

# Climate Change Adaptation and the Energetic Society



A research into how visions influence the governance arrangement of bottom-up initiatives which contribute to climate change adaptation in the city of Arnhem

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## Colophon

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## Summary

Over the past decade the climate in the Netherlands has changed. Cities are getting more vulnerable for events of climate change such as heat waves and more intensified and extreme precipitation. Heat waves can lead to health related problems, especially for the elderly, little children and ill people. Since large surfaces in cities are often paved, it gets harder for the rainwater to infiltrate into the ground. Predictions are made by the KNMI that in the future the temperature will keep on rising with more periods of drought, heatwaves and more intensified and extreme precipitation will occur, therefore one of the urgent issues to deal with in cities, is making the city more climate adaptive.

One of the challenges in effective climate adaptation concerns the engagement of others such as local governments, government agencies, independent governing boards but also private actors and NGOs could be stimulated to get involved. The demand for more involvement of various actors correlates with a general trend that society itself is changing over the past decades. Citizens and businesses are taken more matters into their own hands by improving their own surroundings by creating their own initiatives. Governmental and non-governmental actors can influence these initiatives by forming coalitions and providing resources. In addition, regulation can also influence these initiatives. Visions can be considered as one of the key elements in realizing sustainable solutions. Envisioning how a desirable future might look, and utopian thoughts, provide direction for actions and behaviour. Positive visions about the future can be considered as influential stimuli for changes.

The city of Arnhem has a leadership position in climate adaptation. The past decade, climate change risks such as heat stress and intense precipitation have been identified by governmental actors such as the municipality and the waterboard of Rijn en IJssel. In addition, non-governmental actors such as landscape architecture bureau are also taking an effort to contribute in creating awareness and informing other actors. The past decade, several actors such as elementary schools, neighborhood residents and businesses created initiatives which contribute to climate change adaptation.

This study aims to identify how visions influence the different dimensions of the governance arrangement of bottom-up initiatives in the city of Arnhem, which contribute to climate adaptation. This aim has led to the following question for this research:

*How do visions influence the governance arrangement of bottom-up initiatives which contribute to climate change adaptation in the city of Arnhem?*

A case study was conducted which included a number of bottom-up initiatives that contributed to climate change adaptation in which visions played a clear role and other actors were involved. The empirical findings of this research showed that the following visions are present in bottom-up initiatives which contribute to climate change adaptation: (1) climate change adaptation, (2) social cohesion, (3) circular economy and sustainable use of products and (4) sports and health. Shared visions do influence the formation of coalitions. Social cohesion and climate change adaptation connects the initiators of the bottom-up initiatives with the municipality of Arnhem. However, it can be proven that there are also opportunities for other actors, such as landscape architects to introduce visions for climate change adaptation and circular economy, when a coalition is formed. Visions are of influence on the allocation of resources by governmental and non-governmental actors. Sometimes shared visions for sports and health, climate change adaptation and social cohesion are of influence on the allocation of financial resources mostly by the municipality, but can also be provided by other non-governmental actors. The visions related to climate change adaptation and circular economy and the use of sustainable products were clearly of influence on the allocation of material resources. The vision for climate change adaptation and circular economy and the sustainable use of products was of influence on allocation of the skills and



knowledge of non-governmental actors which primary expressed themselves into the designed plans, even when initiators did not share this vision with the involved landscape architecture bureaus. In addition, skills and knowledge were also provided to benefit the social cohesion of the neighborhood. Visions related to climate change adaptation and social cohesion can make formal rules related to subsidy, flexible. In addition the vision related to social cohesion was also of influence on the formation of informal rules regarding the accessibility of the site.

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Happy reading!

**Hanneke Beker**  
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## Chapter 1: Introduction

This chapter outlines an introduction of this research. It starts by explaining the problem indication on which this research is based. Section 1.2 will address the research aim and research question of this research. Section 1.3 will discuss the societal and scientific relevance of this research. The last section will provide a reading guide for this research.

### 1.1 Problem indication

#### ***Climate change in urban areas***

Research done by the KNMI (2015) shows that in the Netherlands, the temperature has risen by 1,4°C between 1951 and 2013 and in the same period of time precipitation also increased with 14%. According to Van de Ven et al. (2011) especially urban areas in the Netherlands are more vulnerable to climate change. They argue that the adaptive capacity of cities is very low. In most cases, large areas of cities are outdated and do not meet up with the needs which are required nowadays to be climate proof. Events of climate change such as heat waves and more intensified and extreme precipitation, can cause several problems in urban areas. Due to high temperatures, heat waves occur more often. This can cause health problems for more vulnerable citizens such as the elderly, little children and ill people. Besides high temperature, cities have to deal with more intense and extreme precipitation. Because large surfaces within urban areas are often paved, the rainwater has more difficulty to infiltrate into the ground (Van Drunen & Lasage, 2007).

Research of the KNMI (2015) even predicts that in the future the temperature will keep on rising with more periods of drought, heatwaves and more intensified and extreme precipitation to occur. This is why it is important that in urban areas climate change is addressed and that measures are taken to tackle those consequences of climate change. Climate change can be tackled in two ways, through climate mitigation and climate adaptation. The IPCC (2007) defines adaptation as: “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (p. 6).

The past decade, Dutch national policy has mostly been targeting on climate mitigation by stating ambitions regarding sustainable energy. One of these ambitions is to achieve 14% of sustainable energy in 2020 (Rijksoverheid n.d.). Research of the Dutch climate organization Klimaatverbond Nederland shows that 63% of the municipalities in the Netherlands experience a lack of urgency to address climate change adaptation. The lack of both administrative and legal pressure cause other priorities to come forward, such as climate mitigation, which is driven on by national targets (Klimaatverbond, 2015). Yet several research reports conclude that climate adaptation is also necessary to tackle climate change (PBL, 2015; IenM, 2016).

#### ***Climate change adaptation and governance***

Uncertainties about responsibilities for different actors can be considered as a huge barrier for implementing climate adaptation measures (Dewulf, Meijerink & Runhaar, 2015). According to the PBL (2015) climate change adaptation asks the involvement of both public and private actors. The Dutch Government is increasingly less operating from a hierarchical position and is more focused on collaboration and facilitation. One of the challenges in effective climate adaptation concerns the engagement of others such as local governments, government agencies, independent governing boards but also private actors and NGOs could be stimulated to get involved. The demand for more involvement of various actors correlates with a general trend that society itself is changing over the past decades. According to the PBL (2015): “citizens and businesses have more responsibilities (the ‘participatory society’) and more often take the initiative to improve that surroundings (the ‘energetic society’)” (p. 30). Holstein (2011) argues that urban areas can become more

resilient to extreme weather conditions when society is involved. Society can contribute to solutions in climate adaptation strategies while at the same time the vitality of civil society can be improved. Hajer (2011) argues that the modern society is an energetic society. A large group of citizens, farmers and companies are willing to act and change when it comes to sustainability. According to Hajer the government can contribute with knowledge, skills and rules into facilitating new initiatives.

Besides knowledge, skills and rules, there are also other variables that can influence the governance arrangements in climate adaptation. The policy arrangement approach provides a framework that outlines different dimensions of policy arrangements (Van Tatenhove, Arts & Leroy, 2000). The dimensions can be defined in terms of one substantive dimension: policy discourses and three organizational dimensions: policy coalitions, power and resources and the rules of the game.

Arnouts, Van der Zouwen and Arts (2012) have used this specific approach to analyze policy processes in terms of governance to create ideal-typical governance arrangements. This approach presents different dimensions that influence governance arrangements. Wiek & Iwaniec (2014) argue that key elements in realizing sustainable solutions are visions. Envisioning how a desirable future might look, along with utopian thoughts, provide direction for actions and behaviour. Positive visions about the future can be considered as influential stimuli for changes. They can direct planning, decisions, actions and behaviour. Visions are often shaped in in a decentralized bottom-up type of social interaction processes among different actors (Quist, 2007). When visions are shared they can make it possible that actors from different background unite. In addition, they can also guide the behaviour and actions of actors (Dierkes, Hoffman & Marz, 1996). It can therefore be concluded that it is to be expected that visions can play an important role in climate change adaptation.

### ***Climate adaptation in Arnhem***

The city of Arnhem can be considered as one of the European cities which are taking a leadership position in climate change adaptation (Boezeman, Ganzevoort, Van Lier & Louwers, 2014). In the past decade, climate change risks such as heat stress and intense precipitation have been identified by the municipality and the waterboard of Rijn en IJssel. On 28 July, 2014, intense precipitation caused extreme water nuisance in different areas of Arnhem. The sewer system could not handle all the water and several streets flooded and buildings were damaged (Omroep Gelderland, 2014).

Recently a platform has been established with several governmental and non-governmental actors, which is called 'Platform Arnhem Klimaatbestendig'. The aim of the platform is to connect citizens, companies, knowledge institutes, governmental organizations and neighborhood initiatives (Arnhem Klimaatbestendig, 2016). The goal is to create awareness about the negative effects of climate change, inform other actors about the possibilities to tackle these issues and stimulate them to take measures. Over the past decade, several bottom-up initiatives are taken by different actors such as elementary schools, neighborhood residents and businesses (M. Verstraten, personal communication, April 25, 2017; R. Bos, personal communication, May 9, 2017; S. Blok & D. van der Wal, personal communication, April 24, 2017). This is why the city of Arnhem has been chosen for this research, since it can give an insight of best practices. This research focusses on some of the bottom-up initiatives that are present in the city and on how different dimensions of governance arrangements of bottom-up initiatives are influenced by visions. Since the energetic society carries more responsibilities, it is not only suspected that the government plays a key role in facilitating initiatives but also other actors such as societal organizations and landscape architecture bureaus play a key role. Therefore this research also focuses on non-governmental actors who are participating in bottom-up initiatives.

## 1.2 Research aim and research questions

The aim of this research is to get an insight in how visions influence the different dimensions of the governance arrangement of bottom-up initiatives in the city of Arnhem which contribute to climate adaptation. The central research question for this research is:

*How do visions influence the governance arrangement of bottom-up initiatives which contribute to climate change adaptation in the city of Arnhem?*

To give an answer to this research question it is important to determine the dimensions that can influence the governance arrangement of bottom-up initiatives. Therefore this research will focus on several dimensions that influence and shape the governance structure. These dimensions that are researched are actors and actor coalitions, resources and rules. In order to answer the central research question, this thesis will explore the following sub-questions:

*Which visions were present in the bottom-up initiatives which contributed to climate change adaptation?*

*How do visions influence the actors and actor coalitions which were formed in the bottom-up initiatives?*

*How do visions influence resources which have played a role in the bottom-up initiatives?*

*How do visions influence the rules which have played a role in the bottom-up initiatives?*

## 1.3 Relevance of the research

### **Scientific relevance**

No earlier research has been conducted about how visions influence the different dimensions of the policy arrangement approach. This research therefore contributes to knowledge about how visions can influence the governance arrangement of bottom-up initiatives. Since the participation of both public and private actors is necessary to adapt to the changing weather conditions (PBL, 2015; Holstein, 2011; Hajer, 2011). Conducted research about climate adaptation and governance often focusses on the roles and responsibilities of different actors (Dewulf et al. 2015; Hajer 2011; PBL 2015). Different studies (PBL, 2015; Hajer, 2011) also indicate that citizens and businesses have more responsibilities, the so called “participatory society” (PBL, 2015, p.30). In addition, these actors also take the initiative to improve their surroundings more often, the so called “energetic society” (PBL, 2015, p. 30). Since multiple researches already focused on the different roles and responsibilities of different actors, this research will take a different approach. Firstly, this research studies the governance arrangement structure of bottom-up initiatives. The policy arrangement approach is used for this research. Originally it can be used to distinguish different dimensions that can influence a policy arrangement (Van Tatenhove et al., 2000). However this approach can also be used to research governance arrangements (Arnouts et al., 2012).

In addition, no earlier research has been conducted specifically to the visions that are present in bottom-up initiatives which contribute to climate change adaptation. This research therefore also contributes to knowledge about which visions are present in these type of bottom-up initiatives. Multiple researches has shown that vision can play an important role in realizing sustainable solutions (Quist, 2007; Wiek & Iwaniec, 2014; Dierkes et al., 1996). Positive visions about the future can be considered as influential stimuli for changes and provide direction for actions and behaviour. Furthermore, Quist (2007) mentions that visions are often shaped in in a decentralized bottom-up type of social interaction processes among different actors. Since this research focusses on bottom-up initiatives which contribute to climate change adaptation, the expectation will be that visions play an important role and can influence the outcome of the initiatives.

### ***Societal relevance***

Since this research is part of an internship at the organization Platform Arnhem Klimaatbestendig, this research will also focus on the societal relevance. The goals of the platform are to connect actors, and create awareness about the negative effects of climate change, inform stakeholders about the possibilities to tackle these issues and stimulate them to take measures (Arnhem Klimaatbestendig, 2016). Recommendations will therefore be made in order to create guidelines regarding these goals for governmental and non-governmental actors, who are present in this platform. These guidelines can be used to get an insight into facilitating these bottom-up initiatives, related to the researched visions and dimensions. This research will show, which visions play a key role in the bottom-up initiatives which contribute to climate change adaptation and how they are related to the researched dimensions. This will give an insight in several aspects.

Firstly, this research will give an insight in which visions are present in bottom-up initiatives which contribute to climate change adaptation, which can be used to create more awareness about climate issues and how to inform actors. Secondly, this research will show which actors play a key role in bottom-up initiatives and how visions influence the formation of actor coalitions. This will give an insight in how different actors can be connected to each other. Thirdly, this research will give an insight in which visions are of influence on the allocated resources. This will show which actors can provide the right resources which are needed in order to make the initiative succeed. Lastly, this research will show how visions influence the present rules and which rules are needed in order to make the initiative succeed.

### **1.4 Reading Guide**

This research consists of four more remaining chapters. Chapter two addresses the theoretical framework on which this research is built. In this chapter the literature on governance, visions and the policy arrangement approach will be reviewed. Chapter three presents the research strategy and methodology which contributed to answer the central question of this study. In addition, the cases that have been researched will be introduced. Chapter four provides the analyzed empirical data of this research. Finally, chapter five discusses the empirical data presented in the previous chapter and therefore gives an answer on the central research question. In this chapter, there will also be reflected on the experiences of this research. In addition recommendations for further research and for practice are given.

## Chapter 2: Theoretical framework

Regarding the aim of this research, the theoretical framework must represent a model which can be used to define the concept of vision that influences the dimensions of the governance arrangement of bottom-up initiatives which contribute to climate adaptation. This chapter will start with giving a short introduction and definition of the concept of governance. After this introduction, governance is more specifically described in relation to governance arrangements of bottom-up initiatives. Section 2.2 will present a theoretical framework and conceptual model, which includes a combination of the discussed theories for this research. In section 2.3, the definition of the concept of vision will be discussed and several key aspects that are helpful to identify a vision will be mentioned. Lastly, section 2.4 will discuss the policy arrangement approach and its dimensions.

### 2.1 Governance

In this research the governance arrangement of several bottom-up practices in the city of Arnhem has been explored. Therefore this chapter start with explaining the concept of governance. Governance has multiple definitions in literature, Stoker (1998) for instance, mentions that the traditional use of governance is referred to as a synonym for government. However Rhodes (1996) refers to it as: “a change in the meaning of government, referring to a new process of governing; or a changed condition of ordered rule; or the new method by which society is governed” (pp.652-653). A more specific definition which is more suitable for this research comes from Lemos and Agrawal (2006): “to the set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes” (p. 298).

Lemos and Agrawal (2006) state that global climate change promises to be one of the most critical factors that challenges environmental governance structures. They also mention that the range of governance strategies related to global climate change are difficult to view as being centered on one single agent; state, market or civil society. According to them the state is not equipped to generate effective measures on their own, the cooperation of civil society and market actors and changes in individual actions are necessary and critical to come to a successful implementation of governance strategies that may be effective.

Van der Steen, Hajer, Scherpenisse, Van Gerwen and Kruitwagen (2014) conclude that there is a marked increase in cooperation between the government, market and society. Citizens and enterprises are more and more present in the public domain. At the same time the government has responded by looking at other actors to carry out public tasks from a top-down perspective. Government cutbacks have also led to a higher demand for society to take responsibility and to demonstrate resilience. According to Van der Steen et al (2014), these developments have made it clear that cooperation with other actors is no longer a matter of choice. The government can choose to cooperate with other actors or can withdraw entirely. In many cases other actors, which step up to fill in the void, will also lead back towards areas in which they have to deal with the government. Therefore, the relationship between the government and society can be seen as highly dynamic.

According to the PBL (2015) the Dutch Government is increasingly less operating from a hierarchical position and is focusing more on collaboration and facilitation when it comes to climate adaptation. Like mentioned before in chapter 1, the demand for more involvement of various actors correlates with a general trend that society itself has been changing over the past decades towards a more participatory society and energetic society. Therefore styles of governance, from a governmental point of view, are according to them shifting from a ‘performing’ and ‘lawful’ government towards a more ‘networking’ and ‘participating’ government. Van der Steen, Scherpenisse & Van Twist (2015) state that the society is energetic and creative enough to cope with issues regarding sustainability. According to them, the role of the government is not to solve these issues for society.

Instead, the government should enable citizens and businesses to handle issues on their own.

It can be concluded that by defining the concept of governance the role of the government is still strongly present. But at the same time, more recently, it also highlights the rising presence of the market and civil society. Apart from private actors, the government plays a role in bottom-up initiatives. The participating government perspective of Van der Steen et al (2015) describes the presence of the government, market and society in bottom-up initiatives. Since this perspective is mainly described from a governmental point of view, this research also focused on other suitable literature related to bottom-up initiatives and governance. It also explains which dimensions play a role in shaping this specific governance perspective.

### **Governance arrangement of bottom-up initiatives**

Typical for bottom-up initiatives are that the initiators stay the project owner of the initiative, they remain to keep a steering role during the process. The overall determination of the goal of the initiative itself is defined by initiators (Oude Vrielink & Van de Wijdeven, 2011; Oude Vrielink & Van de Wijdeven, 2007). The overall goal of bottom-up initiatives can be considered as a gathering of individual interests (Van der Steen et al., 2014). Interactions with local governments, corporations and welfare organizations are even so present. At a certain moment the government can become involved in the initiative in a regulated, directing, stimulating or facilitating way (Rob, 2012). The government can also connect different organizations together which can support the initiative. In this way an informal institutional structure is formed, in which opportunities rise for interaction, cooperation and support between different actors (Oude Vrielink & Van de Wijdeven, 2007; Hajer, 2011). According to Oude Vrielink & Van de Wijdeven, (2011), storytelling and other communicative forms are more in line with the bottom-up initiatives and so is the personal approach. If initiators feel supported, appreciated and acknowledged for their performances they are more likely to stay motivated to improve their own surroundings. According to Van der Steen et al. (2015), governments can stimulate ambitions, ideas and initiatives in society in the one hand, while they can also use their knowledge of society to reflect upon their own ambitions, rules and procedures.

## **2.2 Conceptual model**

In order to present a complete theoretical framework, which is used for this research, several theories are combined. Figure 1 below, represents the conceptual model of this research

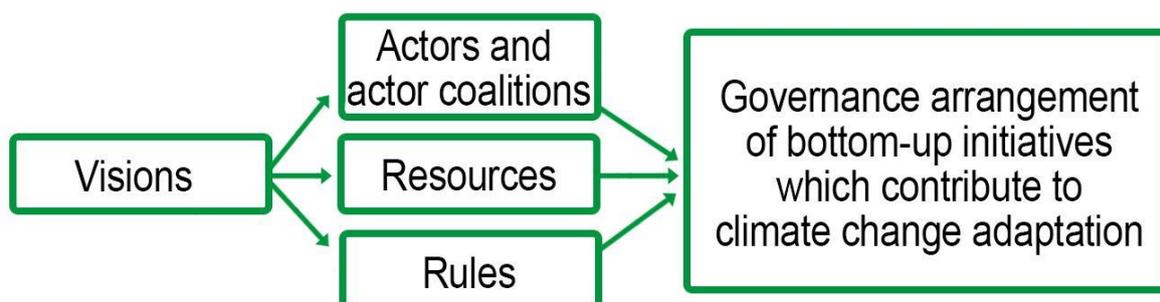


Figure 1 Conceptual model

It shows the link between visions and the selected dimensions of the governance arrangement of bottom-up initiatives that contribute to climate adaptation. The selected dimensions for this research are actor and actor coalitions, resources and rules. These

dimensions create the governance arrangement of bottom-up initiative which contribute to climate adaptation, that is central to this research. These dimensions originate from the policy arrangement approach, which also includes a fourth dimension: discourses. This dimension focuses on the substantive character of the governance arrangement. This dimension is not specifically researched since this research already has a specific focus on the visions which are present in the bottom-up initiatives which contribute to climate change adaptation.

The assumption on which this research is based, is that visions influence the different dimensions of the policy arrangement approach. In conducting this research, the policy arrangement approach is supplemented with theory about visions. In order to get a general representation of the governance arrangement of bottom-up initiatives, theories which relate to this subject will also be discussed.

## 2.3 Visions

### ***Definition and key aspects***

In literature, visions are often associated with a desirable state in the future (Wiek & Iwaniec, 2014; Constanza, 2000; Kemp & Martens, 2007; Oels, 2009). However this is still rather broad. For the purpose of this research it is necessary to find key elements that can describe the further concept of a vision, in order to identify them. Helm (2009) defines the concept of vision as: “the more or less explicit claim or expression of a future that is idealized in order to mobilize present potential to move into the direction of this future” (p.100). According to Helm, three aspects can be used to better understand the definition of a vision: (1) the future, (2) the ideal and (3) the desire for deliberate change. These key elements are elaborated below.

Visions entail a future element according to Helm (2009), however they are often mistaken with worldviews and point of views. Although visions of the future often include elements related to someone’s worldview, visions can be identified by those expressions that refer to something that is not (yet) existing. Another element which can be used to identify visions is the ideal. According to Helm (2009), visions are expected to refer to an ideal future, however, visions entail contextual and historical contingencies. Instead of searching for the best possible ideal future, visions often refer to something (contextually or historically) better than the current situation. This does not have to refer to the best possible future. According to Helm visions can therefore better be seen as ideal futures in comparison with possible or likely futures. At last, visions entail the aspect of a desire to deliberate change according to Helm (2009). Visions generate and/or direct change. Expression that do not entail a claim to change can therefore not be seen as a vision.

The definition of the concept of vision, which is used in this research, is a collection of different elements of the earlier discussed literature. For this research the following definition for a vision is used: a claim or expression that refers to a future desirable state that generates and/or directs the desire to change (Wiek & Iwaniec, 2014; Constanza, 2000; Kemp & Martens, 2007; Oels, 2009; Quist, 2007; Helm, 2009). In addition, the following aspects are used to identify the concept of vision for this research:

Future aspect: the expression or claim refers to something that is not (yet) existing.

Ideal aspect: the expression or claim refers to something (contextually or historically) better than the current situation.

Desire to deliberate change aspect: the expression or claim generates and/or directs the desire to change.

### ***The role of visions in governance***

Research about visions in relationship to sustainability and decentralized bottom-up type of social interaction processes, often discuss the transition of socio-technical systems and innovations towards sustainability (Quist, 2007; Wiek & Iwaniec, 2014; Dierkes et al., 1996). Specific research on the role of visions in the governance arrangement of bottom-up initiatives which contribute to climate change adaptation, remains absent. This research therefore contributes to get an insight in the influence of visions on the governance arrangement of bottom-up initiatives which contribute to climate change adaptation.

Like mentioned before in chapter 1, visions are often shaped in a decentralized bottom-up type of social interaction processes among different actors. According to Quist (2007), visions can at the same time influence these processes and their outcomes. According to Hajer (2011), societal actions are often related to public perception. Frames, that are part of the public perception, are often formed through people's perceptions and values based on what they see and experience. According to him a frame can influence people's ideas and can offer them direction for actions.

Wiek & Iwaniec (2014) argue that visions can direct planning, decisions, actions and behaviour. Creating and crafting sustainable visions in particular, provide a key reference point for developing strategies to transition to a desirable future state. According to Dierkes et al. (1996) shared visions make it possible to unite actors from different backgrounds. Visions can guide the behaviour and actions of the actors who share or support the vision. Visions of the government can function as a point of reference for other actors. Expressing ambitions and visions can release energy in other actors (Van der Steen et al. 2014). These visions can generate innovative solutions and give an indication of the direction the government wants to head. It can show social initiatives where there is room for creativity, energy and initiative. One of the challenges for governmental actors, is to not create a government program that other actors can sign up for, but to set up a playing field where other actors bring forward initiatives on their own. The provided objective should stay challenging and generate new initiatives. It should not provide fixed rules that leave little room for initiatives.

Kemp and Martens (2007) argue that different visions can create better worlds together rather than apart. It is therefore important to explore multiple visions of different actors rather than focusing on just one vision. Visions can for example advance the objectives of special interest groups, however they can also be inconsistent with the needs of wider groups or communities. By including different visions, it is more likely that interests of different groups are represented.

### **2.4 Policy arrangement approach**

The aim of this research is to get an insight in how visions influence the different dimensions of the governance arrangement of bottom-up initiatives which contribute to climate adaptation. The policy arrangement approach provides a framework that outlines different dimensions of policy arrangements. Van Tatenhove et al. (2000) define a policy arrangement as: "the temporary stabilisation of the organisation and substance of a policy domain at a specific level of policy making" (p. 54). The policy arrangement approach gives a strategical and institutional analysis of a policy arrangement. It represents the dynamic between the actor and structure. Furthermore, it can give insight in the (changing) relationships between the actors and resources of the bottom-up initiatives. Figure 2 below, shows the schematic reproduction of the policy arrangement approach, based on Van Tatenhove et al. (2000).

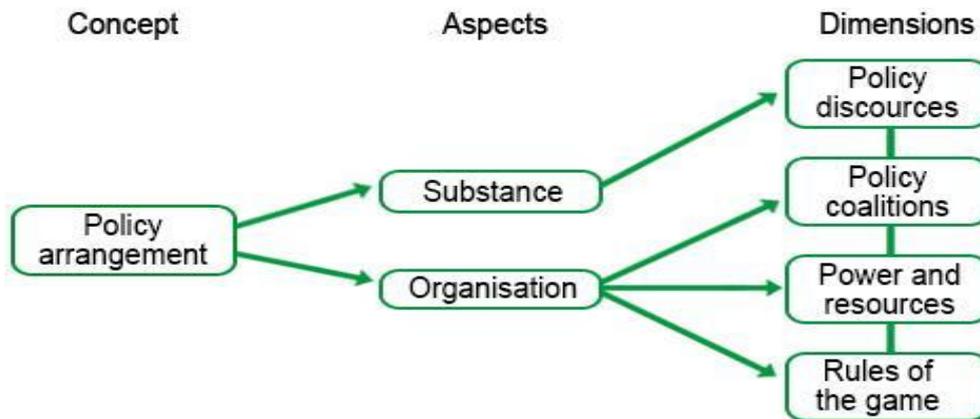


Figure 2: Schematic reproduction of the policy arrangements approach, Van Tatenhove et al. (2000)

Arnouts et al. (2012) have used this specific policy arrangement approach to analyze policy processes in terms of governance to create ideal-typical governance arrangements. Thereby this approach can be used to analyze the governance arrangement structure. The policy arrangement approach distinguishes four dimensions: policy discourses, policy coalitions, power and resources and the rules of the game. The first dimension, can be seen as a substantive aspect of policy. Policy discourses, can be considered as a more abstract concept, it can be referred to as a set of ideas, concepts and narratives which give meaning to certain phenomena in the real world (Van Eerd, Wiering & Dieperink, 2014). Therefore the concept of discourses can also be considered to refer to the government arrangement structure of bottom-up initiatives which contribute to climate change adaptation. As mentioned before, since the substantive character of the governance arrangement in this research is already defined, one of the choices that has been made in this research is to focus on only the organizational dimensions of the policy arrangement approach. The remaining three dimensions of the policy arrangement approach are explained below. It is discussed how these dimensions are suitable in terms of governance arrangements. In addition, the earlier discussed literature of visions is used to explain how it is assumed that visions can influence these three dimensions. For each dimension a hypothesis is formed, which functions as a reference point for this research and this will give new knowledge about how visions influence these dimensions.

### ***Policy coalitions***

This dimension is concerned with the actors and coalitions which are involved in the policy arrangement. In the development of a policy arrangement different aspects are significant; the roles which actors play, the interests and goals, the influence on the policy process, the relations between the actors, clusters of actors and their position in the process and the context in which they operate (Van Eerd et al., 2014). Coalitions are often formed due to common thoughts, ambitions and goals (Lieverink, 2006). Arnouts et al. (2012) distinguishes governmental and non-governmental actors in this dimension. In addition, they focus on how coalitions, defined as group of at least two actors, work together to achieve a certain goal. Throughout this research the emphasis on this dimension is to get an insight in the governance structure of the bottom-up initiatives. For the purpose of this research it is researched how visions can influence the formation of coalitions. As discussed in section 2.3, shared visions make it possible to unite actors from different backgrounds. **For this research, it is therefore assumed that other non-governmental and governmental actors get involved and that coalitions can be formed, due to the presence of shared visions in the bottom-up initiative.**

### ***Power and resources***

Power and resources consist of the idea that actors are dependent upon each other for resources. They can be described as tools within an arrangement which actors can use for influence and power. Power refers to mobilization, division and deployment of resources that will influence policy outcomes (Van Eerd et al., 2014). Throughout this research this dimension, can give an explanation of how the resources and power are divided between the different actors who are involved in the bottom-up initiatives. Examples of these resources can be described in terms of financial resources such as money, but also in terms of property, knowledge and skills (Van Tatenhove et al., 2000; Buizer, Elands, Mattijssen, Van der Jagt, Ambrose, Geróházi, Santos & Steen Møller, 2015). It has been assumed that material resources, in forms of donating equipment to execute the bottom-up initiative, can also be present. For the purpose of this research resources are referred to as: financial resources, knowledge, skills or material resources. As discussed in section 2.3, visions can guide the behaviour and actions of the actors who share or support the vision (Dierkes et al., 1996). **For this research, it is therefore assumed that the resources provided by governmental and non-governmental actors can be linked to their own visions.**

### ***Rules of the game***

This dimension can be described as institutional patterns and visions that can be established in informal and formal rules. Examples are procedures, norms, regulations, legislation and covenants which are relevant to a policy domain (Van Eerd et al., 2014). The rules of the game overlay the other three dimensions in certain ways, rules can for example also indicate how the interaction between different actors is arranged or how the power of one actor can be limited (Lieverink, 2006). Arnouts et al. (2012) argue that rules can shape the interactions between different actors. Furthermore they can determine the division of responsibilities between the involved actors in an arrangement. For the purpose of this research rules are referred to as formal and informal rules. Formal rules, can include regulations and legislations, while informal rules can include agreements. As discussed in section 2.1, the government can get involved in a bottom-up initiative in an regulating manner (Rob, 2012). However storytelling and other communicative forms are more suitable for bottom-up initiatives. Initiators are more likely to stay motivated to improve their surroundings when they feel supported, appreciated and acknowledged for their performances (Oude Vrielink & Van de Wijdeven, 2011). **For this research it is therefore assumed that visions make formal rules if they are applicable, as flexible as possible. In addition it is therefore assumed that more informal rules are used.**

## Chapter 3: Methodology

This chapter will discuss and presents the methodological approach of this research. It will also clarify how the research has been conducted in order to give an answer to the research question. It will start by elaborating the research strategy. Section 3.2 will present the used criteria for selecting the different cases of this research and will give an introduction of the selected cases. Section 3.3 will address the methods of the data collection and analysis used for this research. It will also explain how the reliability and validity of the research is taken into account. Section 3.4 will address the operationalization of theoretical concepts.

### 3.1. Research strategy

The research question of this research is: *How do visions influence the governance arrangement of bottom-up initiatives which contribute to climate change adaptation in the city of Arnhem?* In conducting a research different strategies can be used to answer a research question. Verschuren & Doorewaard (2015) distinguish different types of research strategies such as: survey, experiment, case study, grounded theory and desk research. In order to come up with an answer for a broad research question, it is necessary to get an in depth insight in the phenomena. Case study research is often used for the exploration and understanding of complex issues when a holistic, in-depth investigation is required (Zainal, 2007). Given the broadness of the research question, an in-depth investigation is appropriated. This is why case study research is chosen in conducting this research. The case study approach is criticized because of the difficulty in generalizing the evidence to other settings. In addition, case study research is often criticized due to fact that the data collection and analysis can be considered as the interpretation of the researcher, this can disadvantage the phenomena that are being studied (Flyvbjerg, 2006; Yin, 2009). It is therefore important that the researcher ensures the internal and external validation of the research. The validation of this research is further discussed in section 3.3.

Case study can use different kind of methods to collect the data such as interviews, the study of documents and observation (Verschuren & Doorewaard, 2015). All these kind of methods are used during this research to make sure the data is collected through different sources. Triangulation benefits the validation of the research (Creswell, 2014). The majority of the data collection for this research is collected through conducting interviews. In addition desk research is used and observations were made during site visitations. Within the desk research secondary data, produced by others, has been studied. This is primarily helpful by defining the cases for this research or providing background information. For this research, this includes news articles and press releases. Observations were made during the monthly gathering at Platform Arnhem Klimaatbestendig and at the site of the projects. The data collection from this research is going to be elaborated further in section 3.3.

### 3.2. Case selection

In order to research how visions influence the governance arrangement of bottom-up initiatives, three dimensions are researched. These dimensions are: actors and actor coalitions, resources and rules. A few considerations are taken into account by selecting the cases: 1) The case is definitely a bottom-up initiative, since there is specifically chosen for bottom-up initiatives. This means the initiators of the cases under research are part of the so called energetic society. Thus the initiative is not taken by governmental actors. 2) Apart from the initiators other public and/or private actors play a role in realizing the initiative. Such as the government and non-governmental actors. In order to investigate how their visions have influenced the initiative. 3) Multiple dimensions that shape the governance arrangement, play a role in the selected cases. This means during the search for background information it

became clear that actors and actor coalitions, resources and rules could already be recognized. 4) The case contributes to climate adaptation. In the selected cases paved surfaces make room for surfaces that infiltrate rainwater and/or contribute to tackle urban heat stress by cooling down the area. 5) The case is recently realized or in the executive phase. Since the relationship between the market, civil society and government continues to change, it is important to define a certain timeline in which all the cases took place. Furthermore to get a complete picture of the processes inside the projects, it is important that the cases are already realized or almost finished.

After taking these criteria in consideration, three interviews were conducted with participants in the field of climate adaptation. These interviews took place before the researched cases were selected. The interviews were conducted with a civil servant of the municipality of Arnhem, an advisor of a NGO in the field of education about sustainable development and two business owners from architecture and landscaping bureaus that are concerned with climate adaptation. They often participate in bottom-up initiatives that contribute to climate change adaptation. Because of their knowledge, they advised me about potential cases for this research. In addition they could also provide me with contact information from the involved actors. These conversations are not audio taped, however notes were made during the conversations. Afterwards a summary of these interviews were made.

When taking the criteria that are mentioned above into consideration as well as taking the conversations with the participants in the field of climate adaptation into account, it is decided to analyze four cases in this research. These conversations have made it clear that over the past decade several bottom-initiatives have been taken by different actors such as elementary schools, neighborhood residents and market businesses in the city of Arnhem (M. Verstraten, personal communication April 25, 2017; R. Bos, personal communication, May 9, 2017; S. Blok & D. van der Wal, personal communication, April 24, 2017). However it was decided not to continue with some cases in a later phase of this research. In one of the selected elementary schools only a small area of the playground was addressed, therefore the majority of the playground is still paved. It is therefore questionable in how far the case contributed to climate change adaptation (H. Wentink May 22, personal communication, 2017; M. Wennemers, personal communication, May 31, 2017). Another case which was selected for this research, which concerns a business park, was not yet in an executive phase of the project (R. Bos, personal communication, May 9, 2017). This has made it difficult to research the different dimensions that are selected for this research, since there was no implementation yet but only a vision. Approximately ten other smaller cases were selected as potential cases, however several aspects of these cases lead to the decision not to further research them. These were often implemented by one actor without noteworthy involvement of other actors in terms of resources and/or rules. In addition, only the vision of the initiator often played a role in these initiatives itself.

Like mentioned above, four cases were researched. These included two elementary schools that created more natural playgrounds, a community garden and a climate adaptive garden. Figure 3 below, includes a map in which the different locations of these cases is shown.

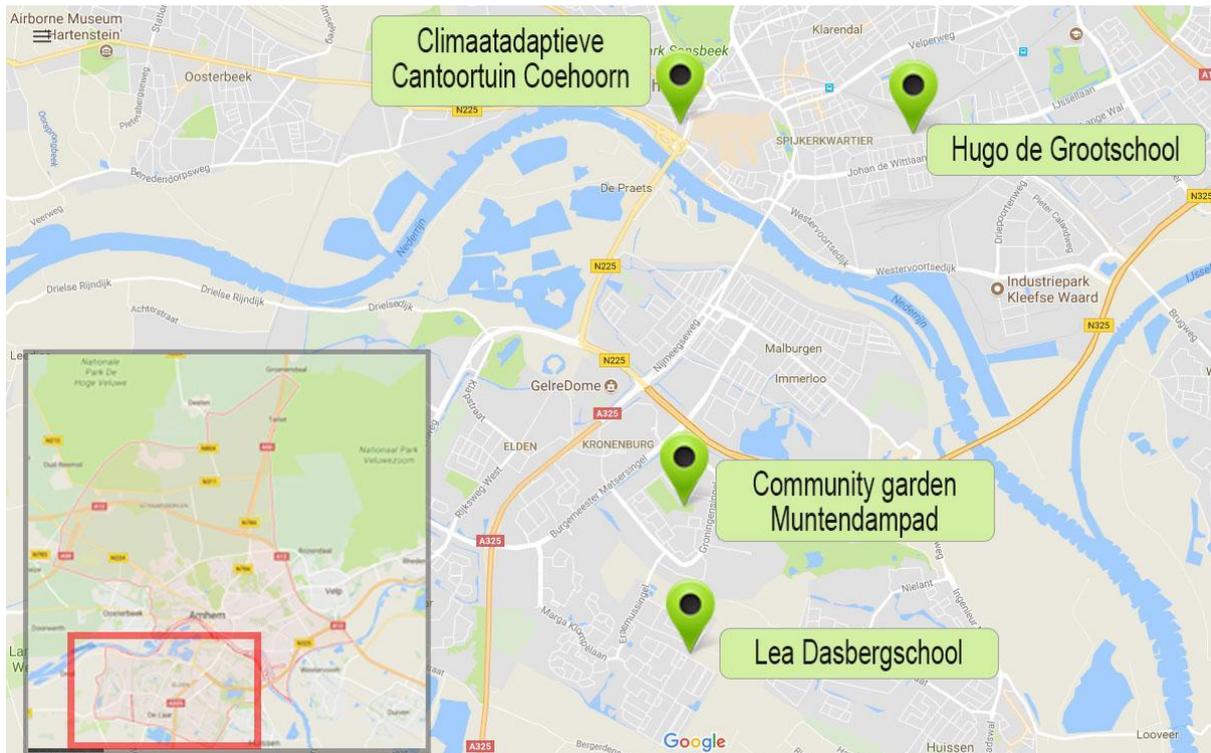


Figure 3: Overview of the location of the cases.

It is expected that the selected cases will give a varied insight into the researched dimensions, since they were selected with caution. The four cases are further introduced below.

### ***Natural playgrounds elementary school Hugo de Grootschool***

The Hugo de Grootschool, is an elementary school located in the district Statenkwartier. Recently two paved playgrounds were transformed into natural playgrounds. The large paved surfaces of the two playground were replaced by more natural elements such as sand hills, shredded tree bark and tree trunks. Figure 4 below, shows a before (left) and after (right) picture of the playground. The initiative to create a more natural playground came from the director of the elementary school, A. Lips. Other governmental and non-governmental actors such as the municipality, the waterboard of Rijn en IJssel and a landscape architecture bureau were involved.



Figure 4: Before and after photos playground elementary school Hugo de Grootschool. Source: Groendok

### ***Climaatadaptieve Cantoortuin Coehoorn***

The 'Climaatadaptieve Cantoortuin Coehoorn' is the name of a project which took place in the district of Coehoorn, which is located near the city centre. The project took place on a former elementary school which is used by several small businesses owners. The former playground was completely paved, as shown in figure 5 below on the left. A landscape architecture bureau, transformed the site. A large amount of the tiles were removed and more natural elements such as plants were introduced, as shown in figure 5 below on the right. During the project the municipality, other businesses, students of a graduate school and a societal organization were involved in the bottom-up initiative.



Figure 5: Before and after photos Climaatadaptieve Cantoortuin Coehoorn. Source: Arnhem Klimaatbestendig

### ***Natural playground elementary school Lea Dasbergschool***

The elementary school Lea Dasbergschool is located in the district named Rijkerswoerd. The initiative to create a more natural playground came from a group of parents of attending school children. An amount of tiles were removed from the playground and more natural elements such as trees and sand were added, as shown on the two pictures in figure 6 below. The municipality, a societal organization and a landscape architecture bureau also participated in the bottom-up initiative.



Figure 6: Photos playground Leadasbergschool. Source: K. Wolffenbuttel

### **Community garden Muntendampad**

The location of the project was in the district named Vredenburg. The project involved a large paved ground in the neighborhood on which a community garden is created. The initiative was created by a group of neighborhood residents. A large amount of tiles was removed from the site and a community garden in which people grow their own vegetables was created, shown in figure 7 below. In addition, fruit trees were planted and a playground for children was created. The municipality, a societal organization and a landscape architecture bureau also participated in the project.



Figure 7: Before and after photos Community garden - Muntendampad. Source: Werkgroep Groen Vredenburg

### **3.3. Data collection and analysis**

Like mentioned before in section 3.1, the researcher can use different kind of methods to collect the data such as interviews, the study of documents and observation (Verschuren & Doorewaard, 2015). In case study research it is important that the validity of the research is ensured. Ensuring the validity of the research is based on determining if the findings are accurate from the view of the researcher, participant or reader (Creswell & Miller, 2000). When it comes to internal validity Creswell (2014) recommends the triangulation of different data sources of information and member checking, thus letting participants of the research check the information to see if the interpretation is well performed. These points are taken into account during this research. The data is collected from different types of sources; interviews, document analysis and observations. In addition, the interviewees were offered the choice to read the end results of chapter 4 to see if the data from the interviews were interpreted well.

The majority of the data for this research is collected by conducting interviews. For this research different actors were interviewed to gather the information. For each case multiple actors were interviewed, an overview of the interviewees of each case are submitted

in appendix I. This includes the initiator(s) of the project, but also someone from the municipality of Arnhem who got involved into the project. Since it is assumed that not only public actors play a role in the governance arrangement structure of bottom-up initiatives, other private actors who got involved in the project were also interviewed. In three cases this concerned a private actor that played a part in designing the plan and/or advising the initiator(s). In conclusion, from the presented theory in chapter 2, the three different researched dimensions of the policy arrangement approach are interconnected with each other. Therefore, it was chosen that after the short introduction, in which the interviewees could introduce themselves, the interview would start with questions that shape a general view about the governance arrangement of the initiative. This includes the start of the initiative itself and which public and private actors were involved and the role of these different actors in the project.

In addition, documents were studied, for example articles and press releases, which were found online and in newspapers. These documents provided some background information before conducting the interviews. This made it possible to ask more specific questions during the interviews. During monthly gatherings from Platform Arnhem Klimaatbestendig, mostly the actions of the different participants were discussed. However sometimes interesting practices were also subject of the discussion. On the location, where the projects of the bottom-up initiatives were realized, observation were made. During these observations with the initiators of the project, different aspects of the project were already discussed. The following aspects were taken into consideration:

- Location of the project: for example, is the project located into a residential area or outside a residential area? This can explain which visions play a role in the neighborhood and which stakeholders participate in the project.
- Climate adaptive capacity: Which measures are taken that make the site more climate adaptive in comparison with the former situation?
- Present elements: Which elements are present? Such as park benches, playground equipment, three trunks etc. These elements could help identify participating stakeholders that provided these resources and their underlying visions.

Aspects that were mentioned above, provided some background before starting the interview and made it more easy to specify the questions in the interviewees.

The internal validity of the research is also enhanced by making sure every interview is conducted in the same way. In addition, a semi structure interview guide makes it possible to clarify ambiguities during the interviews. The aim of the research is not to generalize the data. The study aims to find a better understanding of a specific phenomenon, therefore it is not necessary to satisfy the conditions of external validity. Research can be considered as reliable when the data collection methods and analysis produce consisting findings. According to Yin (2009) reliability can be reached to document the procedures of the case study. All interviews during the research are audio-taped to minimize flaws in interpretations. During the observations notes are also documented.

There were no difficulties in getting in contact with organizations or initiators. Like mentioned in section 3.2, some of the participants in the field of climate adaptation already provided me with contact information of potential interviewees. This made it more easy to get in contact with the right persons. In order to prevent the research from getting biased, multiple actors instead of one were contacted and asked for information. Therefore, other interviewees were contacted through their own business by looking up the contact information on their web page. Most of the interviewees were contacted by phone, some through email. All interviewees responded enthusiastically about the research and were willing to cooperate. Thus the data collection went prosperous.

All interviews were conducted physically at the interviewees' location or at the city office of the municipality of Arnhem. For this research semi-structured interview guides were used. Semi-structured interview guides provide some flexibility, which made it possible to

gather some additional data. It often occurred that the order of the questions were changed to maintain a certain flow during the interviews. During this research all interviews are audio taped. All interviews were conducted in Dutch. Afterwards all audio material was transcribed.

After the transcriptions were made, the text is categorized per theme in order to make an clear overview of the interview material. Four themes were used to categorize the data. The themes, that are used for categorizing, are the three dimensions that are used for this research: actors and actor coalitions, resources and rules. The fourth theme that is used is visions. The process of categorizing was executed with markers on the printed transcripts. During this process, research is conducted for the connectivity between the visions and the three dimensions.

### 3.4 Operationalization of theoretical concepts

This section discusses the operationalization of the theoretical concepts that are presented in the conceptual model in section 2.1. The theoretical concepts are translated into measurable aspects that are used in conducting this research. The concepts are leading in forming the interview guides that are used for this research. These interview guides are included in appendix II and III of this research.

Four themes were selected to collect more extensive data about the initiatives. These include: visions, actors and actor coalitions, resources and rules. The term visions is operationalized in: a claim or expression that refers to a future desirable state that generates and/or directs the desire to change (Wiek & Iwaniec 2014; Constanza 2000; Kemp & Martens 2007; Oels 2009; Quist 2007; Helm 2009). In order to properly identify visions it is necessary that a vision includes more or less the following aspects:

- Future aspect: the expression or claim refers to something that is not (yet) existing.
- Ideal aspect: the expression or claim refers to something (contextually of historically) better than the current situation.
- Desire to deliberate change aspect: the expression or claim generates and/or directs the desire to change (Helm 2009; Quist 2007).

This information about the operationalization of the concept of vision is summarized in table 1 below.

Variable	Definition	Aspects
Vision	A claim or expression that refers to a future desirable state that generates and/or directs the desire to change.	<ul style="list-style-type: none"> <li>● <u>Future aspect</u>: the expression or claim refers to something that is not (yet) existing.</li> <li>● <u>Ideal aspect</u>: the expression or claim refers to something (contextually of historically) better than the current situation.</li> <li>● <u>Desire to deliberate change aspect</u>: the expression or claim generates and/or directs the desire to change.</li> </ul>

Table 1: operationalization of the concept of vision

The three dimensions of the governance arrangement of bottom-up initiatives are even so operationalized, this information is summarized in table 2 below. Actors and actor coalitions are translated into: the non-governmental and governmental actors, who work together to achieve a certain goal. In addition, the focus has been on how the relationship between actors can be defined. Resources are operationalized into financial resources,

property, knowledge or skills (Van Tatenhove et al., 2000; Buizer et. al, 2015). In addition material resources in the form of equipment are also added. Rules are translated into formal and informal rules. Examples of these rules are procedures, norms, regulations, legislation and covenants (Van Eerd, Wiering & Dieperink, 2014).

<b>Variable</b>	<b>Dimensions</b>	<b>Aspects</b>
Governance arrangement of bottom-up initiatives	Actors and actor coalitions	<ul style="list-style-type: none"> <li>● Non-governmental and governmental actors</li> <li>● Relationship between actors</li> </ul>
	Resources	<ul style="list-style-type: none"> <li>● Financial resources</li> <li>● Knowledge</li> <li>● Skills</li> <li>● Material resources</li> </ul>
	Rules	<ul style="list-style-type: none"> <li>● Formal rules</li> <li>● Informal rules</li> </ul>

Table 2: operationalization of the dimensions of the governance arrangement of bottom-up initiatives

## Chapter 4: Research results

This chapter will present the research results of the four bottom-up initiatives that were researched. Sections 4.1 until 4.4, will discuss the four cases. Each subsection will discuss the visions, actors and actor coalitions, resources and rules of that particular case.

### 4.1. Natural playgrounds elementary school Hugo de Grootschool

During this bottom-up initiative, the director of the elementary school took the initiative to transform two playgrounds into natural playgrounds. A large amount of the tiles of each playground were removed and green elements are introduced. In addition, a community garden was created. The visions that appeared in this case are related to climate change adaptation, sports and health, social cohesion and circular economy and sustainable use of products. These visions will be further elaborated in section 4.1.1. Actors that were involved in the bottom-up initiative are the municipality, the waterboard of Rijn en IJssel and landscape architecture bureau Groendok. Section 4.1.2 will address the involvement of these actors and formation of actor coalitions. Section 4.1.3, will elaborate the resources that were provided by these actors. The formal and informal rules that were applicable in this case will be discussed in section 4.1.4.

#### 4.1.1 Visions

##### ***Climate change adaptation***

The playground was completely paved and warm during summer days. The future and ideal image for this case refers to the creation of two playgrounds where more shadow is created and where the water infiltrates more easily into the ground. The desire to deliberate changes is expressed by the use of green elements to create shadow places and a large amount of tiles that is removed from the site in order to change the playground and create a more adaptive site. In addition changes were also made regarding drainage of rainwater. The use of a rain barrel and disconnecting the elementary school from the sewer system, also contributes to make the site more climate adaptive (M. Wennemers, personal communication, May 31, 2017).

##### ***Sports and health***

Obesity among children is one of the issues we deal with more and more these days. The future and ideal image related to this vision, is to contribute to tackle this issue by challenging the children to play more and introduce them to healthy food in order to enhance their health. The desire to deliberate changes expressed itself into including more green elements that challenges the children even more to exercise regularly. In addition, a community garden in which children learn to grow their own vegetables, was included (A. Lips, personal communication, June 2, 2017).

##### ***Social cohesion***

In the past parents on the elementary school did not always get along. The future and ideal image in this case is to create a more ideal and future site that would benefit the social cohesion in the neighborhood. The desire to deliberate changes expressed itself by creating a site where people could meet outside and children could play outside school hours (A. Lips, personal communication, June 2, 2017; R. Kleinhesselink, personal communication, June 2, 2017).

## ***Circular economy and sustainable use of products***

The demand for raw materials mankind is using, keeps rising. During the project a large amount of tiles was removed from the site, with no further function. The ideal and future situation was to partly recycled these tiles, instead of dispose them. The desire to deliberate changes expressed itself into the creation of a new path, reusing the old tiles in order to prevent the use of new materials and reduce the demand for raw materials mankind is using (Personal communication with M. Wennemers, May 31, 2017).

### ***Introduction of the visions***

During this case two phases can be distinguished in which the visions were introduced. Firstly, the initiation phase in which the idea for the bottom-up initiative is explored and elaborated. In this phase, the idea to challenge children to exercise more and to introduce them to healthy food in order to enhance their health. In addition, the creation of a place where people could meet in order to benefit the social cohesion of the neighborhood also appeared in this phase. Secondly, the design phase in which design choices were made. During this phase the enhancement of the climate adaptability of the site was introduced and the vision to use recycled products was introduced.

#### **4.1.2 Actors and actor coalitions**

Both governmental and non-governmental actors were involved in the realization of the natural playgrounds of the elementary school Hugo de Grootschool. R. Kleinhesselink of the municipality of Arnhem was convinced by the idea to create a more natural playground. He states that the municipality has similar visions:

*“We want to see children healthy, children should have the opportunity to exercise more. That is one of the ambitions we have as a municipality. A more challenging and adventurous learning and playing environment is suits that ambition’ (..) ‘Learning and playing; green is widely applicable in that are”*

(R. Kleinhesselink, personal communication, June 2, 2017).

The municipality also wanted to make one of the playgrounds more public and was convinced that this would also lead to more social cohesion in the neighborhood itself. According to R. Kleinhesselink creating a more natural playground makes the area in the neighborhood more green and pleasant (Personal communication, June 2, 2017). The director of the elementary school, shared the vision with the municipality to create more social cohesion in the neighborhood, she also wanted to do something in return for the neighborhood. She liked to envision a place for the neighborhood where people could meet (A. Lips, personal communication, June 2, 2017).

During the design phase of the project another governmental actor got involved in the project, namely waterboard of Rijn en IJssel. They got involved because the waterboard gave permission to disconnect the elementary school from the sewer system and connect them to a nearby ditch (M. Wennemers, personal communication, May 31, 2017 and October 4, 2017).

Another actor who was involved in the project was Groendok. The elementary school already has a connection with the Natuurcentrum, a center for nature and environment education. The director contacted the center to discuss the plan of transforming the playgrounds (A. Lips, personal communication, 2 June, 2017). M. Wennemers works at the Natuurcentrum but also as a business owner at a landscape architecture bureau called Groendok. She was eventually assigned to create the designs for the two playgrounds. She

created a plan that included a list of ideas from the school and then presented the plan to the director and several interested teachers (M. Wennemers, personal communication, May 31, 2017). According to the director, M. Wennemers and herself have a similar visions, which makes the playgrounds more natural and challenging for the children:

*“If you click with someone, that is really nice. You often realize that you have the same vision. (...) She gave a boost to the project and she also feels that I agree upon her ideas because I am standing behind the same things”*

(A. Lips, personal communication, June 2, 2017).

### 4.1.3 Resources

One of the most important resources that contributed in the realization of the natural playground of the elementary school Hugo de Grootschool, were the financial resources of the municipality. R. Kleinhesselink, who was initially assigned with the task to find elementary schools that could educate asylum children, investigated several elementary schools that were suitable for this specific group. The Hugo de Grootschool was one of the elementary schools that qualified (R. Kleinhesselink, personal communication, June 2, 2017). With the arrival of these asylum children, a large budget was also released. This budget could be spent on aspects such as temporarily hiring barracks, for furnishing and teaching materials (R. Kleinhesselink, personal communication, June 2, 2017). However the elementary school had enough classrooms, furniture and teaching materials. Together with the municipality the director then discussed how they could spend this budget. Eventually the director came with the idea to create more natural playgrounds. The visions that supported this idea was to create more adventurous and challenging playgrounds, which could improve the health of children. R. Kleinhesselink was convinced by these visions of the director. These visions of the director, persuaded him to agree that the budget could be spend on the playgrounds:

*“The director herself was decisive, she convinced me. I noticed she really wants to go for it. She has the right intrinsic motivation to do right for these children. This convinced me to agree the money could spend on the playgrounds. (...) The director is emotionally involved with the children, this moved me. I saw she was really convinced that this environment would benefit the children. She was convinced that this was the right way to do so, by making the playgrounds more green, adventurous and challenging”*

(R. Kleinhesselink, personal communication, June 2, 2017).

M. Wennemers was assigned to design the plan for the natural playgrounds because of her knowledge and skills for designing natural playgrounds. The director of the elementary school saw different other designs from previous natural playgrounds that were realized by Groendok. These previous designs were in line with the desire to create more green, adventurous and challenging playgrounds at the elementary schools (M. Wennemers, personal communication, May 31, 2017; A. Lips, personal communication, June 2, 2017). The director also identifies resources in terms of knowledge provided by M. Wennemers as one of the decisive aspects of the project. She states that she was lucky to find the right

person for the designing process (A. Lips, personal communication, June 2, 2017).

M. Wennemers, has a clear vision on climate change adaptation. She is conscious about possible future states such as water nuisance, water shortage or problems with water purification. She wanted to incorporate different elements in her plan such as a water pump, disconnecting the water and adding a rain barrel. She wanted to let children think about these aspects because they are the future generation and could possibly contribute to solutions about climate adaptation (M. Wennemers, personal communication, May 31, 2017). However climate adaptation as a vision only played a minor role in the initiative for the director herself. In addition, she mentions that, the rain barrels are rarely used by the teachers at the moment. The underlying thought about climate adaptation is not yet recognized by the majority of the teachers. However she still wants to discuss with M. Wennemers how they could present information to the teachers about using the rain barrels in relation to climate adaptation (A. Lips, personal communication, June 2, 2017).

Another vision of M. Wennemers is related to circular economy and sustainable use of products. She wants to recycle existing elements in her designs. At the elementary school she recycled some of the tiles of the former playground. Recycling materials is one of the core visions she has as a designer. This occurs from the vision to recycle more materials in projects, in order to reduce the demand for raw materials mankind is using:

*“This also relates to the climate; the less new and extra raw materials we are using, the better. I think it is important that children are also taught about this”*

(M. Wennemers, personal communication May 31, 2017).

As mentioned before, the waterboard of Rijn en IJssel gave permission to disconnect the school from the sewer system. They contributed in terms of material resources by donating a rain barrel. This was provided by the waterboard of their vision to enhance the climate adaptability of the site (M. Wennemers, personal communication, May 31, 2017 and October 4, 2017).

#### 4.1.4 Rules

Visions of the initiator and the municipality were of influence on the rule dimension of the governance arrangement of the bottom-up initiative. R. Kleinhesselink explained that the current laws and regulations concerning playgrounds are based on old standards from the 80's. Municipalities are provided with money from the ministry of education to realize paved playground with some playground equipment such as sandpits. So there is no specific regulation for realizing more natural playgrounds. Though R. Kleinhesselink wants to cooperate in desired changes (Personal communication, June 2, 2017):

*“It is a matter of willing to cooperate in desired changes. I do not like stiff attitudes, so I am always trying to find room to manoeuvre within the policy field we are in. I am pro innovation, I always like that. If it is possible, you should grab the opportunity”*

(R. Kleinhesselink, personal communication, June 2, 2017).

His shared visions with the director for improving the children's health by challenging children to exercise more and eat more health and enhancing the social cohesion in the neighborhood, convinced him to investigate if the plan was legally justified. He wanted to make sure the rules that were specified and the budget, are in line with the vision to create a more natural playground on the elementary school. He received confirmation from the budget holder on spending the budget for the playground.

More informal rules were formed in terms of informal agreements that were set up between the municipality and the elementary school. An informal agreement that was made was related to the accessibility of playground after school hours. The vision that played a big role in this was to create a place where people and children could meet, to enhance the social cohesion. To make one of the playgrounds accessible for the neighborhood, was one the conditions the municipality pointed out in realizing the project (R. Kleinhesselink, personal communication, June 2, 2017).

## 4.2 Climaatadaptieve Cantoortuin Coehoorn

The initiators of this project are two business owners of a landscape architecture bureau: Le Far West. During this case a large paved area from a former elementary school was transformed into a more natural site. A large amount of tiles were removed and more plants were introduced. In addition, climate adaptive solutions such as water permeable tiles are present at the site. The visions that came up in this case are related to climate change adaptation, social cohesion and circular economy and sustainable use of products, which will be further elaborated in section 4.2.1. Several actors got involved into the project and several coalitions were formed. The municipality of Arnhem got almost immediately involved into the project from the very beginning. Another business owner, W. Jakobs, got involved for the execution of the project. The involvement of these actors and other actors, will be further addressed in section 4.2.2. The resources that were provided by these actors, will be elaborated in section 4.2.3. Lastly, the formal and informal that were applicable in this project will be discussed in section 4.2.4.

### 4.2.1 Visions

#### ***Climate change adaptation***

At the site urban heat stress occurred during hot summer days and at rainy days the site flooded. These climate issues occurred due to the fact that the site was completely paved. The future and ideal image that played a role in this project was to create a site where it would be cooler during hot summer days and where at rainy days more water could infiltrate into the ground. The desire to deliberate changes was expressed by the removal of an amount of tiles and the introduction of green elements, in order to make the site more climate resilient. The removal of the tiles made it possible that the natural water system could function again (D. van der Wal, personal communication, May 22, 2017 and September 18, 2017).

#### ***Social cohesion***

Since the site was completely paved with no further function, it was not inviting people to meet and to spend some time. The future and ideal image regarding this visions was to create a better site where neighborhood residents and business owners could have a more pleasant stay together. The desire to deliberate changes was expressed by the green elements that are added so people are more attracted to stay at the site and/or grow their own vegetables. In addition, the site can also function as an educational showroom where people can meet. This benefits the social cohesion of the neighborhood (D. van der Wal, personal communication, May 22, 2017).

### ***Circular economy and sustainable use of products***

The future and ideal image regarding this vision was to reuse the materials in order to make sure less new products were included which leads to less carbon emission. The desire to deliberate changes was expressed in the use of reused items from the former playground such as the tiles. In addition, the reused items had to show that even with a small budget a lot can be accomplished. (D. van der Wal, personal communication, September 18 2017).

### ***Introduction of the visions***

Enhancing the adaptive capacity of the site played a key role and was introduced in the initiation phase. Enhancing the social cohesion in the neighborhood also appeared in this phase. The recycling of materials and sustainable use of products came up during the design phase of the project.

#### **4.2.2 Actors and actor coalitions**

Since one of the most important visions of the project is climate adaptation, a coalition was formed with the municipality of Arnhem who shares this vision about climate adaptation. H. Wentink, a civil servant of the municipality of Arnhem, mentioned that the vision of the project, to create a garden which enhances the climate adaptivity in the city of Arnhem, fits well in the vision of the municipality to become a more climate resilient city. On the specific location of the project, heat stress and water nuisance play a role. In addition, this site could also have a buffer function to a lower area behind the site, to prevent water nuisance (H. Wentink, personal communication, May 22, 2017). One of the other important reasons why a coalition was formed with the municipality, was because Le Far West filed for subsidy to execute their initiative (D. van der Wal, May 22, personal communication, 2017). H. Wentink, got involved in the project because of the temporary status of the site. The site Coehoorn Centraal on which the initiative is situated, is an experimental project to advance starting creative entrepreneurs by assigning them with empty municipal property. H. Wentink is part of this project and already had ties with Le Far West, due to the so called project Coehoorn Centraal.

Students of the graduate school Van Hall Larenstein were asked to come up with ideas to recycle the tiles and to investigate how much water has to be infiltrated to make sure the site could be disconnected from the sewer system (Coehoorn Centraal, 2016). This assumes that there are shared visions present between the initiators and the students regarding circular economy and climate change adaptation. According to the initiators, these students were specifically asked because these types of projects can benefit students when they finished their study and become part of the work field (D. van der Wal, personal communication, May 22, 2017).

The initiators and the municipality also formed a coalition with W. Jakobs, business owner of Willem Jakobs. He was asked to execute the plan, since he already designed and executed Coehoorn Park, a nearby site of the climate adaptive garden. In addition, he also has several contacts which could help him execute the project (D. van der Wal, personal communication, May 22, 2017; W. Jakobs, personal communication, May 24, 2017). Willem Jakobs shares the visions regarding climate change adaptation and circular economy. According to him the used products that are still of good quality and sustainable products are more environmentally friendly (W. Jakobs, personal communication, May 24, 2017).

#### **4.2.3 Resources**

Financial and material resources, skills and knowledge contributed to the realization of the Climaatadaptieve Cantoortuin. Financial resources were provided by the municipality. This was a decisive factor in the realization of the project, since Le Far West had no financial recourses themselves for the project (D. van der Wal, personal communication, May 22, 2017). Financial resources came from a subsidy that targets tackling heat stress and

stimulates urban agriculture. As mentioned before the municipality shared the vision on climate adaption with Le Far West, their vision fits well in the vision of the municipality of Arnhem to become a more climate resilient city (H. Wentink, personal communication, May 22, 2017).

Material resources were donated by two businesses Plato Wood, which provided them with sustainable wood and Struyk Verwo, which donated water permeable tiles. In addition a societal organization Natuurcentrum Arnhem, donated plants (D. van der Wal, personal communication, September 18, 2017). These actors were approached by Le Far West, they targeted on these potential sponsors because they have the similar vision regarding climate change adaptation and the sustainable use of products:

*“Our design is climate adaptive and they also have a sustainable perspective and provide sustainable products. We asked them to contribute to our plan”*

(D. van der Wal, personal communication, May 22, 2017).

In the future Le Far West wants to search for more possible sponsors to turn the site into a show garden for climate change adaptation solutions (D. van der Wal, personal communication, May 22, 2017). Le Far West had skills and knowledge themselves to come up with a design and plan for the project. However, additional skills and knowledge were provided by the executor of the project W. Jakobs and van Hall Larenstein students. Like mentioned before W. Jakobs has several contacts which could help him execute the project. Since the financial resources were limited W. Jakobs was seen as the perfect person to execute the project because he had the experience with designing and executing, and has the right connections (D. van der Wal, personal communication, May 22, 2017). The students from Van Hall Larenstein contributed with their knowledge and skills to investigate several solutions to make the site more climate adaptive (Coehoorn Centraal, 2016).

#### 4.2.4 Rules

Formal rules regarding the subsidy were applicable at the initiative. The designed basic plan was used to file for subsidy at the municipality. The shared vision for climate change adaptation lead to financial resources that came from a subsidy that targets on tackling heat stress and stimulates urban agriculture. The rules and its standard that are applicable for this subsidy, did meet up with overall goal of the project, since the site contributes to tackling heat stress. In addition, the opportunity was created to let people grow their own vegetables, which stimulates urban agriculture (D. van der Wal, personal communication, May 22, 2017; H. Wentink, personal communication, May 22, 2017). However, the majority of the financial resources was intended to come from the subsidy for the development of the southern part of the city. However, this was rejected by the municipality. On the one hand this was due to the fact that the site of Coehoorn was too far away from the southern part of the city for which the subsidy scheme is intended, on the other hand it was rejected because the future plans for Coehoorn are still insecure at the moment (D. van der Wal, personal communication, May 22, 2017; H. Wentink, personal communication, May 22, 2017). H. Wentink explained that the subsidy schemes which were filed for are not meant for projects with a temporary status, they are more intended for locations that are more likely to still exist in the nearby future (Personal communication May 22, 2017).

### 4.3 Natural playground elementary school Lea Dasbergschool

The initiators of this project were a group of parents of attending school children. Their overall goal was to make the playground more challenging and pleasant for the children to play on, so an amount of tiles were removed from the playground and trees and sands were added. The visions that played a role in this project are related to climate change adaptation, sports and health, social cohesion and circular economy and sustainable use of products, which will be further elaborated in section 4.3.1. The involvement of the present actors with which coalitions were formed, the municipality of Arnhem, landscape architecture bureaus Groendok and Le Far West and a societal organization Natuurcentrum, will be elaborated in section 4.3.2. The resources which are provided by these actors and other actors will be addressed in section 4.3.3. Lastly, section 4.3.4 will address the informal and formal rules that were applicable during this project.

#### 4.3.1 Visions

##### ***Climate change adaptation***

On the playground of the Lea Dasbergschool heat stress was noticed during warm summer days. Since the playground is completely paved, it is much harder for the rainwater to infiltrate into the ground. The future and ideal image related this vision included a playground on which children would have a more pleasant climate to play on. The desire to deliberate changes is expressed in the green elements that were also included during the project. These changes were made in order to make the playground more climate resilient and therefore more ideal for the children to play on during these warm summer days. In addition, these green elements can also be used to educate children and stimulate them to use climate adaptive solutions in their future life (K. Wolffenbuttel, personal communication, June 21, 2017; (H. Wentink, personal communication, June 19, 2017).

##### ***Sports and health***

Since obesity among children is more of an issue these days, the elementary school is focusing on including more elements of sports in their educational program. The future and ideal image related to this vision was to stimulate the children to play and exercise more to benefit their health. The desire to deliberate changes is expressed in introduction of more green and natural elements, which assumed it is more likely that the children would exercise more (K. Wolffenbuttel, personal communication, June 21, 2017).

##### ***Social cohesion***

Nowadays, the majority of the children are less playing outside. The future and ideal image was to challenge the children to play outside more and let them then experience how fun it can be to play outside together. The desire to deliberate changes is expressed in the changes that were made on the playground by the introduction of more natural elements, which challenges the children to play more. It is expected that, because of these changes, more children are playing on the playground outside school hours. (K. Wolffenbuttel, personal communication, June 21, 2017).

##### ***Circular economy and sustainable use of products***

There was only a little budget to realize the project, therefore the future and ideal image was to reuse used items to reduce the costs and in addition these items are better for the environment by reducing mankind's impact on the environment. The desire to deliberate changes is expressed in the items that were included such as an old sewer pipe and tires (K. Wolffenbuttel, personal communication, June 21, 2017).

### ***Introduction of the visions***

Three out of the four visions appeared in the initiation phase. Firstly, the vision to enhance the climate adaptability of the site was one of the goals of the project and therefore appeared in this phase. Secondly, since the elementary school itself was already focusing on sports and health, this vision was also introduced in the initiation phase. Lastly, the desire to benefit the social cohesion in the neighborhood also appeared in this phase. The remaining visions, to including recycling products was introduced was introduced in the design phase.

#### **4.3.2 Actors and actor coalitions**

Coalitions were formed with the municipality of Arnhem, Natuurcentrum, M. Wennemers of Natuurcentrum Arnhem and business owner of a landscape architecture bureau Groendok and landscape architecture bureau Le Far West. M. Wennemers was approached by the initiators of the project. Since the school already had ties with Natuurcentrum Arnhem, the parents contacted M. Wennemers directly for advice about creating a natural playground (K. Wolffenbittel, personal communication, June 21, 2017; M. Wennemers, personal communication, May 31, 2017). The initiators contacted M. Wennemers specifically because they expected a shared vision about creating a more natural playground (K. Wolffenbittel, personal communication, June 21, 2017). M. Wennemers confirms this shared vision, from her own point of view and from Natuurcentrum, she wants to initiate changes by supporting elementary schools to create a more challenging and green environment at their elementary school. In addition, this would also enhance the adaptive capacity of the site (M. Wennemers, May 31, personal communication, 2017).

The municipality got involved in the initiation phase. Henk Wentink, a civil servant at the municipality, organised a few meetings together with Natuurcentrum in which several elementary schools were invited to get informed about natural playgrounds (H. Wentink, personal communication, June 19, 2017). The meetings of the so called project 'Groene Gezonde Schoolplein' (Green and healthy playgrounds) were set up in order to help elementary schools to start making a plan and make other parents enthusiastic as well (Bloei in Arnhem, 2016). M. Wennemers was aware of these meetings and pointed the initiators in the direction of the municipality for more support and financial resources (K. Wolffenbittel, personal communication, June 21, 2017; M. Wennemers, personal communication, May 31, 2017). The initiators joined the meetings organized by the municipality and Natuurcentrum from then on. In total four groups of four different elementary schools continued the process together to create more natural playgrounds, supported by the municipality (K. Wolffenbittel, personal communication, June 21, 2017; H. Wentink, personal communication, June 19, 2017).

The municipality of Arnhem recently started a policy in which they express the desire to stimulate and facilitate local initiatives taken by civilians in order to benefit the social cohesion in the neighborhood. Therefore, they share the vision to enhance social cohesion in the neighborhood. H. Wentink, a civil servant of the municipality, also stated that the changes that are made on the playground of the elementary school contributes to climate change adaptation. This is one of the reasons why he organized these informal meetings for the elementary schools. The initiators and the municipality shared the vision to create a more natural playground for climate adaptive reasons, such as the cooling function the playground might get. Thus they also shared this vision with the initiators. However the municipality of Arnhem also focused on some different aspects of this vision. According to H. Wentink, more rainwater can be infiltrated into the ground. He also liked the idea that children are educated about climate change adaptation. During classes the children are told why climate change adaptation is important. H. Wentink hopes that this also has an influence on the choices the children will make in the future:

*“Children then understand what is happening on the playground. And of course you hope when children grow up and have their own garden, they do not instantly start running around with pretty looking tiles but also add some green”*

(H. Wentink, personal communication, June 19, 2017).

K. Wolffenbuttel one of the initiators, thinks the overlapping visions of the actors played an important role in the formation of coalition with the municipality and M. Wennemers:

*“If our visions did not overlap with especially Marja Wennemers and Henk Wentink, we wouldn't have benefited from each other”*

(K. Wolffenbuttel, personal communication, June 21, 2017).

Landscape architecture bureau Le Far West was included during some of the meetings with the elementary schools organized by the municipality and Natuurcentrum. Le Far West was asked to help the elementary schools to translate their ideas into sketches. H. Wentink of the municipality, invited Le Far West for this meetings because of their knowledge and skills regarding landscape architecture. Like mentioned before Natuurcentrum organized the meetings together with the municipality to inform elementary schools. Natuurcentrum was also asked by H. Wentink to do this together with the municipality because of their network. They already had ties with several elementary schools for instance for educational lessons about nature and environment (H. Wentink, personal communication, June 19, 2017).

### 4.3.3 Resources

Resources in terms of financial and material resources, knowledge and skills were provided by the following actors: the municipality, Natuurcentrum, M. Wennemers, Le Far West, the parents association, a local foundation, local businesses and neighborhood residents. The municipality financially contributed to the project by providing financial resources. Like mentioned before M. Wennemers pointed the initiators into the direction of the municipality, since she was aware of the financial resources they offered (K. Wolffenbuttel, personal communication, June 21, 2017; M. Wennemers, personal communication, May 31, 2017). The financial resources of the municipality came from a subsidy that is targeted at on initiatives that contribute to climate adaptation. Since the filing for the subsidy scheme was a complicated process, H. Wentink helped the initiators by giving them directions on how to file for the subsidy in the right way (H. Wentink, personal communication, June 19, 2017). In this way, H. Wentink also offered some help in terms of knowledge and skills.

Other financial resources came from the parents association, of which the initiators were members. This association already had some financial resources they could use to benefit the project, since they shared the same vision to create a more natural and challenging playground for the children to benefit the children's health and stimulate them to sport. A local foundation, which wishes to stay anonymous, made a financial donation because they liked the idea to create a more natural and challenging playground. Neighborhood residents also financially supported the initiative by supporting little fundraising project such as a birthday cards that were sold and designed by the children (K. Wolffenbuttel, personal communication, June 21, 2017).

Material resources were provided by local businesses that donated items such as old sewer pipes and car tires. These items were used because of the vision that recycling material reduces mankind's impact on the environment and helps to keep the project on a low budget (K. Wolffenbuttel, personal communication, June 21, 2017). M. Wennemers helped the parents to find these resources, also because of her own vision that mankind should reuse products or use as much sustainable products as possible (M. Wennemers, personal communication, May 31, 2017). Le Far West, Natuurcentrum and M. Wennemers offered recourses in terms of knowledge and skills. They offered help by informing the initiators about aspects that had to be taken into account by creating a sketch for the playgrounds. Since the initiators had no knowledge and skills regarding landscape architecture, this came of great use:

*“They looked at the sketches we already made for the playground in these sessions. Of course it is really pleasant to hear from others how they viewed our designs, of those who have knowledge. Because we as parents, do not have a view on this kind of things”*

(K. Wolffenbuttel, personal communication, June 21, 2017).

#### 4.3.4 Rules

Visions of different actors were as well of influence on the formal and informal rules that appeared during the initiative. Rules were related to the subsidy schema that was allocated by the municipality. H. Wentink mentioned that 2016, was the first year in which this subsidy was made available for these kind of initiatives. H. Wentink therefore wanted to make sure this subsidy was used to completely benefit initiatives. He wanted to show that the subsidy is successful (Personal communication, June 19, 2017). This can be related to the visions the municipality has to stimulate and facilitate more local initiatives taken by civilians and becoming more climate adaptive.

In addition, the allocation of the subsidy became more flexible, since one of the formal rules of the subsidy is that the initiators also had to bring in own financial resources. Like mentioned before the initiators had some financial resources from the parent association and small fundraising projects. However the total amount of their own financial resources had to equal the amount of the subsidy. Since the financial resources of the parents was less than the subsidy, H. Wentink agreed upon counting material and social resources (such as potting soil and working hours) instead:

*“Schools have some budget of course, so I said it is 50/50 (..) And at this school we said just guess what time you spend in working hours from parents, self-employment. Thus the matching has not only been in financial resources but also in working hours of parents and materials”*

(H. Wentink, personal communication, June 19, 2017).

Informal rules in terms of agreements were made regarding the accessibility of the playground after school hours. Making the playground accessible after school hours by keeping the school gate open, benefits the vision to create more social cohesion in the

neighborhood. Children could play together on the playground and could experience how fun it can be to play outside in a more natural environment according to K. Wolfenbuttel (Personal communication, June 21, 2017).

#### **4.4. Community garden Muntendampad**

At the site of the project, a large area was completely paved and had no further function. The site is transformed into a site with a community garden and a playground for children. Visions that appeared during this project are related to climate change adaptation, social cohesion and circular economy and sustainable use of products. These visions will be further elaborated in section 4.4.1. Actors who were involved, are the municipality of Arnhem, a societal organization: Rijnstad and G. Hendriks, a business owner of Gerda Hendriks Groen. The relationship between these actors and the formed coalitions, will be discussed in section 4.4.2. The resources which are provided by these actors and other actors will be addressed in section 4.4.3. Lastly, the rules that are applicable during this project are elaborated in section 4.4.4.

##### **4.4.1 Visions**

###### ***Climate change adaptation***

The site of the project was completely paved and extremely hot during summer days. Since the site was going to be used by neighborhood residents for growing their own vegetables, the future and ideal image was to create a more healthy environment for people and nature. The desire to deliberate changes is expressed in the removal of an amount of the tiles and including more green elements on the site, which can function to cool down the site. (G. Hendriks, personal communication, May 18, 2017).

###### ***Social cohesion***

The people in the neighborhood were more withdrawn. The ideal and future image was to use the community garden as means to create more social cohesion in the neighborhood. In addition, there was also the hope that children would come together more and play at the site. The desire to deliberate changes is expressed by creating a community garden in which people could meet and work together. In addition, a playground for children was created (E. Roelofs, personal communication, May 23, 2017).

###### ***Circular economy and sustainable use of products***

There was only little budget to spend during the project, therefore the ideal and future image was to use reused items during the project, which reduces the costs during the project. In addition, the sustainable use of products is important to reduce the impact of mankind on the environment. The desire to deliberate changes is expressed by the large amount of tiles that were reused and incorporated into the design of the plan (G. Hendriks, personal communication, May 18, 2017).

###### ***Introduction of the visions***

Enhancing the social cohesion in the neighborhood was one of the goals of the project and therefore appeared in the initiation phase of the project. The idea to include used items and enhance the adaptive capacity of the site was introduced in the design phase.

#### 4.4.2 Actors and actor coalitions

A societal organization: Rijnstad, the municipality of Arnhem and G. Hendriks, business owner of a landscape architecture bureau: Gerda Hendriks Groen were involved during the project. Rijnstad is a civil society organization, that receives funds of the municipality. The organization offers social welfare and assistance for several targets groups such as children, teenagers and adults (J. Brouwer, personal communication, June 20, 2017). An employee of Rijnstad, got involved in the initiation phase, since she was already attending and organising neighborhood gatherings. During the project she helped the initiators organise themselves in order to create the first steps (H. Brüggemann, personal communication, May 23, 2017; E. Roelofs, personal communication, May 23, 2017). This organization also wants to connect people with each other in the neighborhood by addressing activities and issues of civil society (J. Brouwer, personal communication, June 20, 2017). This shows that Rijnstad does share the vision with the initiators to create a community garden in order to create more social cohesion in the neighborhood.

Rijnstad also helped with finding someone who could help out with the design of the community garden by publishing an invitation in a local newspaper. G. Hendriks just started her own business, a landscape architecture bureau named Gerda Hendriks Groen. She read about the invitation and responded to it. She thought it was a good opportunity for her to get involved in a local project in which she could provide her services. During the design phase she noticed that her own visions did overlap with the ones of the initiators. However she also noticed that there were some differences in emphasis between her visions and the visions of the initiators:

*“You could say there are differences in emphasis. From what I understood, the primary wish of the neighborhood residents was to create a community garden and something for the children. And there was a site on which nothing happened. If I speak for myself, then I could say I have an abomination for every site that is completely paved and has no further function. So for me it was that bleak site that could become more cheerful and friendly. And in addition there was the aspect of climate change adaptation, that you could contribute to this. But for me these two aspects need to be combined. It is not only climate change adaptation, but you do this for this, this and this. So I think viability and an attractive living environment for neighborhood residents is equally important”*

(G. Hendriks, personal communication, May 18, 2017)

In addition, Rijnstad also put the initiators into contact with the municipality. The municipality thought it was a good idea to transform the site paved ground into a community garden. One of the visions of the municipality is to support neighborhood initiatives in order to create more social cohesion in the neighborhood. The municipality wants to take a facilitating and supportive role in realizing initiatives (J. Brouwer, personal communication, June 20, 2017). Thus the initiators and the municipality do share the same vision to deliberate more social cohesion in the neighborhood.

### 4.4.3 Resources

Several resources contributed to the realization of the community garden, namely financial and material resources, skills and knowledge. These resources were provided by Rijnstad, the municipality of Arnhem, G. Hendriks of landscape architecture bureau Gerda Hendriks Groen, the foundation Oranje Fonds and the neighborhood platform. Financial resources were provided by the foundation Oranje Fonds and the neighborhood platform. Oranje Fonds offers financial support for social initiatives in order to benefit the social cohesion (Oranjefonds, n.d.). Therefore it is assumed that this foundation shares the vision to enhance the social cohesion in neighborhoods. The neighborhood platform in the district Vredenburg, receives an annual budget from the municipality. This budget can be spent on resources that benefit the social cohesion in the neighborhood (J. Brouwer, personal communication, June 20, 2017). The municipality therefore also indirectly contributed with financial means. Both the municipality and the neighborhood platform, who agreed on spending the budget on resources such as a park bench, share the vision of the initiators to deliberate more social cohesion in the neighborhood.

Since the initiators had little budget to spend, items such as the tiles at the site were reused to create the borders of the vegetable gardens on the site. This idea was presented by G. Hendriks, this originated from the vision to reuse items because as a business owner she thinks sustainable use of products is important to reduce the impact of mankind on the environment (G. Hendriks, personal communication, May 18, 2017). The initiators also wanted to include used items because they only had a little budget to spend. Most important for the initiators was that they had a low budget (E. Roelofs, personal communication, May 23, 2017). Material resources were provided by the municipality. J. Brouwer, a civil servant of the municipality who was involved in the project, explain that the municipality has an annual budget that can be spent on providing resources to the neighborhood initiatives. The budget was released to remove the sandbox and the remaining tiles. In addition they also arranged potting soil for the vegetable gardens. According to J. Brouwer, it is better to exercise restraint during neighborhood initiatives. Especially when the initiative is concentrated on deliberate changes in the neighborhood in order to increase social cohesion:

*“You should exercise restraint. Because if on a Saturday they have all lugged around with tiles and pallets, they did realize something together. It is not about the end product per se, but also about the journey towards it. That is what brings people closer together. People who barely knew each other, are now working together to realize something. That also makes it more their own product and then they will keep looking after it in order to maintain it”*

(J. Brouwer, personal communication, June 20, 2017).

Like mentioned before Rijnstad put the initiators into contact with both a landscape architect and the municipality. In addition, they also arranged the financial contributions of both the neighborhood platform and the foundation Oranje Fonds. In this way, they supported the initiators with valuable contacts. Rijnstad could arrange this because they have a broad network and could lead neighborhood residents through the process of an idea until the final realization (J. Brouwer, personal communication, June 20, 2017). G. Hendriks offered her services as a landscape architect for free, to help the initiators create a design for the community garden (G. Hendriks, personal communication, May 18, 2017). Her skills and knowledge helped the initiators in realizing their initiative. In her own point of view she translated the ideas of the neighborhood residents into a design. Like mentioned before she

wants to contribute to climate change adaptation. In addition she also thinks social cohesion and an attractive living environment for neighborhood residents is equally important. According to G. Hendriks, the visions she has as a business owner were all implemented during the project (Personal communication, May 18, 2017). Her vision to create an attractive living environment for the neighborhood overlapped with the vision of the initiators to create a place where people could work together in a community garden and where children could play, in order to increase social cohesion.

#### 4.4.4 Rules

No formal rules appeared during the initiative. Informal rules in terms of agreements were made regarding the responsibility of maintaining the community garden and the accessibility of the site. One of the initiators of the initiative was asked to sign an agreement for responsibility for maintaining the community garden. This is standard procedure for the municipality when neighborhood residents are taking over public space to maintain. This is also to make sure the site stays accessible for the rest of the neighborhood (J. Brouwer, personal communication, June 20, 2017).

## Chapter 5: Conclusion and reflection

The objective of this research is to contribute on and getting an insight in the influence of visions on the governance arrangement of bottom-up initiatives which contribute to climate change adaptation. In doing so, this research's main goal was to understand which vision play a role in these bottom-up initiatives. Secondly, the influence of these visions is researched in relation to the three different dimensions of the governance arrangement of bottom-up initiatives: actors and actor coalitions, resources and rules. The conclusion of the research gives an answer to the main question of this research:

*How do visions influence the governance arrangement of bottom-up initiatives which contribute to climate adaptation in the city of Arnhem?*

Section 5.1 presents the conclusion of this research. Section 5.2 presents a personal reflection on the experiences throughout this research. In section 5.3 recommendations for further research are mentioned. Section 5.4 provides an overview of recommendations for practice.

### 5.1 Conclusion

The section 5.1.1 t/m 5.1.4 presents the answers on the questions of this research. These sections, will each focus on a sub question which was presented in chapter 1.

#### 5.1.1 Visions

The first research question aims to identify the visions which played a role in bottom-up initiatives which contribute to climate adaptation. Vision that play a role in the governance structure of bottom-up initiative which contribute to climate change adaptation can be distinguished in four themes, these are (1) climate change adaptation, (2) social cohesion, (3) circular economy and sustainable use of products and (4) sports and health. The first three themes appeared during all the four cases, the latter only appeared at the two elementary schools which developed natural playgrounds. Theoretical findings related to visions were discussed in chapter 2. The following aspects were used to identify the above mentioned visions:

Future aspect: the expression or claim refers to something that is not (yet) existing.

Ideal aspect: the expression or claim refers to something (contextually of historically) better than the current situation.

Desire to deliberate change aspect: the expression or claim generates and/or directs the desire to change.

All of the visions that appeared in the four cases included all the aspects mentioned above. All four visions always referred to something that is not (yet) existing and referred to something better than the current situation. Therefore these two aspects were hard to distinguish from one another. The desire to deliberate change could in most visions be directly linked to the physical changes that were made during the project.

#### ***Introduction of the visions***

During the data analysis, it appeared that visions were introduced during different phases of the project. This information is summarized in table 3 below. Eventually two different phases could be distinguished. Firstly, the initiation phase in which the idea for the bottom-up initiative is explored and elaborated. Secondly, the design phase in which design choices were made for the execution of the project.

	Climate change adaptation	Social cohesion	Circular economy and sustainable use of products	Sports and health
Natural playgrounds elementary school Hugo de Groot school				
Climaatadaptieve Cantoortuin Coehoorn				X
Natural playground elementary school Lea Dasbergschool				
Community garden Muntendampad				X

Design phase   
 Initiation phase

Table 3: Introduction of visions in different phases

Another aspect that appeared during the data analysis was that visions could, apart from the initiators, also be introduced by other actors. Lastly, it also appeared that different aspects of a vision could also be recognized. The introduction of the visions related to these two aspects and the different aspects of a vision, will be discussed below.

### ***Climate change adaptation***

Visions related to climate change adaptation appeared in all of the researched cases. However, this vision appeared during different phases of the project. In two cases, the Climaatadaptieve Cantoortuin Coehoorn and at the elementary school Lea Dasberg, this vision can be seen as the start to create the project and therefore appeared in the initiation phase. In the two remaining case the vision appeared with the inclusion of the designer of the plan, in the design phase and were therefore introduced by the involved landscape architecture bureaus. Different aspects related to this vision can also be recognized by initiators or other involved actors to realize the bottom-up initiative. Incorporating elements that contribute to climate change adaptation such as plants, water systems and other solutions were used for this specific purpose by the initiators themselves in two cases: the Climaatadaptieve Cantoortuin Coehoorn and the natural playground at the Lea dasberg school. The initiators and/or the involved actors also recognized the educational purpose of these elements in three cases namely at the two elementary schools and the Climaatadaptieve Cantoortuin Coehoorn. The two elementary schools also used these elements in order to challenge the children to play more. The site for the community garden in Vredenburg, was chosen by the initiators because of its warm and sunny site. However, the initiators did notice later on, that the site had become more pleasant since they planted some trees and created some shadow places.

### ***Social cohesion***

Visions related to social cohesion in the neighborhood appeared in all four of the researched cases. Enhancing social cohesion, appeared during all four cases in the initiation phase and were all introduced by the initiators. Thus it can be concluded that social cohesion as a vision plays an important role in bottom-initiatives which contribute to climate change adaptation. By realizing the initiative, it is assumed that changes were deliberated that would benefit the social cohesion in the neighborhood.

### ***Circular economy and sustainable use of products***

Visions related to circular economy and sustainable use of products appeared in all four researched cases. This vision always appeared during the design phase of the project. In only one case, the climate adaptive garden in Coehoorn circular economy and the use of sustainable products can entirely be led back to a conscious choice made by the initiators themselves. In addition, they also mentioned that by doing so they could show other people that the project can also be realized on a low budget. It must be noted once again that the initiators are owners of a landscape architecture bureau themselves. The designers of the remaining cases also used recycled products, this was also for them a conscious choice, in order to make a more environmentally friendly choice. The initiators of the Lea Dasbergschool also took this aspect into consideration but their main objective was to keep the project on a low budget. The initiators of the community garden in Vredenburg stated that only the low budget aspect was their motivation. Thus overall it can be concluded, that this vision plays an important role in most cases and are often taken into account by the people who are concerned with the design of a plan.

### ***Sports and health***

Visions related to sports and health only appeared in two cases namely at the two elementary schools. This vision appeared in both cases in the initiation phase. In both cases the elementary school itself had the desire to include more sports in their educational program. At the Hugo de Grootschool, the initiative came from the director herself, she had a clear vision to deliberate changes on the playground in order to stimulate the children to play and exercise more. At the Lea Dasbergschool the director and the teachers supported the initiative of the parents because the natural playground could stimulate the children to exercise more.

#### **5.1.2 Actors and actor coalitions**

The second research question aims to identify the influence of visions on the actor and actor coalitions that are formed in the bottom-up initiatives which contribute to climate change adaptation. Based on the literature discussed in chapter 2, **it is assumed that other non-governmental and governmental actors get involved and that coalitions can be formed, due to the presence of shared visions in the bottom-up initiative.**

The empirical findings of the research show that shared visions do influence the formation of coalitions. All four cases show that coalitions were formed with both governmental and non-governmental actors. Social cohesion and climate change adaptation as a vision often strongly connects the initiators of the bottom-up initiatives with governmental actors. However it can be proven that there are also opportunities for other non-governmental actors such as landscape architects to introduce visions for climate change adaptation and circular economy and the sustainable use of products when a coalition is formed.

A governmental actor that was present in all cases, is the municipality of Arnhem. As mentioned above enhancing social cohesion and the climate adaptivity of the location often strongly connects the initiators of the bottom-up initiatives with the municipality of Arnhem. In the case of the elementary school Hugo de Grootschool, the civil servant also strongly stated that their vision was a similar vision related to sports and health. By transforming the playground in a more challenging natural playground, children would be stimulated to exercise more. In this case, the waterboard of Rijn en IJssel also got involved. The waterboard got involved due to the shared vision for climate change adaptation with the designer of the plan.

In all cases nongovernmental actors also got involved. In three cases a coalition was formed with a landscape architecture bureau. In the fourth remaining case, the

Climaatadaptieve Cantoortuin Coehoorn, the initiators were business owners of a landscape architecture bureau. Which assumes that landscape architecture bureaus play an important role in the realization of bottom-up initiatives which contribute to climate change adaptation. This actor got involved in the two cases of the elementary school with the assumption that there are overlapping visions between the initiators and the landscape architecture bureau regarding adding green elements, which eventually contribute to climate change adaptation.

In the three cases in which a landscape architecture bureau got involved, it happened that the involved actors had a different vision than the initiators, but this vision still supported the same outcome for the initiative. This happened for instance in two cases with the vision for circular economy and the use of sustainable products. The landscape architecture bureaus that were involved, supported this vision due to the aspect that it reduces the impact of mankind on the environment. The initiators also wanted to use sustainable and recycled products, however this was because of the low-budget aspect of these products.

### 5.1.3 Resources

The third research question aims to identify the influence of visions on the resources that are present in bottom-up initiatives which contribute to climate change adaptation. Based on the literature discussed in chapter 2, **it is assumed that the resources provided by governmental and non-governmental actors can be linked to their own visions.**

The empirical findings of this research show that visions of governmental and non-governmental actors are of influence on the resources that are provided by them. In some cases, shared visions with the initiators for sports and health, climate change adaptation and social cohesion are of influence on the allocation of financial resources, mostly by the municipality collected from subsidies, but were also provided by other non-governmental actors, collected from donations. The visions related to climate change adaptation and circular economy and the use of sustainable products were of influence on the allocation of material resources. The vision for climate change adaptation and circular economy and the sustainable use of products was of influence on allocation of the skills and knowledge of non-governmental actors which primarily expressed themselves into the designed plans, even when initiators did not share this vision with the involved landscape architecture bureaus. In addition, skills and knowledge were also provided to benefit the social cohesion of the neighborhood.

In all four cases, resources were provided by both non-governmental actors and governmental actors. In the majority of the cases the initiators contacted the other actors for resources and assumed that they share the same visions. This included financial and material resources, skills and knowledge. Multiple shared visions instead of only one, were of influence on the allocation of financial resources. Financial resources collected from subsidies, were in all cases directly (or in one case indirectly through a financially supported neighborhood platform) provided by the municipality. In two cases the financial resources collected from the subsidy can be linked to the shared vision for climate change adaptation, which made it possible to collect funding from a subsidy intended for projects that contribute to climate change adaptation. In the two other cases, financial resources were provided due to the shared vision for social cohesion. In the case of the Hugo de Grootschool, the similar vision related to sports and health with the director, also pursued the civil servant from the municipality, in providing financial resources collected from a subsidy. Financial resources were in some cases also collected from donations provided by non-governmental actors. In the case of the Lea Dasbergschool a donation was provided from a parent association, who shared the vision related to sports and health. In addition, they also received donations from a local foundation and neighborhood residents, however it is not clear which visions triggered them to make a donation.

The visions related to climate change adaptation and circular economy and the use of sustainable products were of influence on the allocation of material resources. The elementary school Hugo de Grootschool was provided with a rain barrel due to the vision for

climate change adaptation. Even though the director did not initiate the project because of a vision for climate change adaptation, the waterboard did donate the rain barrel in order to stimulate climate change adaptation. Two businesses and a societal organization also provided the Climaatadaptieve Cantoortuin Coehoorn with products that benefit the climate adaptivity of the site. There is also a connection between the allocation of material resources and the vision related to circular economy and the sustainable use of products. In two cases material resources were provided by local businesses. They provided the initiators with recycled products in order to realize their plans in a low budget way.

In three cases, skills and knowledge were also provided by landscape architecture bureaus, in order to create a design. The vision for climate change adaptation was strongly of influence on the designed plans, since the designers implemented their own vision for climate change adaptation in the plans. In only one case of these cases, namely the Lea Dasbergschool the initiators strongly shared the vision to create a climate adaptive site with the designer of the plan. In one case, the community garden in Vredenburg, the designer strongly stated that she also provided skills and knowledge to benefit the social cohesion of the neighborhood.

#### 5.1.4 Rules

The fourth research question aims to identify the influence of visions on the rules that are present in bottom-up initiatives which contribute to climate change adaptation. Based on the literature discussed in chapter 2, **it can be assumed that visions make formal rules if they are applicable, as flexible as possible. In addition it is therefore assumed that more informal rules are used.**

The empirical data from the research shows that visions related to climate change adaptation and social cohesion can make formal rules related to subsidy, flexible. In addition the vision related to social cohesion was also of influence on the formation of informal rules regarding the accessibility of the site.

In three cases formal rules were applicable to the allocation of financial resources in order to realize the bottom-up initiative. In two these cases visions did influence the interpretation of the rules that were applicable to the allocation of the subsidy. In these cases the civil servants that were involved, interpret the rules flexibly which made it possible to allocate the initiators with (more) financial resources. In one case this originated from the vision for social cohesion and in the other case the vision related to climate change adaptation was of influence.

In three cases informal rules were formed regarding the accessibility of the site. In order to benefit the social cohesion agreements were made to keep the site accessible for other neighborhood residents. In two cases, these agreements were made with the municipality of Arnhem and in one case with the director of the elementary school.

#### 5.2 Reflection on the research

Throughout this research it became clear that doing research is a process of constant critical self-reflection in which a researcher has to respond to setbacks and opportunities that appear. At the very beginning, this research started off with a broad subject: climate change adaptation. This research took shape and was eventually completed by using the expertise of the supervisors and because of my own interest in the subject.

As mentioned before, during this research an internship was provided by Platform Arnhem Klimaatbestendig. One of the challenges for me during this research, was to create an end product that equally beholds both scientific and societal relevance. Therefore, throughout this research, the intentions was to create a product that generates scientific knowledge which can also be used to make recommendations for practices. Therefore this research not only focusses on recommendations for further research, but also for practices.

These recommendations are addressed in the sections 5.3 and 5.4.

One of the challenges of this research was to create a theoretical framework that can be used to analyze the governance arrangement structure of bottom-up initiatives. Since a number of theories are suitable for this, one of the first choices that had to be made was to define the theories that were going to be used. Since my strength in doing research lies into the data collection and analysis, it was chosen to start with this as soon as the theories were defined. During the data collection and analysis the theoretical framework was further enhanced and shaped in order to connect them with the empirical findings.

Due to the limitation of time some choices had to be made during the research. Throughout this research it was intended to select a broader amount of cases, it was difficult to find cases that meet the standards that were made up on beforehand, as discussed in chapter 3. Therefore the choice was eventually made to only select four cases that meet up all standards. Because of this choice, this research does provide an in depth understanding of the influence of visions on the three selected dimensions, as it was intended to do so. In addition it was possible to interview multiple actors that were involved in the bottom-up initiative. This made it possible to analyze the data from multiple point of views, instead of one. Even though it was not always possible to interview all involved actors, I was able to interview the actors that were most important and played a key role in this research.

During this research, I faced some difficulties. First of all, it appeared that the aspects of the concept of visions are difficult to distinguish. Respondents often sketched an ideal situation that lies in the future. It became clear that it seems that the future and ideal aspect are more tied together and therefore difficult to see apart from each other, then assumed at the beginning of the research. Secondly, in the beginning of the research I intended to research all four dimensions of the policy arrangement approach, however the conducted interviews showed that the discourse dimension appeared to strongly overlap with the present visions. It was therefore difficult to distinguish discourses and visions from each other during the data analysis. From then on I decided to only use the concept of vision and the remaining three dimensions of the policy arrangement approach. Thirdly, since the spoken language in the interviews was Dutch, it was sometimes challenging to make the right translation. In order to prevent misinterpretation, the interviewees were asked to read and respond to the presented research results. Lastly, during the data collection the exact subject and focus of this research was not completely defined. However in most cases this did not lead to the lack of information since a broad number of questions was asked. In some cases the respondents were asked to clarify their answers and in one case to supplement them.

### 5.3 Recommendations for further research

From the empirical findings of this research, some recommendations can be made that need to be addressed by further research. First of all, in order to get a more extensive insight of which visions play a role in bottom-up initiatives, this research can be repeated with a larger sample of cases. In doing so, it is more likely that more visions appear. The researcher might get a more complete picture of all the visions that can play a role in these bottom-up initiatives.

Secondly, this research also showed that governmental and non-governmental actors play a key role, since the initiators are provided with resources through these actors. In addition this research shows that these actors can often introduce climate adaptation as a vision into the bottom-up initiatives. Further research can be addressed regarding the specific role of governmental and non-governmental actors. This research can for instance focus more on the relationship between the initiators and the governmental and non-governmental actors in terms of regulating, stimulating and facilitating. In this way, more information can be gathered about the specific role of these actors related to introducing climate change adaptation in bottom-up initiatives.

Thirdly, this research showed that bottom-up initiatives are highly dependent of the resources that are provided by governmental and non-governmental actors, since bottom-up initiatives do not always have the means to realize their initiatives. Further research can be done regarding the allocation of resources provided by these actors. It can for instance be useful to research the juridical, economical and societal capacity and responsibility of governmental and non-governmental actors to allocate resources to specifically bottom-up initiatives that contribute to climate change adaptation.

Lastly, this research shows that bottom-up initiatives benefit from formal regulation related to subsidy when it is more flexible. It can also be assumed that informal regulation can be suitable regarding the accessibility of the site. Further research can be done regarding regulation versus bottom-up initiatives. In this way, more information can be gathered about suitable regulation for bottom-up initiatives which contribute to climate change adaptation.

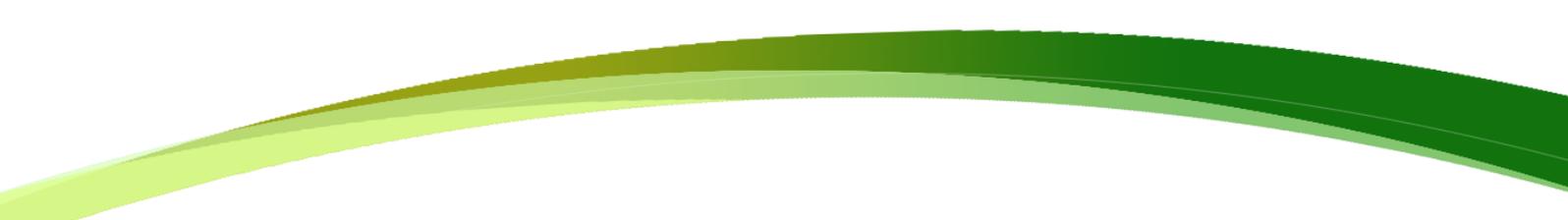
#### 5.4 Recommendations for practice

This research was part of an internship at the organization Platform Arnhem Klimaatbestendig, therefore recommendation for practice are also included. These recommendations are guidelines for the governmental and non-governmental actors who are part of Platform Arnhem Klimaatbestendig. Through these recommendations the actors get an insight into facilitating bottom-up initiatives that contribute to climate change adaptation in the city of Arnhem, related to the researched visions and dimensions.

Bottom-up initiatives which contribute to climate change adaptation can originate from different visions. These visions can be used to make stakeholders aware of climate change and inform them about the benefits of climate change adaptation. In most cases it appeared that enhancing social cohesion in the neighborhood plays an important role for the initiators at the very beginning of the initiative. Creating a site where people in the neighborhood can meet and maintain a community garden can meet up with this desire and also contribute to climate change adaptation at the same time. Another vision that also came up in both cases regarding the elementary schools, is the desire to include more sports and health activities. This assumes that this topic also plays an important role for elementary schools. Both cases show that including more green items and removing tiles on the playground, make the playground more challenging for children and also contribute to climate adaptive solutions. It is therefore important that initiators that have the desire to enhance social cohesion in their neighborhood or to include more sport and health activities are more aware that they can achieve this by choosing more climate adaptive solutions and contribute to climate change adaptation at the same time. Landscape architect bureaus should play an important role in this, because they are often concerned with the design to transform the location.

Initiators form coalitions with both governmental and non-governmental actors. This is often the case due to the assumption that there are shared visions present among them. Therefore it is important that initiators and other actors can be easily connected to each other. Societal organizations such as Natuurcentrum Arnhem and Rijnstad, which have a broader overview of the interests of different actors can play an important role into connecting initiators with actors that have an interest into contributing to climate change adaptation.

This research shows that bottom-up initiatives are highly dependent on other actors for resources. The resources that came up during this research can inform actors about the right resources they can provide in order to make the bottom-up initiative successful. Since initiators often have a little budget to spend it is therefore important that they are provided with the resources from other actors. Financial resources were often seen by the initiators as a decisive mean. It is therefore important that initiators are aware of subsidy and/or other financial resources. Initiators can also be pointed towards material resources that support a low budget such as used products provided by other actors. Other practical solutions



regarding for example heavy groundwork and creating a design can offered by governmental and non-governmental actors can be used to help them out. Initiators can have little knowledge and skills about creating a design that contributes to climate change adaptation. These resources can be provided by landscape architecture bureaus. However since initiators can have a small budget, financial resources for their work can be granted by other actors who have an interest such as governmental actors. Other creative solutions can also be used, landscape architecture bureaus can for example work for free or low costs in order to build up their portfolio.

Since multiple visions often exist in the initiative, subsidies that target on these visions can be used by initiators. It appeared that the governmental and non-governmental actors who support the initiators, often have more knowledge about the existence of suitable subsidies. Therefore it is important that these actors inform initiators about the existence of these subsidies. In addition, bottom-up initiatives can benefit more from these subsidies when the formal regulation related to the subsidy is more flexible. It appeared that when the rules regarding subsidy are more flexible, initiators can collect funding from subsidies more easily. Actors with more inside knowledge can help initiators to meet up with the required information and resources that are necessary to grant the subsidy. Informal rules, in the form of agreements can be used to clarify the accessibility of the site, when it is on public ground.

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## Appendix I: List of interviewees

### Interviews participants in the field of climate adaptation

Interviewee	Function	Date
Monique Verstraten	Director Natuurcentrum Arnhem	25 April 2017
Daphne van der Wal	Business owner Le Far West	24 April 2017
Sanne Blok	Coördinator Netwerk Groen Arnhem	24 April 2017
Ronald Bos	Civil servant, municipality of Arnhem	9 May 2017

### Case: Natural playground elementary school Hugo de Grootschool

Interviewee	Function	Date
Ans Lips	Director elementary school	2 June 2017
Ramon Kleinhesselink	Civil Servant, municipality of Arnhem	2 June 2017
Marja Wennemers	Business owner Groendok	31 May 2017

### Case: Climaatadaptieve Cantoortuin Coehoorn

Interviewee	Function	Date
Daphne van der Wal	Business owner Le Far West -Initiator	22 May 2017
Henk Wentink	Municipality of Arnhem	22 May 2017
Willem Jakobs	Business owner Willem Jakobs	24 May 2017

### Case: Natural playground elementary school Lea Dasbergschool

Interviewee	Function	Date
Karin Wolffenbuttel	Neighborhood resident – Initiator	21 June 2017
Henk Wentink	Civil servant, municipality of Arnhem	19 June 2017
Marja Wennemers	Business owner Groendok	31 May 2017

### Case: Community Garden Muntendampad

Interviewee	Function	Date
Els Roelofs Herman Brüggemann	Neighborhood residents - Initiators	23 May 2017
Jiska Brouwers	Municipality of Arnhem	20 June 2017
Gerda Hendriks	Business owner Gerda Hendriks Groen	18 May 2017

## Appendix II: Interviewguide initiators

### Introductie

1. Kunt u kort uzelf introduceren?

### Governance structuur

1. Kunt u in het kort vertellen hoe het initiatief is ontstaan?
2. Welke publieke en private partijen zijn betrokken geweest bij *de case*? Hoe zijn deze betrokken geraakt bij deze *case*?
3. Zijn er daarnaast ook nog andere partijen meer indirect betrokken geweest bij *de case*?
4. Hoe heeft de overheid (gemeente Arnhem) zich opgesteld ten opzichte van de andere partijen?
5. Hoe is deze relatie tussen de overheid ten opzichte van de markt en gemeenschap te omschrijven?
6. Wat is de rol geweest van verschillende private partijen bij *deze case*?
7. Welke partijen hadden volgens u ook betrokken kunnen worden?

### Conditie

#### *Coalitions*

1. Zijn er coalities gevormd tussen verschillende partijen?
2. Zijn deze gevormd op basis van gemeenschappelijke doelen en ambities? Of hebben andere zaken een rol hierbij gespeeld?
3. Wat zijn kansen geweest als het gaat om het vormen van coalities? Welke partijen hadden mogelijk ook een belangrijke rol kunnen spelen en hoe?
4. Wat zijn belemmeringen geweest bij het uitvoeren van de plannen, zijn er bepaalde partijen geweest die de planvorming en implementatie in de weg zaten?

#### *Resources*

1. Is er sprake geweest van een bepaalde machtspositie van een of meerdere partijen? Hiermee wordt bedoeld dat andere partijen afhankelijk waren van deze partij voor bijvoorbeeld hulpmiddelen (sociale, juridische of financiële hulpmiddelen)
2. Welke partijen hebben de meeste invloed gehad bij het creëren van het plan en de uiteindelijke uitvoering hiervan?
3. Waardoor kwam dit?
4. Wat was volgens u doorslaggevend bij dit project?
5. Welke hulpmiddelen zijn van belang geweest bij het ontwerp van het plan en de uiteindelijke uitvoering? (Denk aan financiële, sociale en juridische hulpbronnen. Door welke partijen zijn deze beschikbaar gesteld?)
6. Wat zijn kansen geweest als het gaat om het de machtspositie en het beschikbaar stellen van hulpmiddelen? Welke partijen hadden mogelijk ook een belangrijke rol kunnen spelen hierin en hoe?

7. Wat zijn belemmeringen geweest bij het uitvoeren van de plannen, hebben machtsposities of tekort aan hulpmiddelen planvorming en implementatie in de weg zaten?

#### *Rules of the game*

1. Hoeveel ruimte is er geboden als het gaat om het uitwerken en uitvoeren van het plan als het gaat om formele regels vanuit de overheid? (beleidsregels, wetgeving etc.)
2. In welke mate is er flexibel omgegaan met deze regels en zijn hier bijvoorbeeld informele regels uit voort gekomen? (afspraken in de vorm van contracten en akkoorden)
3. Hebben sommige van deze regels het vormen van het plan en de uiteindelijke implementatie in de weg gestaan?

#### *Discourses*

1. Welke ideeën en opvattingen hebben een rol gespeeld bij het vormen van het plan en de uiteindelijke uitvoering hiervan?
2. In hoeverre zijn deze bepalend geweest tijdens het creëren van het plan en de uitvoering hiervan?

#### *Visions*

1. Welke visies hebben een rol gespeeld tijdens het project?
2. Hebben bepaalde visies van actoren, die zij hebben meegenomen vanuit hun eigen bedrijf etc, die een rol hebben gespeeld bij het creëren van het plan en de uitvoering hiervan?
3. Heeft klimaatadaptatie een rol gespeeld tijdens dit project?

## Appendix III: Interviewguide involved non-governmental and governmental actors

### Introductie

1. Kunt u in het kort iets vertellen over uw functie?
2. Op welke wijze bent u als persoon betrokken (geweest) bij het project?

### Governance structuur

1. Kunt u in het kort vertellen in welke fase van het project *bedrijf/overheid* is geraakt bij dit project?
2. Hoe heeft in uw ogen *bedrijf/overheid* zich opgesteld ten opzichte van de initiatiefnemers?
3. Hoe is deze relatie tussen de *bedrijf/overheid* ten opzichte van deze partijen te beschrijven in een woord volgens u? (faciliterend/stimulerend/cooperatief)
4. Is *bedrijf/overheid* volgens u ook betrokken geweest bij het sturing geven aan het project? en op welke wijze? (is dit te vertalen in hulpbronnen, wet en regelgeving etc?)

### Conditie

#### *Coalitions*

1. Hoe is er volgens u een samenwerkingsverband ontstaan tussen *bedrijf/overheid* en de initiatiefnemers van het project? Bijvoorbeeld door middel van gemeenschappelijke doelen en ambities? Of hebben andere zaken een rol hierbij gespeeld?
2. Wat zijn belemmeringen geweest bij het uitvoeren van de plannen, zijn er bepaalde partijen geweest die de planvorming en implementatie in de weg zaten?

#### *Resources*

1. Heeft *bedrijf/overheid* een bepaalde invloed gehad op het project door het aanbieden van hulpbronnen (denk aan sociale, juridische of financiële hulpbronnen)?
2. Zijn deze hulpbronnen voor uw gevoel doorslaggevend geweest voor het project?

#### *Rules of the game*

1. Hoeveel ruimte is er geboden als het gaat om het uitwerken en uitvoeren van het plan als het gaat om formele regels vanuit de overheid? (beleidsregels, wetgeving etc.)
2. In welke mate is er flexibel omgegaan met deze regels en zijn hier bijvoorbeeld informele regels uit voort gekomen? (afspraken in de vorm van contracten en akkoorden)
3. Hebben sommige van deze regels het vormen van het plan en de uiteindelijke implementatie laten slagen of juist misschien wel in de weg gestaan?

### *Discourses*

1. Hebben bepaalde ideeën en opvattingen vanuit *bedrijf/overheid* een rol gespeeld bij het vormen van het plan en de uiteindelijke uitvoering hiervan?
2. In hoeverre zijn deze bepalend geweest tijdens het creëren van het plan en de uitvoering hiervan?

### *Visions*

1. Heeft de *bedrijf/overheid* een bepaalde visie die zij hebben meegenomen in het project, die daarnaast ook een rol heeft gespeeld bij het creëren van het plan en de uitvoering hiervan?
2. Heeft klimaatadaptatie als visie een rol gespeeld binnen dit project?