in a network, which is included in Appendix III (Bryman, 2012).

Figure 3.2: Coding in Atlas.TI.

3.4 Recap

This chapter justified the research methodology in this study. The research approach that is chosen is qualitative, as this facilitates a deeper understanding of human elements in their natural setting. Eleven semi-structured, face-to-face interviews together with analysis of six documents are the main sources of data in this research, and these are complemented by (in)formal conversations with institutional stakeholders. The research is focused on Wijk van de Toekomst neighborhoods in Arnhem.

4 Energy transition in the region

The following chapter takes the energy transition issue in The Netherlands as a starting point, where the course for the Dutch energy is determined. From there, the chapter zooms in from the Klimaatakkoord to the provincial level, where expert stakeholders in the regime level came together to discuss their interpretation of the Klimaatakkoord on energy transition in Gelderland. The context from the Dutch energy transition is provided and how this is implemented in policy-making in the Transitievisie Warmte. Furthermore, Arnhem's program of 'New Energy Made in Arnhem' is presented and hereafter, Arnhem's position in the Climate Active Neighborhoods program is explained. In the second paragraph, the vision in municipal policy is elaborated and a description of the way this has an impact on Wijk van de Toekomst-initiatives on a neighborhood level is given. The third paragraph explains the social approach of expert stakeholders in the regime level, to give insight in the approach that is taken to encourage homeowners to take initiative.

4.1 Arnhem sets the course for the energy transition

The energy transition is directed by the Dutch government, as implemented in the Klimaatakkoord (Climate Agreement) of 2019 (Rijksoverheid, 2019). It is stated that, as result of the Paris Agreement that aims to guarantee a climate neutral European Union by 2050, national policy-making should actively take sustainable development into account. In the Klimaatakkoord the Dutch government claims that municipalities play a key role in this development, as these have the task to look at neighborhood-fitting measures into becoming CO2-neutral in the long term. For a neighborhood-oriented sustainable approach, the Dutch government has 100 million euro available for municipalities (Rijksoverheid, 2019, p. 23). The Dutch government provides a subsidy for housing corporations to make the homes more sustainable and, in particular, to ultimately make the homes gas-free. This is supported by tax reduction on electricity on the one hand and tax increase on gas on the other hand. For private homeowners, there are subsidies available for home insulation, heat pumps, and solar panels, that cover a minor part of the total costs. These subsidies have an individual character and do not require any form of collaboration or neighbor dependence. The goal of this approach is to create better conditions for sustainable adjustments of the home (Rijksoverheid, 2019).

4.1.1 Transitievisie Warmte

In line with the energy transition, all Dutch municipalities are assigned to compose central vision ('Transitievisie Warmte', translated 'Transition Vision Heat') for their neighborhoods (Rijksoverheid, 2019). Arnhem states that the municipality is working on the Transitievisie Warmte for all neighborhoods in Arnhem, capturing the timeline in which the neighborhoods are detached from the gas supply and the potential new energy sources or infrastructures. The Transitievisie Warmte has to be delivered by the municipality of Arnhem by the end of 2021, and although the finished product is not available yet, Arnhem has a clear focus:

> "By the end of 2021, each municipality will have a transition vision for the entire municipality. […] Crucial within the implementation plan is the participation of residents and building owners" (Gemeente Arnhem, 2020).

This means that Arnhem has to move into two directions; social housing and private homes. Social housing is the responsibility of housing corporations, who are a stakeholder in the Transitievisie Warmte, but homeowners are a group of multiple individuals that need to be included in the Transitievisie Warmte. Nevertheless, unlike the situation of individual governmental subsidy, the vision of the municipality is focused on neighborhood collaboration, and the question arises to what extent neighbor collaboration is desired by homeowners in terms of Verkade & Höffken (2019). The challenge for the municipality of Arnhem is to include all these individual homeowners in a central vision for the energy transition in the future.

4.1.2 New Energy Made in Arnhem

In light of the emerging of sustainable transition in the upcoming years, the municipality of Arnhem claims to be ambitious when it comes to sustainability in its 'New Energy Made in Arnhem' project, which runs throughout 2015-2020 (Gemeente Arnhem, 2015). This project builds upon the earlier vision of the municipality to further strengthen and develop this in the upcoming years. One of the central components of its vision is the campaign for energy saving and sustainable energy generation, which consists of focus on energy saving, solar energy, wind energy, heat, and green mobility, altogether utilized in the process of reaching 14 percent sustainable energy in Arnhem by the end of 2020. This component of the energy transition is driven by a growing energy awareness and because of the individual benefit for homeowners, such as lower monthly energy costs, it can be seen as a form of 'promoting individual energy practices' by Verkade & Höffken (2019). It can be considered the first step in neighborhood collaboration, as it creates more awareness with residents, but the main character of this social practice is mainly focused on the individual. However, this form of citizen participation, both

by homeowners and renters, plays a role in reaching the 14 percent target by the end of 2020, which is also communicated through the municipal website. Elaborated into four pillars, together forming the 'New Energy Made in Arnhem' project:

> "[…] different dimensions of the city are reflected; energy-conscious living, energy-conscious entrepreneurship, transport, and clean air, and networks and projects" (Gemeente Arnhem, 2020).

On the municipal website the municipality speaks directly to homeowners and provides tools to make sustainable transition more accessible to homeowners specifically, through the campaign of ArnhemAAN (Gemeente Arnhem, 2020).

4.1.3 CAN

It is clear that national governmental policy is decentralized to municipal challenges and Arnhem has to take responsibility here. In the coming years, Arnhem desires to be ambitious, which has resulted in the participation in the Climate Active Neighborhoods (CAN) project of Interreg North-West Europe (Interreg, 2019). CAN focuses on underprivileged neighborhoods that need renovation, introducing a bottom-up approach that encourages residents to find appropriate financing for the planned energy efficiency measures. This approach goes one step further in terms of Verkade & Höffken (2019). The next step in their model is mainly focused on 'collective energy generation', but this does not fully apply to CAN, as it does have similar collective practices such as obtaining knowledge and raising money on the one hand, but it is not focused on collective energy generation yet. The focus of CAN has three components: shared responsibility, financing schemes, and neighborhood action. First, shared responsibility will help in establishing shared responsibilities and community-led organizations dedicated to improving the energy performance of the homes in the neighborhood, cost-effectively. Second, financing schemes will launch investment funds for residents (mainly with a focus on migrant communities). Third, neighborhood action tools will be provided to promote good practice examples (Interreg, 2019). CAN here sets the course for future sustainable residential development in Arnhem and Arnhem does live up to this. In 2019, the municipality of Arnhem won the 'EU Regio Star Award' in Brussels for its innovative initiative in sustainable development. Two innovative initiatives that were mentioned are the 'AANjaagfonds' and Lijn2030 by ArnhemAAN. For the next two years (2020-2021) ArnhemAAN obtained a 400,000-euro subsidy by CAN (Rothoff, 2019).

4.2 Initiatives

In the context of CAN, Arnhem has a focus on resident participation in neighborhoods and attempts to reach them through innovative initiatives. ArnhemAAN forms a bridge between municipal policy vision regarding environment and residents, directed by professionals in the sector, called 'AANjagers' (D. Willemsen, personal communication, 16 October 2019). Its orientation differs from Wijk van de Toekomst, as the latter focuses on the bigger picture by including a whole group of stakeholders in the regime, where ArnhemAAN has a small-scale focus and connects with the neighborhoods in Arnhem specifically. In terms of Van Assche et al. (2013), the role of ArnhemAAN has potential in the connection between policy and homeowners as the AANjagers can discuss with homeowners and expose their attitudes. The goal of ArnhemAAN is to inspire residents, including homeowners, to take initiative by providing small or large examples of other sustainable initiatives in the region. These are initiatives such as energy saving, sustainable energy generation, reducing carbon emissions, and creating a circular and/or climate proof neighborhood, which are all focused on collaboration with neighbors, but differ in the intensity of collaboration. The role of the AANjagers is supportive for homeowners, as their expertise can be utilized to guide the process. Examples of supportive tools provided by ArnhemAAN are heat camera measurements, climate conversations with inhabitants in the neighborhood, and informative events for inhabitants. These examples can be seen as small, easily accessible steps that help homeowners in creating awareness and gaining knowledge, and does not go too much into detail about collaboration with neighbors.

4.2.1 Wijk van de Toekomst

According to Vakblad Warmtepomp (Trade Journal for Heat Pumps) challenges in becoming climate neutral in The Netherlands are predominantly situated in the older urban environment, as newer buildings are built under more sustainable conditions (e.g. home insulation, lower energy use) and are less intensive to become climate neutral (Louws, 2018). Predominantly, Arnhem focuses on Wijk van de Toekomst neighborhoods together with ArnhemAAN in the largest challenge in sustainable transition; detaching from the gas supply. The role of experts of Wijk van de Toekomst is connecting between different actors; province, municipality,

neighborhood initiatives, energy network operators, housing corporations, and business life (Provincie Gelderland, 2019). The construction of the network of Wijk van de Toekomst is more complex as it tries to connect different actors in the niche and regime of Geels' (2004) Multi-Level Perspective, in order to change the landscape eventually. Here the niche-regime as introduced by Rotmans et al. (2007) unfolds; community initiatives in the niche level become stronger through the network of Wijk van de Toekomst in the regime level. It is still unclear, however, if the emergent niche-regime has a micro-meso pattern or a meso-meso pattern of De Haan (in Rotmans et al., 2007). The inducement to become a Wijk van de Toekomst initiative lies within the community, but the reason why Wijk van de Toekomst exists in the first place is to guide community initiatives, which makes it difficult to decide which one came first.

Challenges for a successful initiative that are mentioned by Wijk van de Toekomst are financing, legislation, and participation (Hardeman, 2019). The latter refers to one of the main focus points of the municipality of Arnhem; as it is stated that citizen and building owner participation is crucial in this transition as approximately 50 per cent of the homes in these Wijk van de Toekomst neighborhoods is private-owned (Gemeente Arnhem, 2015). The vision of Wijk van de Toekomst on stimulating owner participation is based on creating connections within the neighborhood. As El Bilali (2019) stated as a critique on the Multi-Level Perspective, there is a risk that actors operate side by side instead of each other, leading to a possibility that resident's thoughts do not break through the regime. This could also be at risk for Wijk van de Toekomst. For example, the municipality and province have a guiding role as these are responsible for policy-making and legislation and the energy network operators are responsible for the correct distribution of energy. The role of residents, and homeowners in particular, is not included here and therefore there could be a risk, in terms of Van Assche et al. (2013), that this leads to unequal distribution of power.

4.2.2 Hoogkamp Energie, Duurzaam Craneveer & GroenWest

The main focus of the municipality lies with citizen participation in cutting off the gas supply of existing built environment in neighborhoods of Arnhem through Wijk van de Toekomst-initiatives, GroenWest for Arnhem-West, Hoogkamp Energie for Hoogkamp, and Duurzaam Craneveer for Alteveer-Cranevelt. These initiatives have a voluntary central board that organizes meetings or informs participants and neighbors about their activities.

	Cranevelt-Alteveer	Hoogkamp	Lombok-Heijenoord-Klingelbeek
Households	2,189	3,330	2,818
Income (avg.)	29,300	35,600	27,200
% private home owners (2015)	52,3 %	74,1 %	58,4 % in Heijenoord and Lombok 46,3 % in Klingelbeek
Status	Desk research in becoming climate neutral.	Neighborhood meetings for becoming gas free neighborhood in 2030.	GroenWest initiates smaller-scaled interventions, planning to implement concrete plas of energy neutral neighborhood in 2021.

Table 4.1: Wijk van de Toekomst initiatives (Wijk van de Toekomst, n.d.)

GroenWest claims on its web site to be working to realize climate neutral neighborhoods in Arnhem-West in 2030. In the period 2019-2021 sustainable development in the neighborhoods is situated around smaller interventions, such as solar roofs, setting up shared e-car projects, and green roofs and gardens. From 2021, concrete plans of an energy neutral neighborhood will be implemented, supported by earlier studies towards this topic (GroenWest, 2019).

On its residents' meeting Hoogkamp Energie prospected a gas free neighborhood in 2030 as feasible. Collaboration and right division of tasks between Hoogkamp Energie, residents, and Arnhem are necessary here, and for this, a participation plan has to be set up:

> "If the results of this process about support among residents, technically and economically the detailed energy transition plan are positive, there will be approved for approval in the fall of 2021at the city council." (Hoogkamp Energie, p. 1).

When residents are positive about this and when technical and economic aspects are positive, the energy transition plan will be asked for approval at the municipality (Hoogkamp Energie, 2020).

Duurzaam Craneveer claims to be working on a heat transition plan through desk research, thinking of possible solutions, and conversations in the neighborhood. Through its communication to residents, an online guide is provided for steps in becoming CO2 neutral. In a survey from 2019, Duurzaam Craneveer asked residents about their preparedness on the sustainable heat transition and predominantly on home insulation. (Duurzaam Craneveer, 2019).

There are different approaches per neighborhood initiative. All initiatives claim to have set up concrete sustainable plans by 2021, but with different targets. GroenWest aims for fully climate neutral neighborhoods, where Hoogkamp Energie aims for gas free neighborhoods. Duurzaam Craneveer is still working on an approach that is fitting with the neighborhood.

4.2.3 Residents

In the present time, Arnhem, ArnhemAAN, and Wijk van de Toekomst initiatives maintain an easily accessible approach to motivate residents to join, mainly through social media, web sites, and neighborhood meetings. These residents, however, step in because of their intrinsic motivation and initiative. It remains a question so far whether residents without personal intrinsic motivation are willing to step in. This thought is supported by the AANjagers of ArnhemAAN, who stated that the residents they know are invested and motivated and they might be biased to think this image applies to all residents (M. van der Burght, personal communication, 11 November 2019). The willing residents might only be the top of the iceberg and there is a high chance that there are residents with different beliefs ‘below the surface’. The group of homeowners that are actively involved in the Wijk van de Toekomst initiatives is not a random sample of all homeowners in their respective neighborhoods. Seyfang et al. (2013) state that strong niche networks are, among other things, based upon a high level of broadness and deepness and participation from members. To realize a stronger niche it therefore is necessary to know how homeowners without prevalent intrinsic motivation are willing to step in. Hargreaves et al. (2011) argue that community can play a powerful role in sustainable transitions like these, and Smith (2012) adds that social movements can give this group a more

powerful position. This is realized by homeowner co-operation as that makes this group one strong actor in this transition. Wijk van de Toekomst already addressed homeowner participation as one of their challenges, but at the same time likes to continue their bottom-up stimulation, where homeowner participation remains open-ended. If hypothetically, there would be more governmental persuasion for this matter, all interests of homeowners would be included but at the same time, the desired bottom-up processes become distorted. Moreover, the question arises to what extent the process of motivating homeowners to join in initiatives regarding the energy transition is a bottom-up process per se. The desire to have a bottom-up energy transition is an idea that is driven by market actors, institutions, and government, which could be considered as a top-down idea as well.

4.3 The regime discourse

All policy actors maintain an easily accessible approach for homeowners to this moment, as citizen participation has to be facilitated through bottom-up processes in their vision. As homeowner inclusion is ultimately one of the necessary factors for this transition, it is useful to ask how all homeowners can be included here and if homeowners without intrinsic motivation need to be approached differently, and in the context of this study, how homeowners need to be approached. Furthermore, the question arises if the attempt of market actors and government to include all homeowners in the niche level to create a bottom-up process is actually more a top-down vision, and in addition, if that is distorting the process. Wijk van de Toekomst-initiatives are interpreting Arnhem's vision into their respective neighborhood approaches as the task of detaching from the gas supply is one of the major challenges in the existing neighborhood areas because of the relatively old houses. Citizen participation is essential, but it remains the question of how every homeowner can join.

4.3.1 Give or take?

The inclusion question considering sustainable home development is bothering the actors in their own specific way. On 1 July 2019, Spectrum Elan, an institute that is focused on social wellbeing in neighborhoods, alongside with Klimaatverbond Nederland, Alliander, and other expert stakeholders organized a meeting for expert stakeholders operating in municipalities in Gelderland, called 'niet kunnen investeren, toch kunnen profiteren' ('not able to invest, still able to profit'). Among participants of this meeting were policy workers, social workers, and energy providers, mainly active at the regime level, or in-between the niche and regime level. The inducement for this meeting was the release of the Klimaatakkoord, leading to the question of how everyone becomes able to join this transition:

> "Everyone has to be able to join, this is a strict demand in the processes we engage in neighborhoods." (Translation of Spectrum Elan, 2019).

This demand is derived from the ambitions of the Klimaatakkoord, which states that in order to reduce the national environmental impact, every household in The Netherlands should be able to live in a sustainable home in order to change the Dutch landscape to more environmentally efficient (Rijksoverheid, 2019). The Dutch Vereniging Eigen Huis (Homeowners Association) was one of the negotiating stakeholders in forming the Klimaatakkoord and this inclusion question is one of their main criteria (Vereniging Eigen Huis, 2019). The challenge in this

question is to include the group of homeowners that are at the entry-level of buying a home; this group just had access to a mortgage to buy a home, but do not have enough savings to do sustainable interventions on their own.

Figure 4.1: Model towards a mature relationship as a condition for an accessible transition for everyone. (De la Court, 2019).

To explain the situation in the neighborhood, expert stakeholders have visualized residents' attitudes towards local municipality, entrepreneurs, and banks considering sustainable interventions in their homes; 'must' and 'want' represent residents' feeling of autonomy in their decisions, 'having to offer/give' and 'having to need/take' represent residents' available resources for the implementation of these sustainable interventions. For the expert stakeholders in this transition, this framework visualizes the way one approaches another and how a mature relation ('want') can be established. When residents remain a 'must' attitude, resistance occurs, and this could put the ideal situation where everyone is able to do sustainable interventions at risk, according to the expert stakeholders:

> "It [the model in figure 7] is about approaching and addressing each other, in order to prevent resistance. When we 'must' we do not feel like we have ownership [in the transition]. " (translation of Spectrum Elan, 2019).

For the realization of a predominant 'want' attitude of residents, expert stakeholders had a brainstorm session about possible approaches to include every resident in the transition, respectively on the 'give' and 'take' side of the quadrant.

4.3.2 The lack of urgency

In the vision of expert stakeholders, a positive approach is desirable, as both the community, public actors, and private actors need to work together. The transition takes place on a national scale and as illustrated in the Klimaatakkoord (2019), financial resources do not fully cover sustainable home adjustments. This is why, according to expert stakeholders, residents should have the leading role, ideally as a result of a 'neighborhood trigger event'. This could be a starting point (i.e. downpours in the neighborhood or earthquakes in Groningen) that creates a feeling of urgency with residents, as this could push them towards a 'want' attitude and they feel encouraged to think about what to 'give' or 'take'. This feeling of urgency is at the base and needs to be supported by expert stakeholders who can guide the process. The desired attitude of the expert stakeholders is transparent; there should be mutual trust between residents and experts, and transparency of interests of different parties such as the municipality and energy providers. The feeling of mutual trust is pleasant for the process as it reduces suspiciousness among residents. Moreover, residents are informed and have ideas of ways to make this transition successful. It is concluded that the experts' approach is focused on 7 pillars:

1. Positive approach
2. Social approach
3. Respond to 'neighborhood trigger events'
4. Expert transparency
5. Demand-oriented
6. Expose urgency
7. Trust each other; openness and transparency

These expert stakeholders believe that a critical event leads to higher intrinsic motivation of homeowners, and their job is to guide this process with their personal expertise, without giving to many directions, in order to keep the bottom-up process intact. The expert stakeholders agree

on the fact that collaboration is desirable and everyone should be able to join, but they do not address the value of mutual trust and are more focused on urgency as a driving force for motivation in the first place. Trust is an important determent in the success of community initiatives according to Walker (2008), but it does not show up here.

4.3.3 Approach from the inside

Expert stakeholders stressed the relevance of an approach from inside the neighborhood. A method that has been used for socio-economic problems is the Asset-Based Community Development (ABCD) method, which facilitates a positive approach, such as ArnhemAAN does. Movisie, a knowledge institute for the approach of social issues in The Netherlands, is specialized in the provision and handling of social problems of society and mentions the benefits of using the ABCD approach that has been implemented in Arnhem and other cities earlier (Movisie, 2010). This method aims to generate social relations and to mobilize the capacity of residents, organizations, and institutions of the local community. The target audience of this method is residents, regardless of their age or origin and this approach is designed to bring all levels of society together in the neighborhood. To realize this, a five-step process is gone through.

The first step is to map the neighborhood's assets by exposing residents' capacities, networks, and other relevant assets. The second step is about building relations between the neighborhood's resources. The third step focuses on the activation of the neighborhood for economic development through communication networks. The fourth step is to make this concrete: coming together for a plan to solve the problem in the long term, together with a representative group of residents. The fifth and final step is to look outside the neighborhood for support of external resources, in addition to the existing development (Movisie, 2010).

Here, the value of trust as described by Walker (2008) is not explicitly recalled, but there is attention for the underlying relation between residents. The ABCD approach is successful according to Movisie because small-scale activities can expand to a larger group of active residents at the niche level. Small results or 'quick wins' boost confidence and motivation, but a long-term vision is necessary to avoid fragmentation. This is where experts come in, according to Movisie, which is why a strong connection between expert knowledge and residents is desirable. However, this approach is only used in small-scale, easily accessible projects by ArnhemAAN and it is not used in more intensive neighborhood initiatives.

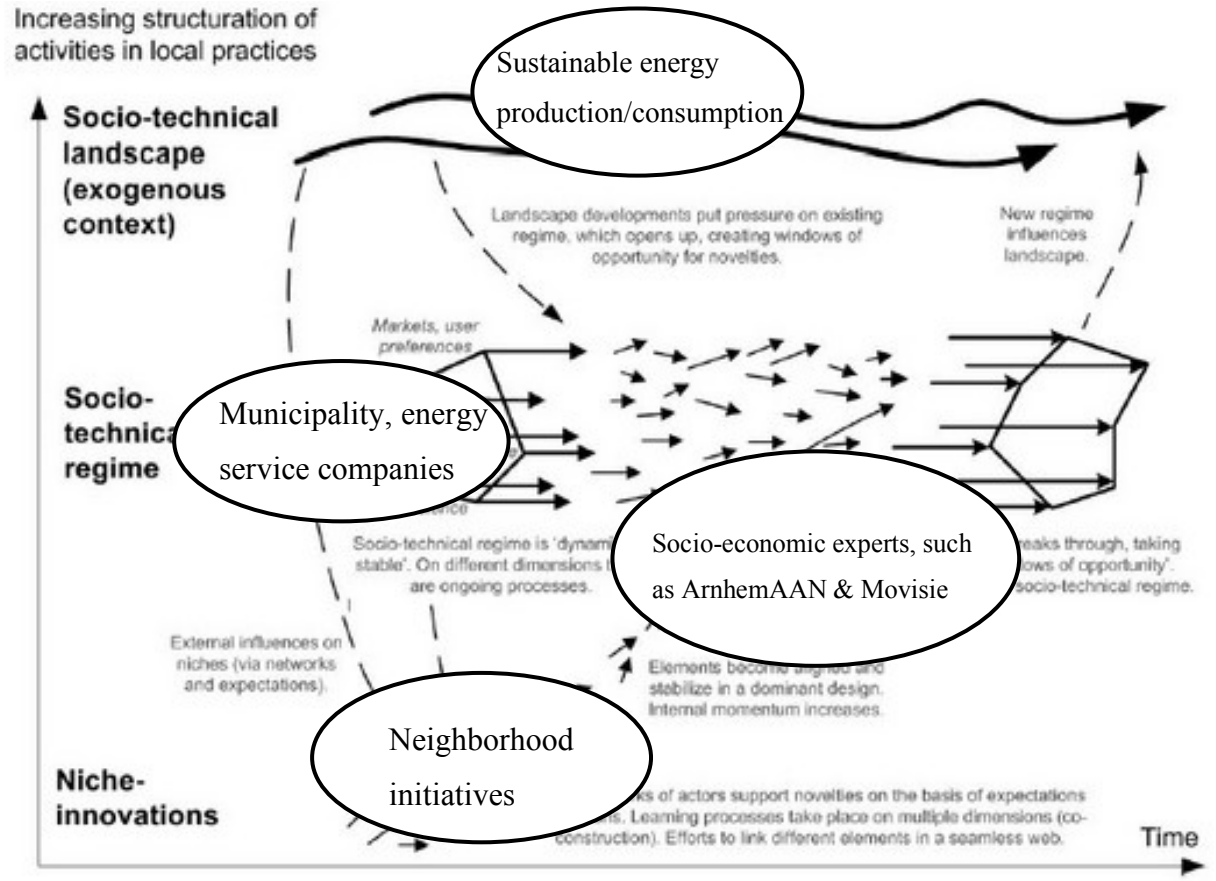


Figure 8: Multi-Level Perspective by Geels (2004) placed into the context of this study.

The position of all stakeholders for the Wijk van de Toekomst neighborhoods, as directed by the Klimaatakkoord (2019) is visualized in this model. Actors that operate in the regime such as the municipality have existing processes going in the niche level. They consist of different technologies, policies, and cultures and are a result of past processes. Homeowners in neighborhood initiatives (Wijk van de Toekomst-initiatives) are situated in the niche level, and in order to generate a successful bottom-up process as desired by regime actors, these initiatives need to break through the regime to facilitate the transition in the landscape. Between the niche and regime level are socio-economic experts such as ArnhemAAN and Movisie, that are focused on making a connection between homeowners and regime experts such as the government and energy service companies by motivating homeowners on the one hand and informing regime actors on the other hand.

5 Setting foot in the neighborhood: homeowners' stories

5.1 Entering Arnhem's neighborhoods

Chapter four illustrated how (local) government and other expert stakeholders ideally address the case and how these are related to earlier discussed theory. This chapter zooms in to neighborhood level, and highlights the perspective of homeowners in the neighborhood, with the aim to understand their willingness to do sustainable investments in their home, and to what extent these homeowners are willing to collaborate with neighbors in order to realize national energy efficiency concerning the environment. Their personal opinions are presented in detail here, supported by translated and contextualized quotations from the interview transcripts. The final paragraph of this chapter connects policy vision and homeowners' vision, to get an understanding of what is at stake for the different actors in this energy transition, and where the similarities and differences are.

5.1.1 Willingness for sustainable home owning

'Sustainability' is a broad term that can be defined in many different ways. To understand the definitions that are given by respondents, there is asked to create an image of the role that sustainability entails in their lives. One of the variables that came up when asking this question, was 'awareness'. The respondents claim to have sustainable awareness and support this with examples of their sustainable behavior. Examples of sustainable behavior as a result of their awareness are waste separation, cutting heating costs, diet choices, and shopping behavior. The examples that are given by respondents illustrate that in the everyday, small-effort adjustments with environmental benefit are made in their lives. On the meaning of 'sustainability' in general, different ideas arise among respondents. Something that has been brought up by four respondents is circular thinking. José mentions the role of circular thinking in sustainability in the conversation:

> "It is our way of life. Trying to have no impact on our Earth, trying to be sustainable where we can in order to continue living on this planet."

Four respondents feel like lowering emissions should be accentuated, such as Ernst:

> "If you really try to be sustainable, you should at least make sure that your home does not have a large CO2 footprint anymore, and live climate neutral, with awareness of your meat consumption, et cetera."

In both ideas, the importance of taking responsibility is implemented as circular thinking and emission reduction on national or global scale can be realized through collective action. The respondents in this study are therefore also responsible for realizing their idea of a sustainable world. All respondents in this study made clear that sustainability does play a role in their lives and that they implement this in their behavior in some way, but it remains the question to what extent respondents in these neighborhoods are willing to adjust their behavior for environmental benefit.

5.1.2 Trade-offs in daily life

As illustrated, 'sustainable awareness' has an effect on everyday behavior, where these respondents make decisions to take environmental benefits into account every day. Most of these behavior adjustments are relatively small, but home interventions could also have a larger impact on the living conditions of these respondents. Respondents have talked about how these interventions could impact their everyday life and recalled the challenge of this. Something that has been said throughout all conversations is the trade-off between sustainability and comfort that is involved in respondents' decision-making when it comes to radical, larger-scale adjustments of behavior (i.e. switching from a gas stove to an all-electric stove and reduce flying):

> "I hesitated about it [getting an electric cooking stove instead of gas], but I really disliked the way of cooking when I had it in the past, so I would not like to switch over right away" (José)

> "On the one hand, I am aware of my impact on the environment […] but on the other hand, we are going on vacation multiple times per year. And then we fly to Asia, without feeling much guilt for that. […] Because we are able to do this financially, and when it's about traveling, creating new memories with your family is one of the nicest things to do." (Ernst)

Ernst illustrated with his point of view that emotional reasons are dominant in the trade-off between sustainability and comfort. This also applies to Ronald when it comes to his flying behavior:

> "My wife has a muscle disease and we don't know how it is going to develop itself […] so now I am retired, I've got time, but we don't know how long we have got left until

she is going to be in a wheelchair. So now we are traveling, even though we've said at first that we limit ourselves to flying once per three years. That has changed now."

Other reasons in the trade-off between sustainability and comfort are related to the fact that respondents do not want to give up certain things. José illustrates that some things in her everyday life are too precious to get rid of.

> "In my kitchen, I have [a kitchen tap that makes use of a relatively high energy-consuming boiler] and that is not sustainable at all […] but I find it very useful to have."

Another prevailing argument in the trade-off between sustainability and comfort related to aesthetics in and around the house. Here, the impact of sustainable adjustments is too high when it comes to aesthetic features. Henk lives in a house that is built in the 1930s, of which he thinks that it is characterized by pleasing outside features. He is not planning to install solar panels because he does not like the look of it, as the solar panels have to be installed on the front side of his house for the highest return.

> "I think they're hideous. If they could be placed on the side of the railroad tracks [on the backside of the house], it would not have been a problem for me. If solar panels would become available in the same color as my roof tiles, then I might consider it."

Gas boilers have the power to heat radiators to relatively high temperatures, compared to energy boilers. To complement the lower temperature of radiators in the house as a result of energy, floor heating is a desirable option. José does not like if installing floor heating means that she has to get rid of her current floor:

> "I am very pleased with this [wooden] floor, and if I think about floor heating, that's a 'no' for me. Because I like this floor."

Although most of the participants claimed to be sustainable aware earlier, there was still one participant who thought that he was not sustainable aware. There are adjustments in his house that were originally intended to lower monthly gas and energy costs, but are also beneficial for the environment, as Henk illustrates:

> "Sustainability does not play a large role, but we like to cut costs by installing double glass [in our home], but we do this mostly to save heat costs".

This respondent illustrates that there is a win-win situation for the environment but that costs were the main reason to insulate his house. All respondents who insulated their homes mentioned that lowering their monthly costs is one of the driving forces. It has been made clear by the respondents that win-win situations are attractive to them. Sustainable adjustments can be made when there are other benefits as well, which is why it is desirable to take the low-hanging fruit first. Starting with the 'quick wins' is a way to make a home more sustainable with little to no regret. Ronald uses this approach and mentions that when things in his house need replacement, he is willing to look at the best replacement.

> "If you look at that window, you see that there is a leak as there is condensation in it. It is an older one, so it needs to be replaced. Well then, I just look for the best one I can get. But, I am not going to replace my ten-year-old boiler, because it's still working fine. If it is time for replacement, then I will look for the best way possible".

Eventually, it could be stated that things become more complex with larger-scaled home adjustments. As concluded from paragraph 5.1.1, large-scale circular thinking and emission reduction can be realized through collective action, but the quotations in this paragraph illustrate that these three reasons (emotional, aesthetic, and efficiency) can lead to preferring the personal interest over the collective interest. Two of the three 'deadly sins', as described by Portney (2003), might be applicable here, as 'NIMBYism' and 'Tragedy of the commons are driven by individualism, where the self-interest of individuals in the goal instead of the collective benefit of the community. Negative externalities of respondents who, for example, do not like to adjust their house to more sustainable standards are not for these respondents, but the society. If a large number of homeowners in the neighborhood think the same way the impact of the negative externalities of this decision will be higher and society will pay the costs. Moreover, in line with paragraph 5.1.1 where ten respondents claimed to be sustainable aware, but at the same time they do not want to give up certain comfort in the trade-off, there is NIMBYism involved.

5.1.3 Bottom-up approach: to what extent?

When listening to the respondents' stories, there is a conflict between trying to be sustainable, and not knowing what sustainable interventions are the best fitting for the house. Joining local initiatives could benefit in this conflict as there is a network available of custom, fitting advice for homeowners, such as in Wijk van de Toekomst-initiatives. In the conversations, respondents were asked about the approach of these Wijk van de Toekomst initiatives (respectively

GroenWest, Hoogkamp Energie, and Duurzaam Craneveer) in their neighborhood, focusing on the bottom-up aspect of that. There are differing opinions among respondents, as three respondents think that this approach could be successful and one respondent, Sara, likes the idea of the approach but sees some challenges in it at the same time:

> "On the one hand it is good to meet the individual demands of homeowners, but on the other hand it could not be feasible because of these individual demands. […] Collaboration should be at the surface but not go too deep."

Among eight respondents there is an agreement on the fact that collaboration with neighbors should not go too deep. One reason that is exposed through the conversation is the desire to control your own costs as a homeowner and to remain independent from neighbors. Ernst has a concrete idea of a construction that he would be willing to join:

> "[…] possibly, if the neighborhood is going to work together with a commercial firm, and you, as inhabitant, are a stakeholder in this, then in this way you could work with collective discount."

Here, Ernst admits that he is willing to collaborate with neighbors in a situation comparable to Verkade & Höffken's (2019) 'promoting individual energy practices', using practices such as obtaining knowledge, usage monitoring, and saving energy. In this case, Ernst has an individual financial benefit (discount) of doing energy practices with his neighbors, and according to him, these practices are worthwhile for the benefit he gets from it.

It is not sure if respondents would collaborate with their neighbors in a collective project to make their neighborhood sustainable. The example of Ernst shows that there should at least be conditions that are necessary to even consider joining in a collective project. One respondent appoints the need for a central steering group that would coordinate this collective purchase in the neighborhood, and therefore could provide a sustainable direction for the neighborhood. Respondents who earlier in the conversation claimed to have intensive contact with their neighbors noticed the influence of the neighbors' decisions on their own decision-making. Ernst acknowledges the influence of his neighbors' decision-making in his own decision-making:

> "I am not the one who is going to take the lead in this transition. […] but, [if neighbor decides to participate in collective] I would join. I would not stop it and say 'I will do my own thing' if there is going to be a good collective solution."

Here it becomes clear that neighbors' behavior can have an effect on the homeowners, but none of the respondents claimed to be willing to take the lead in this transition. There is no direct urgent reason to do large-scale adjustments in the house and therefore respondents are not willing to invest (yet). Here, practices such as the central direction of the collective purchase of solar panels, that are necessary for 'promoting individual energy practices' (Verkade & Höffken, 2019), are not desirable for homeowners. According to the expert stakeholders, a neighborhood trigger event could lead to more awareness and willingness to do sustainable investments in the home, and let homeowners think about ways to do this. These neighborhood trigger events, however, are not controllable and happen unexpectedly, and though these might lead to more awareness and a feeling of action, it remains unclear when this is going to take place.

5.1.4 Not willing to be a front runner

The lack of a feeling of urgency demotivates homeowners to do large-scale sustainable home adjustments. There is insecurity about the future as there are different options to lower the CO2 footprint of the house, and the development of relatively new alternatives are still at the starting point. The uncertainty shows that respondents are more likely to sit back and stop intervening:

> "There are no try-out neighborhoods for detaching from the gas supply here. At first, it seems like a relief that my neighborhood is not a try-out neighborhood, but the effect of that on me is that I feel like I can wait and see how they do it in other try-out neighborhoods before I start doing something by myself." (José)

This quote from José illustrates that she is happy that she does not have to participate in a governmental try-out neighborhood, and as a result of that she does not feel responsible for doing sustainable interventions in her home on this moment, which is an example of the earlier discussed NIMBY-effect that occurs. The lack of feeling of responsibility to do sustainable interventions is one reason for a wait-and-see attitude, and Ernst claims that he is too insecure to do relatively large investments:

> "[…]because what are the possibilities? What are the costs, does it make sense to do this [interventions]? Can I get professional help with that? For me, but I think for a lot of people it is mostly about insecurity. Does it make sense what I'm doing right now? Nobody is looking forward to spending 50eurosuro and then, after two hours, even if

> you would really enjoy spending it, you hear that it will not benefit the environment and it is definitely not going to benefit yourself either. Why would you do that anyway?"

When discussing smaller home interventions (e.g. double glass placement, solar panel installation, or wall isolation) that could lead to lower monthly costs on the short term, respondents are less afraid for regret, but when it comes to high impact, long-term interventions, there is some resistance because they do not know what is the right thing to do. In the population poll of 2019, HIER.nu (2019) recalled that the reason why the majority of their respondents would not like to be involved is that they do not feel well informed about the possible sustainable alternatives. This uncertainty, combined with relatively high costs is holding them back.

José has a clear wait-and-see attitude, saying that she would like to see how other neighborhoods are doing this before she does it on her own. She claims not to have the knowledge and says that she needs to have an example of a successful neighborhood. Ernst illustrates the feeling of absence of the right knowledge for doing larger-scale sustainable interventions in the home. Here, knowledge is also a recurring theme in all conversations and plays a role in the fear of regret, as all respondents acknowledged that they were not informed well enough:

> "I find the technological aspects behind this very difficult, and I think there should be some expert advice here." (José).

The fact that there is no 'one-size-fits-all'-way to make houses more sustainable confuses them and discourages the respondents to do larger interventions in the house. The role of experts could be useful here, as they could fill the gap between knowledge and practice for the homeowners. Seyfang et al. (2013) argued that community values are different from commercial values and that there is a possibility of a clash between these values. Intermediary parties can help in overcoming this issue, which is also desired by the respondents. Moreover, homeowners are responsible for their sustainable interventions but this does not mean that they should have all knowledge available as there are enough experts that can provide them with the right advice for their homes. Nonetheless, when the costs of sustainable home adjustments get higher when it comes to larger-scale interventions, respondents are more hesitant and the question arises to what extent respondents are willing to invest for the sake of the environment

instead of their own interests, which is the point where the cycle of NIMBYism and tragedy of the commons ends.

5.1.5 Investment in the future

As illustrated, behind the environmentally idealistic desires of homeowners there is a financial discourse going on that plays a large role in decision-making. The sustainable awareness that is claimed by homeowners does not extend itself into sustainable investments yet, as NIMBYism and tragedy of the commons are involved (Portney, 2003). The homeowners who already invested in sustainable home owning to a certain level claim that the main driving force for them was to lower their costs, such as reducing the monthly energy bills as a result of home insulation. These investments are a win-win situation as it benefits both the environment and homeowners' financial situation on the long term ('quick wins'), and according to Walker (2008, p. 2) cost-saving is an important driving force in the energy transition, but the remaining question is to what extent homeowners are willing to pay when there is an environmental benefit without improvement of their financial situation, or even with a deterioration of their financial situation. In the conversations with homeowners, there is a predominant belief that when they agree to invest in sustainability there should at least be something to be gained financially, as Jan explained:

> "I don't mind investing if I can guarantee myself that I can get some profit out of it."

Two respondents were willing to pay for sustainability even when there was no personal benefit. The first respondent, Ronald, claims that sustainable living is more than just home adjusting but also behavioral change, by giving an example of the minimalist lifestyle he has:

> "If you do a little longer with the stuff you own, you create some financial space and that makes things such as 'return time' irrelevant."

The second respondent, Roger, claims that it is a matter of where the accent lies:

> "For me, the main profit is not necessarily to insulate my home, but end up using less energy and gas [for the environment]."

Ernst said that he will invest if there is a direct cause for investing, for example as a result of an obligation to invest:

> "When it's 15,000 euro, then we're still able to pay that. But I know that there are lots of people who can't afford that."

The main difference between these statements and the statements of respondents who are predominantly focused on financial return is the driving force behind it. The respondents who are willing to pay the costs are motivated by the future of the environment and this does not motivate the other respondents as they are driven by financial returns on top of that. The respondent who claims to be willing to invest if there is a direct cause (urgency) says that he is in a luxury position where he can afford this, but he is aware that not all his neighbors can pay the price. In terms of Walker (2008, p. 2) both driving forces can be seen as 'incentives' for success in new energy co-operatives, but to this moment in the conversations, homeowners are mainly focused on individual investments.

5.1.6 Neighborhood experiences

The previous paragraphs described the attitudes of homeowners towards doing sustainable interventions in their homes, but the character of these interventions is still individualistic, even though these interventions are meant for the collective benefit (i.e. less carbon emission in the world). Through conversations with homeowners, it became clear that there are different reasons for doing sustainable interventions in the home, as well as different reasons for not doing these interventions. The influence of neighbors' decision-making on personal decision-making regarding sustainable interventions is something that has been recalled. This implies that the neighborhood atmosphere such as social cohesion can play a role in the willingness to invest in sustainable collective interventions, instead of individual interventions only. This paragraph elaborates on what homeowners find necessary in co-operating with neighbors to realize a more sustainable neighborhood in a way that goes deeper than 'promoting individual energy practices', that might include energy practices that belong to 'developing collective energy generation' or 'developing collective energy management' as defined by Verkade & Höffken (2019). Here, values as trust and social cohesion become relevant as Ostrom (2000) connects civic engagement to collective action. Manzo & Douglas (2006, p. 339) stated that the importance of shared values and place attachment is at the base of this social cohesion, and for this reason, respondents were asked about their neighborhood experiences.

All respondents enjoyed living in the neighborhood, mainly for the amount of green and facilities such as public transport, distance to the city center, and the presence of supermarkets. Besides these physical features of the neighborhood, ten participants mention the comfortable

social atmosphere in their respective neighborhood, and amongst them is Henk who lives in Arnhem-West:

> "This neighborhood has a very good atmosphere, I know a lot of people here. There are many organized activities such as barbecues, and most people I know through hockey and tennis club live here."

Respondents who are involved in the social community of the neighborhood feel like their personal profile (such as age, family composition, and education) matches their neighbors' profiles, which has been mentioned by Ernst:

> "We [inhabitants of Hoogkamp] have common ground, although people have different professions, I feel like we can connect like it's a village."

Two respondents felt like they did not match the standard profile of their neighbors. These respondents feel like they are from a different age category than their neighbors, and as a result of that they live different everyday lives that do not lead to interaction.

> "Our neighbors are mostly elderly, widowed, people. Their children are much older than mine and they have other interests than me." (Sara)

> "The neighborhood mostly consists of rental homes and relatively low buying homes, and people tend to move in and out a lot." (Suzan)

The level and intensity of encounter have an effect on the 'want' quadrant from paragraph 2 of this chapter. Stern & Coleman (2015) introduced four different types of trust, one of them focused on 'affinitive trust', meaning that trust can be generated through shared values. The role of having children does have an impact here as it defines three groups of inhabitants in the neighborhoods; the young families, the (young) working class without children, and the older people. Everyday interaction between these groups might be less likely than within these groups, but the lower level of interaction between neighbors in the neighborhoods does not mean that there is no trust between neighbors at all. Ten respondents trusted their neighbors well enough to give them access to their own homes when on vacation. One of the respondents, José, mentioned that she does not know her neighbors very well and her profile does not match her neighbors' profile, but she trusts them well enough to watch her house when she is away.

> "It is just a way of peacefully living together, but there is no desire for more intensive contact […] but I know that when I am away in summer and my plants need to be watered, one of my neighbors will help me out, so that is the way it goes."

There was one respondent who would not trust her house to her neighbors when she is away. Suzan mentioned earlier that she does not know her neighbors that well and mentions that one of the reasons for that is the high migration level in the rental homes in her building, as she lives in a complex that consists of private-owned apartments and rental apartments. The absence of interaction with her neighbors or not knowing her neighbors at all, together with the fact that she does not feel it is necessary to get to know her neighbors leads to a lower level of trust:

> "It is not necessary [to take care of home when away] but it is more likely that friends will take care of the house during vacation."

The trust in neighbors when on vacation is mutual; all respondents who let neighbors watch their homes said that they watch other neighbors' homes during vacation as well.

5.1.7 Neighborhood co-operation

The intensity of interaction with neighbors varies per person but the majority of the respondents trusted their neighbors well enough to give them their home keys when on vacation. Trusting neighbors when on vacation, however, might be less intensive than thinking about Verkade & Höffken's (2019) ways to collaborate deeper with neighbors in an initiative towards sustainable living. For context, respondents were asked if they were familiar with their Wijk van de Toekomst-initiative (Hoogkamp Energie, Duurzaam Craneveer, and GroenWest). Timo said he did not know that his neighborhood was a Wijk van de Toekomst.

> "No, I have not heard of it, how should I have found out that there was an initiative here?"

Apparently, he never got in touch with Hoogkamp Energie, which is the initiative of the neighborhood where this respondent lives. Other neighbors in Hoogkamp have heard of it. One respondent who earlier mentioned that he was involved in many social activities in the neighborhood has visited neighborhood meetings in the past. Other respondents in Hoogkamp have heard that their neighborhood is part of a Wijk van de Toekomst through local newspapers or flyers.

The involvement in the Wijk van de Toekomst initiative varies per respondent. Roger has been involved with Duurzaam Craneveer in the past, but due to time, he is not part of it anymore.

> "Duurzaam Craneveer is a very nice initiative, but it is an organization that consists of volunteers and there is not enough of a vision, yet. There are some small initiatives, such as isolation, these kinds of things, to help people start off. That is nice, but this is the point where it's at right now".

The other respondents in Alteveer-Cranevelt have heard of the activities of Duurzaam Craneveer or have made use of it, which is made clear by Sara:

> "I've heard about Duurzaam Craneveer, an initiative […] we are also looking if it is possible to start a collective solar panel project, and I think we would like to join by that time."

These quotes illustrate the different extent of involvement in neighborhood activities on this topic. While one respondent has never heard of the Wijk van de Toekomst initiatives, another respondent has been part of the board of the Wijk van de Toekomst initiative in the past. Another respondent is interested in collectively starting a solar panel project as a first step in becoming sustainable. The vision of respondents on the position of the Wijk van de Toekomst initiative varies, as on the one hand there is a desire for small scale participation in the form of a collective solar panel project, but on the other hand, there is a desire for more action than only the small projects. Homeowners' personal involvement in collective neighborhood projects is heterogeneous, which confirms earlier suspicion by ArnhemAAN about whether all homeowners are included in decision-making regarding energy transition.

In Arnhem-West, all respondents were informed about GroenWest's activities. Respondents feel like GroenWest is a nice initiative, but is still at the beginning point of the energy transition, according to José:

> "Creating sustainable private homes is not a priority here yet."

Arnhem-West is a conglomerate of Lombok, Heijenoord, and Klingelbeek and is the largest Wijk van de Toekomst neighborhood. Ronald explained that within this area, smaller initiatives have arisen, as he is part of a smaller initiative. He says the following about this:

> "I would like to be an intermezzo between GroenWest and my neighbors, to create transparency in what we are doing. The small-scale character of this [other initiative] is nice because I can talk about it with my direct neighbors. And I hope that we can accomplish more with a small-scale approach. […] It is in important, though, that we both do not need to reinvent the wheel, that is a waste of energy."

He claims that the complexity of a large-scale approach has led to smaller 'spin-offs' of existing neighborhood Wijk van de Toekomst initiatives, which could imply that small-scale bottom-up processes meet the desires of homeowners most accurately there. The existence of a smaller spin-off creates a shift in the niche level. As visualized in the MLP framework in paragraph 4.2.2 of this chapter, Wijk van de Toekomst-initiatives operate on the niche level, and organizations such as ArnhemAAN and Movisie operate between the niche and regime level. Ronald's statement implies that there is a need for a smaller-scale approach than GroenWest, to make sure that his neighbors' interests are represented. According to Smith (2012) in the light of Civil Society Theory, social movements in the niche level have the opportunity to break through the regime. As Ronald tries to unify the attitudes of his neighbors their position becomes more powerful, and this could be at cost for the position strength of the Wijk van de Toekomst-initiative in his neighborhood. This improves the power position of Ronald's neighbors in the MLP model, although this does not yet mean that the position of homeowners in general improved as well.

Concerning trust, it can be stated that ten homeowners, even if they do not interact with neighbors, still trust each other in their homes. However, not all respondents feel like their profile matches the profile of their neighbors and respondents have diverse desires when it comes to involvement in neighborhood initiatives, which implies that in some cases the neighborhoods are still fragmented.

5.2 Are stakeholders rowing in the same direction?

The previous paragraphs made clear that there is some fragmentation among neighbors when it comes to environmental ideals, the way they would like to invest, and the impact of neighbors on their decision-making. Besides that, the conversations with respondents exposed that respondents think that neighborhood collaboration only is not going to make the transition happen in the neighborhood. José thinks there should be more government stimulation and intervention for sustainable home adjustments, especially from Arnhem, a municipality with a green vision on the future (Groen Arnhem, 2018).

> "I was surprised that the municipality isn't doing much [on this topic] already. It doesn't take in a steering role here, and I miss that. I would at least expect that a green municipality would be more directive and have concrete plans for neighborhoods. […] and at least give insight into what the possibilities are for every neighborhood, like connecting them to district heating.".

José claimed in paragraph 5.1.4 that she did not want to take responsibility in this transition, and here she says that the municipality should take more responsibility. According to her, the municipality could provide insight in possibilities for every neighborhood, which refers to transparency, and this is also desired by other homeowners and regime actors. Although it is impossible to strive for ultimate transparency according to Van Assche et al. (2012, p. 74), all actors in this case desire a high level of transparency between actors. It was claimed by five respondents that they have high trust in the municipality of Arnhem, as the municipality can provide transparency for homeowners. José has a high level of *rational trust* in the municipality because she knows from her own experience that the municipality is not there for their own profit. The interests of this actor are not based on profit and therefore she has the idea that the actions of the municipality are important to her and her neighbors, irrespective of the ability to monitor or control them herself (Stern & Coleman, 2015).

Moreover, respondents agreed on the fact that the municipality has to think about an approach to the transition. In their opinion, the municipality would have a clear vision for the future they would be more likely to step in. However, as illustrated in chapter four, Arnhem does have a vision of the future when it comes to the energy transition. The municipality and other regime actors mentioned participation as one of the challenges of the energy transition in Arnhem

because bottom-up processes are desired, which is why the municipality is holding back and uses an open-ended approach to this day. On the other hand, the respondents claim that the municipality should take responsibility and not wait too much on homeowners' initiative. This is where two groups in the niche and regime level are in contrast with each other; they disagree on who has real responsibility in this transition.

According to these respondents, adequate control could not only provide direction for neighborhoods but also stimulate homeowners to start with this transition by making it accessible and create a feeling of urgency. This 'feeling of urgency', however, is something that the municipality claims to not being able to control, and should originate from 'neighborhood trigger events'. In the vision of these respondents, the position of the municipality should be informative and providing transparency for homeowners. José prefers that Arnhem has an intermediary role between commercial institutions and homeowners by providing the right information and tools for becoming (more) CO2-neutral:

> "I would like that [municipality that provides transparent information]. It is not easy at all to separate the 'cowboys' from the good ones. You just want them to deliver good work, that it looks neat, and that is not easy. […] It is still a bet if you decide to go for a certain company […] so it would be nice if the municipality shares its previously good experiences."

This quote shows that the municipality could help in the decision-making of these homeowners, as she thinks that the municipality is trustworthy enough, based upon path-dependent, 'rational trust' (Stern & Coleman, 2015). This respondent mentions that she is afraid to be taken advantage of by commercial, organizations and that it results in too high costs and therefore she trusts non-commercial and independent organizations such as the municipality in Arnhem into giving transparency that could help her prevent this problem. Jan thinks that the responsibility of the municipality is to define the framework:

> "I think that the municipality should determine what has to be realized and create a framework for that. The implementation of it should be left with commercial businesses. They [municipality] should not implement on their own."

Respondents have illustrated that working together with neighbors is possible when it does not go too deep, acknowledging that the municipality takes its responsibility here. Not only is the municipality able to stimulate homeowners and create a feeling of urgency, but its neutral and

independent position is trusted by respondents and should be utilized as a bridge between firms and private homeowners. The high level of trust in the municipality can benefit the development as Walker (2008) values trust in community-based initiatives as it helps the citizen to feel positive about their transitions.

The stimulation of private homeowners could lead to more action, according to respondents. Financially, a policy should focus on providing insight into financial benefits and returns or stimulate through subsidies for homeowners. Alternatively, generating a mutual feeling of urgency towards repairing or adapting to the state of the environment could also be a governmental, non-financial way to generate action. Suzan's parents live in Groningen and deal with earthquakes as a result of gas emissions, and she gives an example of a feeling of environmental urgency for acting, which can be seen as a possible neighborhood trigger event:

> "It is clear why The Netherlands should stop using gas [because of the earthquakes in Groningen], where my parents have cracks in the wall as a result of that."

Other respondents would be more activated if the government would set subsidies for becoming CO2-neutral as a homeowner, such as Jan:

> "For me, if I would be approached by a municipality or something, […] and the province has subsidy available for this and this has to be used by the end of the year, see how you arrange this, then I would join, I guess."

This respondent is willing to step in if there would be a subsidy available, but he is not aware that there is a subsidy available. There is no knowledge obtained about possible resources to do sustainable interventions in the home, which is one of the main energy practices in 'promoting energy practices' by Verkade & Höffken (2019) and this might indicate that homeowners are not motivated well enough to do the research.

Respondents could think of other ways, that do not include direct subsidy, which would activate them more, as well. Charging the most polluting individuals or institutions with higher taxes is an example of this according to Ronald:

> "Tax measurements could be taken by the government in which one whose actions are more damaging and polluting to the environment will pay more."

It can be stated that respondents desire more governmental or municipal persuasion for sustainable home adjustment. Actors in the regime level of the MLP do not want to distort bottom-up processes by persuading homeowners too much, which stands in contrast with each other. A neighborhood trigger effect can create a feeling of urgency with homeowners, but it is unclear when this is going to happen, and municipalities have to think about the Transitievisie Warmte in 2020 and this is where homeowner participation is necessary. Creating a feeling of urgency with homeowners is at the base of sustainable interventions in the neighborhood, both individually or collectively. Walker (2008) recalls ethical and environmental commitment as a driving force for action in neighborhoods and although all respondents claim to have environmental awareness, there is still a relatively low level of action that is taken by these respondents. Since the feeling of urgency is one of the main driving forces for energy practices for sustainable interventions, it might be one bridge too far to discuss neighborhood co-operation options with homeowners. Tragedy of the commons explains that co-operation between neighbors is the most efficient way to realize sustainable neighborhoods, as the 'common good' is not just a sum of maximum benefit per individual (Portney, 2003). As stated in this chapter, respondents are not willing to give up some three kinds (aesthetics, emotional reasons, and efficiency) of individual comfort. Tragedy of the commons and NIMBYism generate individualism and maximum neighborhood efficiency is not generated through a sum of maximum profit of individuals, which does not align with the vision of expert stakeholders at the regime level.

The vision of CAN, where Arnhem is part of, is focused on shared responsibility, financing schemes, and neighborhood action. The first focus point is different for the actors, as respondents say that the municipality should take responsibility and expert stakeholders say that everyone, including homeowners, should take responsibility. The second focus point is assigned to all actors, as there are subsidies available but these do not cover the entire investment and therefore homeowners need to do investments to facilitate neighborhood sustainability. Respondents do not feel triggered to do large investments yet, because of the absence of a feeling of urgency, even though they claim to be sustainable aware. The third focus point includes neighborhood action, which is not yet addressed as an option by homeowners. Expert stakeholders addressed the value of collective neighborhood action to reduce negative externalities and realize maximum efficiency in the neighborhood. Financing and participation have been recalled by Wijk van de Toekomst as one of the main challenges in this transition, and an increased feeling of urgency could be the driving force behind participation and

investing, but at the same time Wijk van de Toekomst desires process guidance rather than taking the lead to maintain the bottom-up process, but this leaves the respondents unmotivated to act.

Experts state that more governmental persuasion puts homeowners in the 'must' quadrant, and this will eventually lead to resistance. When homeowners are in the 'want' quadrant, they are willing to look at efficient ways to make their neighborhood sustainable and at ways to finance this. At the same time, the respondents feel like it is not necessary to do large investments yet, which puts them between the 'must' and 'want' quadrant, which could be seen as 'I do not have to'. In practice, this has led to mainly individual action, driven by cost-saving (i.e. solar panel installation or home insulation), but no collective initiatives to eventually cut off the gas supply with the neighborhood. Moreover, seven respondents recalled that they would like more governmental persuasion in this, as this motivates them to do sustainable interventions and think about ways to realize a more sustainable neighborhood. In terms of Verkade & Höffken (2019), energy practices regarding in-depth neighbor collaboration such as 'developing collective energy generation' or 'developing collective energy management' are difficult to realize when the first type, 'promoting individual energy practices' is not fully present in the neighborhood.

The value of 'trust' plays a role here as well. In order to realize collective energy practices, trust in neighbors and other actors is a key factor. Nine respondents claimed to trust their neighbors, but all respondents prefer collaboration at the surface, and this means that they do not want to carry the financial risk of large-scale neighborhood sustainable interventions.

5.3 Recap

The conversations with homeowners have benefited in understanding their standpoints and experiences regarding the formation of willingness to participate in energy co-operatives with their neighbors. There is fragmentation in the neighborhoods that is manifested in three ways. The first one refers to the interaction between inhabitants, where there is less cross-interaction between young families, young working-class without children, and the retired population. This not lead to less trust in general, as respondents trust each other in their homes. The second refers to the way they look at energy co-operatives, which are different. A group of respondents prefers the individual way, others like to get collective discounts, but there is an agreement that collaboration should not go too deep. The third difference is focused on the vision on the Wijk van de Toekomst initiative, as there were respondents who have not heard of it and there were also respondents who would like to see more action.

There is still a large barrier for larger-scale investments in the home, as respondents are uncertain to invest because of the high costs. Four other reasons prevent respondents from investing and adjusting their home on a larger scale; aesthetic reasons, emotional reasons, efficiency reasons (not wanting to replace good working things in the house), and knowledge. The latter could be filled in by expert guidance in the process, and according to respondents the municipality could play a role here. Moreover, there is no feeling of urgency yet, which leaves participants in a wait-and-see attitude, and the government could also benefit here. These conversations have illustrated that sustainable awareness and larger-scale sustainable adjustments are not a natural cause and effect.

Expert stakeholders in the transition know about their mutual dependency but still find it challenging to include residents here, even though the main aim of expert stakeholders is to include residents. Moreover, the ambition is to include all residents, regardless of backgrounds. Motivation does play a key role in the process of including residents and motivation could be mobilized through neighborhood trigger events that create a feeling of urgency. Expert stakeholders should be transparent and acknowledge that this transition is also new for them, and that success can rather be reached by working together than going separate ways. The ABCD model has potential according to expert stakeholders, as it provides a step-by-step guide for approaching neighborhood processes. Earlier ABCD-driven socio-economic cases in neighborhoods in Arnhem were successful and it should show whether this is also the case for this particular case.

6 Conclusion

This chapter will describe conclusions that can be drawn from this research and answer the main and sub-questions, based upon 11 interviews, policy analysis, and relevant theory. This research is introduced with the sustainable energy transition issue and how The Netherlands is planning to implement this in the future. The role of homeowners could not be left unaddressed as they are responsible for their own sustainable home investments. To create a successful energy transition by 2050, it is useful that every homeowner is able to do sustainable investments. The large-scale character of this transition requires efficient investments according to expert stakeholders. For this reason, the municipality of Arnhem looks at an approach on a neighborhood scale, and in a bottom-up manner, with an extra focus on Wijk van de Toekomst neighborhoods.

It is necessary to include all homeowners to realize a climate neutral The Netherlands by 2050, and this has led to the following research question:

> 'To what extent are homeowners of Wijk van de Toekomst neighborhoods in Arnhem willing to do sustainable home investments to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy?'

This chapter will answer the main question with the help of three sub-questions that will be answered first.

6.1 How is homeowners' willingness to do sustainable home interventions generated?

Energy transition in The Netherlands as defined by the Klimaatakkoord (2019) contains that climate neutrality on a national level should be realized by 2050. Although there is a governmental subsidy available, homeowners must take responsibility to make their own homes more sustainable to contribute to the energy transition in The Netherlands. Energy demand is deeply intertwined in the personal, everyday lives of homeowners as it is connected to social practices (Shove & Walker, 2013). Verkade & Höffken (2019) introduced these as 'energy practices', which altogether shape the domestic energy conditions of homeowners. Since homeowners have a responsibility to think about ways to maintain their domestic energy conditions to fulfill their energy practices it is useful to get insight in their willingness to invest in sustainable investments. Walker (2008, p. 2) introduced various driving forces for sustainable action in the energy transition, where 'ethical and environmental commitment' is one of the possible incentives. Ten respondents from three Wijk van de Toekomst claim to be sustainable

aware and explain this through everyday energy practices for environmental benefit. These recalled energy practices have an easily accessible character but when it comes to higher effort sustainable home adjustments, homeowners' willingness changes. A trade-off between sustainability and comfort arises, mainly focused on three reasons; aesthetics, emotions, and efficiency. Here, the NIMBY effect plays a role, even though homeowners claim to have sustainable awareness they are not willing to do sustainable investments because of these reasons (Portney, 2003, p. 130).

Some homeowners have already invested in sustainability; these investments relate to house insulation, installing double glass, and installing solar panels. The homeowners who made these interventions claimed the main reason was cost savings, and the environment is a nice touch. The investments made by homeowners therefore mainly relate to Verkade & Höffkens (2019) 'promoting individual energy practices', where the individual benefit is high. As cost-saving is the main driving force for homeowners to do sustainable interventions, and environmental reasons are a win-win, there is some friction between the extent to which they claim to be sustainable aware, especially when it comes to future, larger investments. According to the respondents, there is no feeling of urgency to do large investments, which leaves them in a wait-and-see attitude. They feel like they are not responsible for thinking about ways to detach their home from the gas supply and also do not have the right available knowledge for this.

The generation of a feeling of urgency of homeowners could be filled in by the municipality, according to the respondents. The municipality has to take responsibility here, and respondents have a high level of rational and procedural trust in the municipality (Stern & Coleman, 2015). They think that the municipality can provide transparency in knowledge provision because of their non-profit position on the market, and this could help homeowners to hire companies that can make their homes more sustainable. Not only their independent position is recalled, but also their ability to persuade homeowners more. All respondents claimed that their wait-and-see attitude is derived from the fact that the municipality is not persuading homeowners to do anything. If homeowners would feel more municipal or governmental pressure they would be more likely to do sustainable investments.

6.2 In what way are homeowners willing to co-operate with neighbors to realize a more sustainable neighborhood in the future?

Until now homeowners have mainly made investments in the context of 'promoting individual energy practices' by Verkade & Höffken (2019). Because of the national scale of the energy transition, it is most efficient to do collective investments for a more sustainable neighborhood, as the sum of maximum efficiency in sustainability is more than a sum of maximum individual benefit (Portney, 2003, p. 130). Therefore, to get a complete answer on the main research question it was useful to look at homeowners' willingness to do collective investments with neighbors in the context of Verkade & Höffken's 'developing collective energy generation' or 'developing collective energy management' and the energy practices that belong to these types. Ostrom (2000) claimed that in order to realize civic participation in the neighborhood trust in residents and authorities is necessary, and therefore it could be stated that a certain level of social cohesion in the neighborhood is desirable as it forms a basis for trust, which is also stated by Kearns & Forrest (2000). All respondents in this research are attached to the neighborhood, but not all homeowners feel like their profile matches their neighbors' as two respondents said their interests were different. However, the absence of shared values did not lead to an absence of trust, as one respondent trusts their neighbors well enough.

The majority of the respondents trust their neighbors well enough to watch each other's homes when they are on vacation, but carrying a collective financial risk with neighbors might require a different form of trust. Not all respondents are aware that their neighborhood is a Wijk van de Toekomst neighborhood and their personal opinions on the intensity of collaboration in a Wijk van de Toekomst initiative should be facilitated. This has in fact led to local spin-off initiatives that represent a smaller group (i.e. one block of houses) in the neighborhood in order to serve personal interests more adequately.

As there is no form of collective investing at this point it is useful to know in what way homeowners are willing to collaborate with their neighbors in order to realize an efficient sustainable neighborhood in the future. All respondents agree on the fact that collaboration with homeowners should be at the surface, but not go too deep, such as the example of collective discount on purchasing solar panels for the neighborhood. There are three dominant attitudes that respondents have in collective investments; there should be financial profit to some extent, the financial benefit is not important as long as there is environmental profit, and 'if there is

municipal persuasion, we would invest'. These attitudes are different and do not form a basis for doing collective investments, as there are no shared values there.

6.3 How is homeowners' willingness to do sustainable home investments compared to the dominant policy vision regarding energy transition in Wijk van de Toekomst neighborhoods?

Homeowners' willingness for sustainable home owning, individual and collective, can be placed into the context of policymaking in energy transition. To illustrate the position of actors in the energy transition, there has been made use of the Multi-Level Perspective model of Geels (2004).

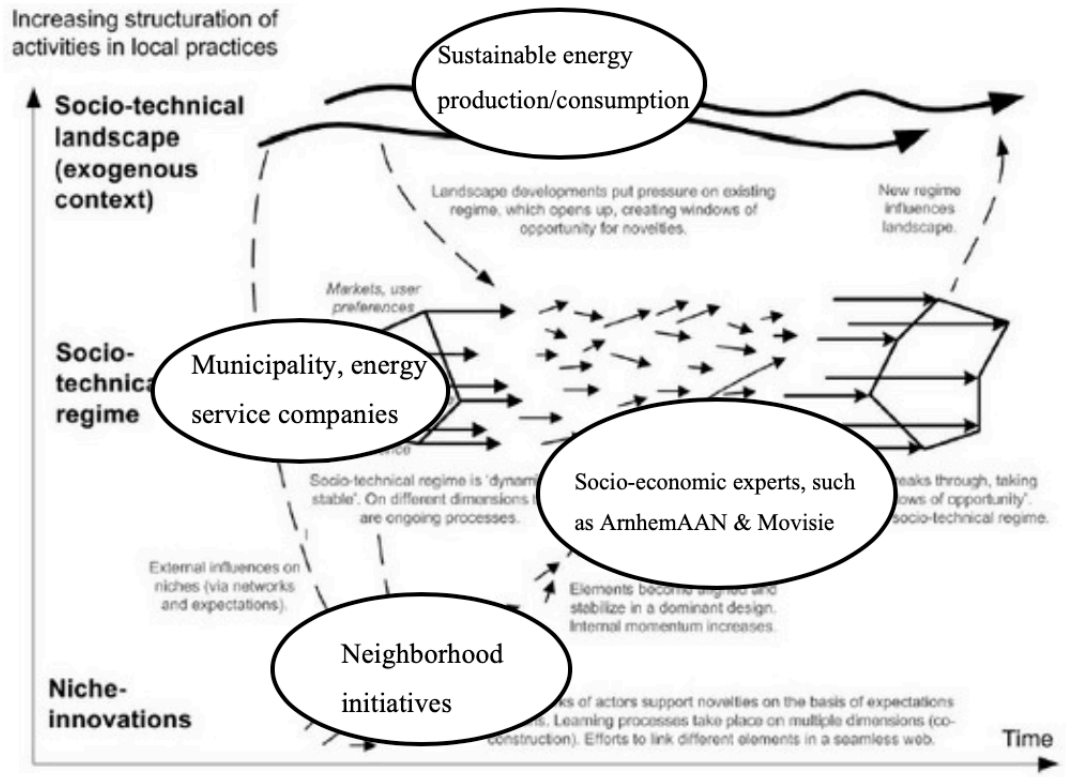


Figure 6.1: MLP applied to the case of this study.

The municipality of Arnhem has a great role in guiding the energy transition for its neighborhoods and it has thought of ways to fill this in. As member of CAN the municipality is focused on resident participation and tries to realize this through the facilitation of a bottom-up approach, where the municipality wants to motivate homeowners to take initiative in creating a sustainable neighborhood. Wijk van de Toekomst's experts who operate in the regime level (as they are originated from Alliander, GNMF, Klimaatverbond Nederland) think about process guidance for initiatives, and ArnhemAAN forms the bridge between the regime actors on one side and homeowners in the initiative on the other side. The approach from actors

in the regime level or in-between the niche and regime level is to not take the lead but guide homeowners' initiatives with their expertise, in order to maintain the bottom-up process. In this way, the neighborhood niche gets stronger and can break through the regime in the MLP and eventually contribute to a landscape change in the Dutch energy infrastructure to detach from the gas supply for 95 percent by 2050.

One of the challenges that expert stakeholders recall is participation realization and how to realize a high level of participation without taking the lead. Their dominant approach is to get homeowners from a 'must' attitude to a 'want' attitude. The role of experts is ideally characterized by seven pillars; positive approach, social approach, trigger events, expert transparency, demand, urgency, and trust. The third and sixth pillar are seen as potential driving forces for homeowners' motivation for investing in sustainable interventions, but the challenge is that a feeling of urgency is driven by a neighborhood trigger effect, and it cannot be said what neighborhood trigger effect is going to happen in the future and moreover when it is going to happen. The fourth pillar is a desire for transparency, which is also desired by homeowners. Van Assche et al. (2013) stated that in civil society regimes absolute transparency is impossible and that striving for absolute transparency as a goal in itself can have unpleasant side effects. However, there should still be looked out for undermining of the distribution of power or other forms of representation, as power distribution can shift without the community being aware of it. One point that is overlooked by the expert stakeholders here is the value of 'trust' as a basis for co-operation, as declared by Walker (2008). The discourse is mainly based upon creating intrinsic motivation but does not address 'trust', which is an important condition for co-operation between neighbors in a neighborhood initiative.

Expert stakeholders desire a participative energy transition as there are limited government financial resources available for realizing nation-wide energy transition by 2050. Respondents, however, think that the municipality should take more responsibility in facilitating this and to this moment homeowners have no willingness to take the lead. According to them, the municipality has to take responsibility and provide direction to homeowners but this statement is in contrast with the statement of expert stakeholders in the regime level, who claim that homeowners should initiate. Moreover, the expert stakeholders in the regime level desire bottom-up processes, but then the question arises whether this desire is more top-down as homeowners have no choice but to participate and take initiative.

The conversations with homeowners have made clear that homeowners are not willing to do deep collective investments with neighbors, even though it is efficient on a neighborhood scale. Expert stakeholders favor collective investments and think that a transparent, easily accessible, and social approach will move homeowners from a 'must' to a 'want' attitude when it comes to investments. This is also in contrast with homeowners, as the respondents claim to desire more governmental persuasion. In this line of thought, expert stakeholders could think of a possible 'have to' attitude for homeowners as homeowners ask for a more top-down approach, especially when a 'neighborhood trigger event' is not controllable in creating a feeling of urgency.

6.4 To what extent are homeowners of Wijk van de Toekomst neighborhoods in Arnhem willing to do sustainable home investments to realize a more sustainable neighborhood that conforms to the Dutch energy transition policy?

The level and intensity of investments and their energy practices determine the willingness of homeowners to do sustainable home investments. These are driven by personal motivation and a feeling of urgency. In past sustainable home interventions, respondents were motivated by cost savings, and the environmental benefit was their secondary motivation. Although respondents were sustainable aware, when costs are driven up too high or the sustainable interventions are too high maintenance with little to no return, they were not willing to do this. More governmental pressure could change this, as the respondents claim to feel like they have no choice but to invest. Moreover, respondents have a high level of trust in the municipality of Arnhem but feel like it is operating on the background.

When placed into the context of the Dutch energy transition policy-making and all stakeholders that are involved, friction occurs. There is a mismatch between homeowners' desire for more governmental pressure and expert stakeholders' desire to initiate a bottom-up process. On a local scale, homeowners' vision on the way energy transition should go differs, leading to even smaller spin-off initiatives that represent the interests of a smaller group.

Even though homeowners trust their neighbors well enough, personal interests differ and this is a barrier for doing collective investments, especially when these investments have a higher collective benefit than the individual benefit or if it causes discomfort. One thing that all homeowners do agree on is that they would be more likely to do investments if the municipality took more responsibility, and this agreement might be the feeling of urgency that the regime expert stakeholders can provide if they are willing to let go parts of their bottom-up approach.

Smith (2012) argued earlier that civil society is never the ultimate factor in transitions, and this research concludes that energy transition is not only powered by homeowners, but powered by the entire society.

7 Discussion

This chapter discusses the methods and theoretical approaches that were used in this study. The expectations and the realities are compared, and there will be looked at the strengths and weaknesses of this.a

7.1 Reflection

First of all, the actuality of this study as made clear in the introduction benefited the relevance of this research, but there are also downfalls to this. Since the energy transition was concretized in the Klimaatakkoord in 2019, the field of research is open and relatively new. This implies that a lot of time is spent by exploring the subject of the energy transition. In addition to that, the technological terms that were used to define types of sustainable home interventions needed to be explored and sometimes caused confusion by respondents who were not aware of these types. This was caused by the novelty of sustainable investments, as they are most likely located in the earlier phases of Levitt (1965). On the other hand, this research contributed to this relatively new field of study and form a better basis for further research.

This research aimed to get an understanding of the willingness of homeowners to do sustainable home investments in order to realize a more sustainable neighborhood that conforms to the Dutch energy transition. To get a broad understanding of investments, there is looked at different ways to invest in the theoretical framework of this research and a distinction was made between investments with individual benefits and investments with collective benefit, where collaboration was one of the key principles. The motivation to use Wijk van de Toekomst neighborhoods as a case study was to avoid a knowledge gap with homeowners in the neighborhoods, as the expectation was that homeowners were aware that they are a Wijk van de Toekomst neighborhood. Through the conversations with homeowners, it became clear that not everyone had heard about Wijk van de Toekomst, which made some of the interview questions about ways to make the home sustainable too complex for them. This is why in some cases, discussing collaboration with homeowners was less of an option as there was no feeling of urgency because of the lack of knowledge. This could have had some consequences for the validity of this research, but on the other hand, experts have said that they are aware that a group is underrepresented, but that this group is difficult to reach out to. Snowball sampling made it possible to reach a group of people that would not likely reach out to the researcher. These people have been reached in this study and this can be seen as one of the main strengths of this

research. In a subsequent study, however, it will be better to pay more attention to the fact that homeowners are not always well-informed about the fact there are community initiatives in their neighborhoods.

One of the limitations that were found in the theoretical concepts of this research reflects on Geels (2004). There has been mentioned some critique on Geels' Multi-Level Perspective, stating that the approach might be too static, and not address the interaction between cross-system boundaries and power relations. In this research it has become clear that there are parties like ArnhemAAN that operate between the niche and the regime level, aiming for a transparent relationship between homeowner initiatives and the regime. Although the model can be used to contextualize all positions, this does not provide a holistic view of the Dutch landscape. For this reason, Civil Society Theory (Smith, 2012) has been added to further discuss power relations in this model, where the role of individualism was addressed to further explain underlying relationships between actors. This was experienced as a useful addition to this research as the recalled 'deadly sins' by Portney (2003) could be used to explain homeowners' statements.

The theoretical debate on the variable of 'trust' had a different completion in this research. In the conceptual model, 'trust' was given as one of the basic principles for co-operation, and this has not been explored deeply enough. One reason for this could be that in the conversations with homeowners, introducing possible co-operation scenarios with neighbors was relatively new to them, and as this information was not known beforehand.

Concluding, there is one important note to be made. The research preparation and data collection took place in the period from September 2019 - January 2020. Data provided by policymakers, homeowners, and other involved stakeholders did not take the 2020 COVID-19 pandemic into account. This global crisis can affect the earlier discussed pace of the transition in the Dutch landscape. One possible benefit from this crisis may be that there is more time for policy-makers to re-examine the current approach and whether it is appropriate with the willingness of homeowners to invest.

7.2 Recommendations for further research

First of all, the case of this research was in Arnhem, but it is situated in the context of the Dutch energy transition. Therefore, it is useful to research the role of homeowners in the context of the Dutch energy transition in other cases as well in order to provide a broader or more in-depth data set. As stated in the methodology chapter of this research, this research is not generalizable because of the context-specific character. Comparative cases could provide more understanding of homeowners' willingness to invest in sustainable home alternatives the energy transition. Moreover, The Klimaatakkoord is released in 2019 and local policy-making is not finished yet, which gives it a dynamic character. One possible case could be in Utrecht Overvecht-Noord, because this neighborhood is appointed as a gas-free pilot neighborhood by the Dutch government (DUIC, 2020). Here, the municipality, together with housing corporations and gas supplier companies, is aiming to encourage residents by providing different packages to detach from the gas network. The problem where homeowners did not know about which sustainable alternative was fitting for their house can be overcome by studying this case, as there are options provided.

One of the main findings of this research is that homeowners are not intrinsically motivated enough to do a sustainable home intervention and to participate in a neighborhood initiative. This relation has been acclaimed in literature, as Oteman et al. (2014) already stated that community projects rely on intrinsic motivations. This research attempted to look at the extent to which homeowners were willing to do sustainable investments and possibly participate in neighborhood initiatives and it has become clear that this is highly driven by a feeling of urgency. Policy-makers stated that this feeling of urgency is uncontrollable; a neighborhood trigger event might lead to a feeling of urgency and intrinsic motivation. In further research, it therefore is useful to see what other controllable factors are behind this feeling of urgency.

Steg et al. (2015) indicated that it is unclear to what extent and under which conditions bottom-up initiatives can be effective. This study also casts doubt on the effectiveness of bottom-up initiatives in this case. Neighborhood initiatives become a strong niche if there is a high level of participation, but when there is no intrinsic motivation this does not happen. Regime stakeholders do not want to distort the bottom-up process by putting the initiative as much as possible with the homeowners, but this has not led to a high level and desire for participation yet. All homeowners claimed to desire more governmental steering in this case, and homeowners experienced a high level of trust in the municipality. In addition to this, it was

recalled in the first chapter of this research that the municipality of Arnhem is exploring its role in the transition, and this particular finding might provide the municipality with more insight on the matter. Further research could reflect on the role of alternative governing strategies in neighborhood initiatives.

As mentioned in paragraph 7.1, it is concluded that Geels' (2004) MLP might have been to static for the case of this research. This model approached the energy transition as a whole, but to get a more in-depth understanding of Wijk van de Toekomst, it could have been useful to look at neighborhood initiatives specifically. For further research concerning Wijk van de Toekomst, it is useful to zoom in. This could be done through the model of Walker & Devine-Wright (2008), as their developed model helps to get an understanding of the community and who runs the project, who influences the project, and who is involved.

7.3 Recommendations for praxis

This research got introduced with the release of the Klimaatakkoord (2019), which entailed many sustainable reforms that need to be implemented in the Dutch society. It was made clear that homeowners face great responsibility in doing sustainable interventions in the home. In order to realize sustainability on a national level, it is necessary that all Dutch homes need to be detached, and as homeowners in Arnhem share approximately 50% of the neighborhood housing supply there was direct reason to see to what extent this group is willing to invest in a more sustainable home. Klimaatverbond Nederland noticed the large responsibility this had for homeowners and is looking for ways to implement the policy of the Klimaatakkoord (2019) efficiently. The bottom-up realization was one of the key elements here, which has been the desired course for this transition in Arnhem. The initiative should come from inside the neighborhood, preferably in a co-operative setting with neighbors. This research can benefit Klimaatverbond Nederland in providing insight into what extent homeowners in Wijk van de Toekomst neighborhoods are willing to invest in sustainable alternatives, in order to further embed, expose, and execute local climate policy in Arnhem.

The first refers to intrinsic motivation. This research has made clear that intrinsic motivation is at the base of joining a Wijk van de Toekomst and this is desirable to keep bottom-up processes intact. Neighborhood trigger events can help create a feeling of urgency but these events are uncontrollable, which is why it is useful to look for other ways to create a feeling of urgency and eventually intrinsic motivation for investing in sustainable alternatives. Respondents in

this study claimed that more governmental persuasion would create a feeling of urgency, which could be an option.

This automatically tackles the second recommendation for praxis. It was stated in the theoretical framework of this research that 'trust' is key to the realization of a successful neighborhood initiative. Although homeowners do not trust their neighbors well enough to engage in intensive collaborations, they feel like they can trust the municipality. Moreover, they think that the municipality of Arnhem should take more responsibility.

The third point of thought for Klimaatverbond Nederland and policy stakeholders is to re-assess their current bottom-up approach to this issue. Since policy stakeholders are the ones who decided to give the initiative in this transition to homeowners it remains debatable to what extent the bottom-up process is more a top-down process already. Especially, because homeowners claim to be willing to invest in sustainable home alternatives when there is more governmental persuasion as this creates a feeling of urgency.

8 References

Aiken, G.T. (2017). Social Innovation and Participatory Action Research: A Way to research community. *European Public & Social Innovation Review (EPSIR), 2*(1).

ArnhemAAN (n.d.). Het AANjaagfonds. Retrieved on 8 March 2020, from https://www.arnhemaan.nl/het-aanjaagfonds.

Assche, K. van, Beunen, R., & Duineveld, M. (2014). *Evolutionary Governance Theory: An Introduction. (SpringerBriefs in economics)*. Heidelberg New York Dordrecht London: Springer.

Avelino, F., Frantzeskaki, N., Bosman, R. (2013) "A Complex Transition Perspective on Community Energy. Exploring the Dynamics of Community Energy from a Complex Transition Perspective." In: Quist, J., Wittmayer, J., Umpfenbach, K. and Bauler, T. (2013). Pathways, Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles. Sustainable Consumption Transitions Series, Issue 3 Proceedings of SCORAI Europe Workshop, 7-8 October 2013. Rotterdam: The Netherlands, p. 141.

Berg, J. van den (28 June 2019). Nederland in dit tempo pas na 280 jaar van gas af. *Volkskrant*.

Boer, J. de, Zuidema, C., & Gugerell, K. (2018). New interaction paths in the energy landscape: the role of local energy initiatives. *Landscape Research, 43*(4), pp. 489-502.

Bouzarovski, S. (2014). Social justice and climate change: Addressing energy poverty at the European scale. University of Manchester. Retrieved on 30 September 2019, from https://www.socialplatform.org/wp-content/uploads/2014/01/Article_energy-poverty_Bouzarovski.pdf.

Bowen, Glenn. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal, 9*(2), pp. 27-40.

Bryman, A. (2012) *Social Research Methods* (4th edition). Oxford: Oxford University Presss.

Caletrio, J. (2015). Multi-Level Perspective and Theories of Practice; A mistaken controversy? Retrieved on 25 September 2019, from http://en.forumviesmobiles.org/printfvm/2972.

Creswell, J. (2012). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks: SAGE.

Dekker, K. (2007). Social Capital, Neighbourhood Attachment and Participation in Distressed Urban Areas. A Case Study in The Hague and Utrecht, the Netherlands. *Housing Studies, 22*(3), pp. 355-379.

Dick, B. (2003). What can action researchers learn from grounded theorists. Paper prepared for the research symposium at the Australian and New Zealand ALARPM/SCIAR conference, Gold Coast, 4-5 May 2003.

Dóci, G., Vasilejadou, E. & Petersen, C. (2015). Exploring the transition potential of renewable energy communities. *Futures, 66*(2), pp. 85-95.

Dóci, G., & Vasileiadou, E. (2014). "Let's do it ourselves" : individual motivations for investing in renewables at community level. *Renewable and Sustainable Energy Reviews, 49,* pp. 41-50.

DUIC (2020). Gemeente Utrecht gaat bewoners Overvecht-Noord verleiden om van gas aft e stappen. Retrieved on 27 July 2020, from https://www.duic.nl/algemeen/gemeente-utrecht-gaat-bewoners-overvecht-noord-verleiden-om-van-gas-af-te-stappen/.

Dyer, W., Wilkins, A., & Eisenhardt, K., (1991). Better stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt; better J. Gustafsson stories and better constructs: The case for rigor and comparative logic. *The Academy of Management Review, 16*(3), p. 613.

Duurzaam Craneveer (2019). Worden Cranevelt en Alteveer Aardgasvrij?. Retrieved on 11 March 2020, from https://www.duurzaamcraneveer.nl/2019/11/01/enquete/.

El Bilali, H. (2019). *The Multi-Level Perspective in Research on Sustainability Transitions in Agriculture and Food Systems: A Systematic Review*. Vienna: Centre for Development Research, University of Natural Resources and Life Sciences.

Elmir, R., Schmied, V,, Jackson, D. & Wilkes, I. (2011). Interviewing people about potentially sensitive topics. *Nurse Researcher. (19)*1, pp. 12-16.

Gelders Energieakkoord (n.d.). Gelders Energieakkoord. Retrieved on 11 November 2019, from www.geldersenergieakkoord.nl.

Gemeente Arnhem (2015). Wijkprofielenboek. Afdeling Informatievoorziening, Onderzoek en Statistiek.

Geels, F. (2004). From sectoral systems of innovation to social-technical systems. Research *Policy, 33*, pp. 897-920. 10.1017/j.prespol.2004.01.015.

Gemeente Arnhem (May 2015). New Energy Made in Arnhem, programma 2015-2020. Retrieved on 2 March 2020, from https://www.arnhemspeil.nl/docs/2019-01-16-gemeente-arnhem-new-energy-made-in-arnhem-programma-2015-2020.pdf

Gemeente Arnhem (2016). Arnhem Partner in nieuw EU Interreg subsidieproject 'CAN'. https://www.arnhem.nl/stad_en_wijken/projecten/energie_made_in_arnhem/energie_made_in_arnhem_nieuwsoverzicht/arnhem_partner_in_nieuw_EU_Interreg_subsidieproject_CAN.

Gemeente Arnhem (2017). Arnhem in Cijfers. Retrieved on 5 September 2019, from https://www.arnhem.nl/stad_en_wijken/onderzoek_en_cijfers/publicaties/staat_van_stad_en_wijken/staat_van_de_stad/flyer_arnhem_in_cijfers_2017.org.

Gemeente Arnhem (2018). Arnhem Partner in EU Interreg subsidieproject Climate Active Neighborhoods (CAN). Retrieved on 20 October 2019, from https://www.arnhem.nl/stad_en_wijken/projecten/energie_made_in_arnhem/Arnhem_partner_in_EU_Interreg_subsidieproject_Climate_Active_Neighbourhoods_CAN.

Gemeente Arnhem (2020). Begroting, transitievisie warmte. Retrieved on 7 March 2020, from https://arnhem.begroting-2020.nl/p27724/transitievisie-warmte.

Gemeente Arnhem (2020). Duurzame Energie. Retrieved on 2 March 2020, from https://www.arnhem.nl/stad_en_wijken/Duurzame_energie.

Given, L. M. (2008). *The SAGE encyclopedia of qualitative research methods (Vols. 1-0)*. Thousand Oaks: SAGE.

Goodman, L. (2011). Comment: On respondent-driven sampling and snowball sampling in hard-to-reach populations and snowball sampling not in hard-to-reach populations. *Sociological Methodology, 41*(1), pp. 347-353.

Grin, J., Rotmans, J. & J. Schot (2010). *Transitions to Sustainable Development. New Directions in the Study of Long-Term Transformative Change*. New York / London: Routledge.

Groen Arnhem (2018). Groenvisie Arnhem. Retrieved on 17 February 2020, from https://groenarnhem.nl/groenvisie-arnhem-20187-2035/.

GroenWest Arnhem (2020). GroenWest aanvraag voor het Wijk van de Toekomst programma fase 2 van het Gelders Energieakkoord toegekend!. Retrieved on 2 April 2020, from https://groenwestarnhem.nl/wijk-van-de-toekomst/.

Hardeman, E. (2019). *De Wijk van de Toekomst ligt in Gelderland*. Kennisplatform Energie+: Lokaal Duurzaam Opgewekt.

Hargreaves, T., Haxeltine, A., Longhurst, N. & Seyfang, G. (2011). Sustainability transitions from the bottom-up: Civil society, the multi-level perspective and practice theory. In: Cohen, M., Szejnwald Brown, H. and P. J. Vergargt (2013) *Innovations in sustainable consumption: new economics, socio-technical transitions and social practices*. Edward Elgar Publishing.

Heijden, van der J. (2015). *Governance for urban sustainability and resilience: Responding to climate change and the relevance of the built environment*. Edward Elgar Publishing.

Hulshof, M. & Straver, K. (8 June 2018). Verdeel de lusten en lasten van de groene revolutie eerlijk. *De Volkskrant*.

Hoogkamp Energie (2020). Verslag bewonersbijeenkomst 21 januari 2020: Kansen voor Hoogkamp in de energietransitie. Hoogkamp Energie.

Hoppe, T., Graf, A., Warbroek, B., Lammers, I., & Lepping, I. (2015). Local Governments Supporting Local Energy Initiatives: Lessons from the Best Practices of Saerbeck (Germany) and Lochem (The Netherlands). *Sustainability 2015(7),* pp. 1900-1931.

Interreg (2019). Climate Active Neighborhoods (CAN). Retrieved on 7 March 2020, from https://www.nweurope.eu/projects/project-search/climate-active-neighbourhoods-can/

Johnson, T. (2014). Snowball Sampling: Introduction. *Wiley Stat*.

Kearns, A. & Forrest, R. (2001). Social cohesion, social capital and the neighbourhood. *Urban Studies 38*(12), pp. 2125-2143.

Klimaatverbond Nederland (2019). Over ons. Retrieved on 31 March 2020, from www.klimaatverbond.nl

Knack, S., & Zak, P. (2003). Building Trust: Public Policy, Interpersonal Trust, and Economic Development. *Supreme Court Economic Review 10,* pp. 91-107.

Louws, M. (4 January 2018*)*. Gasloos wonen in de bestaande bouw: de uitdagingen zijn groot. *Vakblad Warmtepompen*.

Levitt, T. (1965) Exploit the Product Life Cycle. *Harvard Business Review, 43*, pp. 81-94.

MacDonald, C. (2012). Understanding Participatory Action Research: A Qualitative Research Methodology Option. *Canadian Journal of Action Research, 13(2),* pp. 34-50.

Manzo, L. C., & Perkins, D. D. (2006). Finding Common Ground: The Importance of Place Attachment to Community Participation and Planning. *Journal of Planning Literature, 20,* pp. 335 – 350.

Miller, Clark & Iles, Alastair & Jones, Christopher. (2013). The Social Dimensions of Energy Transitions. *Science as Culture, 22,* pp. 135-148. 10.1080/09505431.2013.786989.

Movisie (2008). Een bloeiende civil society. Retrieved on 20 July 2020, from https://www.movisie.nl/sites/movisie.nl/files/publication-attachment/Een%20bloeiende%20civil%20society%20%5BMOV-225890-0.3%5D.pdf.

Movisie (2010). ABCD. Movisie. Retrieved on 30 March 2020, from https://www.movisie.nl/interventie/abcd.

Oteman, M., Wiering, M. & Helderman, J. (2014). The institutional space of community initiatives for renewable energy: a comparative case study of the Netherlands, Germany and Denmark. *Energy, Sustainability and Society, 4*(11).

Ostrom, E. (2000). Collective action and the evolution of social norms. *The Journal of Economic Perspectives, 14*(3), pp. 137-158.

Osynmuyiwa, O., Biermann, F. & Agni Kalfagianni (2018). Applyin the multi-level perspective on socio-technical transitions to rentier states: the case of renewable energy transitions in Nigeria. *Journal of Environmental Policy & Planning, 20*(2), pp. 153-156.

Portney, K. E. (2003). Taking Sustainable Cities Seriously: Economic Development, the Environment, and Quality of Life in American Cities (2nd edition). *Journal of Environmental Studies and Sciences, 6*.

Provincie Gelderland (2018). Energietransitie: Samen in Versnelling!. Retrieved from https://www.gelderland.nl/Beleid-Energietransitie.

Provincie Gelderland (2019). Wijk van de Toekomst. Retrieved on 20 March 2020, from http://magazine.gelderland.nl/wijk-van-de-toekomst#!/voorwoord.

Quist, J., Wittmayer, J., Umpfenbach, K. and Bauler, T. (2013) Pathways, Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles. Sustainable Consumption Transitions Series, Issue 3, Proceedings of SCORAI Europe & InContext Workshop, 7-8 October 2013, Rotterdam, The Netherlands.

Rijksoverheid (2019). Klimaatakkoord. Retrieved on 7 March 2020, from https://www.klimaatakkoord.nl/binaries/klimaatakkoord/documenten/publicaties/2019/06/28/klimaatakkoord/klimaatakkoord.pdf.

Rijksoverheid (n.d.). Vraag en antwoord: Krijg ik subsidie voor een warmtepomp? Retrieved on 3 June 2020, from https://www.rijksoverheid.nl/onderwerpen/duurzame-energie/vraag-en-antwoord/krijg-ik-subsidie-voor-een-warmtepomp.

Rothoff, M. (11 October 2019). Arnhem wint EU Star Award met project Climate Active Neighborhoods. *De Gelderlander*.

Rotmans, J., Loorbach, D. & Kemp, R. (2007). Transition management: Its origin, evolution and critique. Dutch Research Institute for Transitions, Drift. Erasmus University Rotterdam.

Schatzki, T. (2010). Materiality and Social Life. *Nature and Culture 5*(2), pp. 123-149.

Seyfang, G. & Haxeltine, A. (2012). Growing Grassroots Innovations: Exploring the Role of Community-Based Initiatives in Governing Sustainable Energy Transitions. *Environment and Planning 30*(3).

Shove, E. & Walker, G. (2013). What is energy for? Social Practice and Energy Energy Demand. *Theory, Culture & Society, 31,* pp. 41-58

Smith, A. (2012). *Civil Society in Sustainable Energy Transitions*. University of Sussex, United Kingdom.

Spectrum Elan (2019). Verslag bijeenkomst 'Niet kunnen investeren, toch profiteren'.

Steg, L., Perlaviciute, G., & van der Werff, E. (2015). Understanding the human dimensions of a sustainable energy transition. *Frontiers in Psychology, 6*, p. 805.

Stern, M. & Coleman, K. (2015). The Multidimensionality of Trust: Applications in Collaborative Natural Resource Management. *Society & Natural Resources, 28*(2), pp. 117-132.

Strauss, A. & Corbin, J. (1990). *Basics of qualitative research*. Thousand Oaks: SAGE.

Taylor, L. (2016). *Case study methodology*. In: Clifford, N., Cope, T., Gillespie, T., & French, S. (2016). *Key Methods in Geography*. London: SAGE.

Urquhart, C. (2013) *Grounded theory for qualitative research*. London: SAGE, pp. 55-77.

Vereniging Eigen Huis (2019). Klimaatakkoord: iedereen moet kunnen verduurzamen.

Verkade, N. & Höffken, J. (2019). Collective Energy Practices: A Practice-Based Approach to Civic Energy Communities and the Energy System. School of Industrial Engineering and Innovation Sciences, Eindhoven University of Technology. Retrieved on 28 May 2020, from https://www.mdpi.com/2071-1050/11/11/3230/htm.

Verschuren, P. & Doorewaard, H. (2007). *Het Ontwerpen van een Onderzoek*. Boom Lemma Uitgevers.

Verschuren, P. & Doorewaard, H. (2015). *Het ontwerpen van onderzoek (vijfde druk)*. Amsterdam: Lemma Uitgevers.

Walker, G. (2008). What are the barriers and incentives for community-owned means of energy production and use*?*. *Energy Policy, 36*(12), pp. 4401-4405.

Walker, G. & Devine-Wright, P. (2007) Community renewable energy: what should it mean? *Energy Policy, 36*(1), pp. 497-500.

Wijk van de Toekomst (n.d.). Wijken van de Toekomst. Retrieved from https://www.wijkvandetoekomst.nu/.

Wittmayer, J. Schapke, N., Feiner, G., Piotrowski, R., Steenbergen, F. & Baasch, S. (2013). Action Research for Sustainability: Reflections on transition management in practice. European Union. Retrieved on 30 May 2020, from https://incontext-fp7.eu/sites/default/files/InContext-ResearchBrief-Action_research_for_sustainability.pdf.

The World Bank (2002) Citizen Participation Handbook. Kyiv, iMedia, Ltd. Retrieved on 2 October 2019, from http://siteresources.worldbank.org/INTBELARUS/Resources/eng.pdf.

Yin, R.K. (2003). *Case Study Research: Design and Methods*. Thousand Oaks: SAGE.

Zanten, M. van (9 July 2018). Energietransitie zo dicht mogelijk bij de burgers brengen. Retrieved on 19 December 2019, from https://www.ru.nl/nieuws-agenda/vm/2018/juli/energietransitie-dicht-mogelijk-burgers-brengen/.