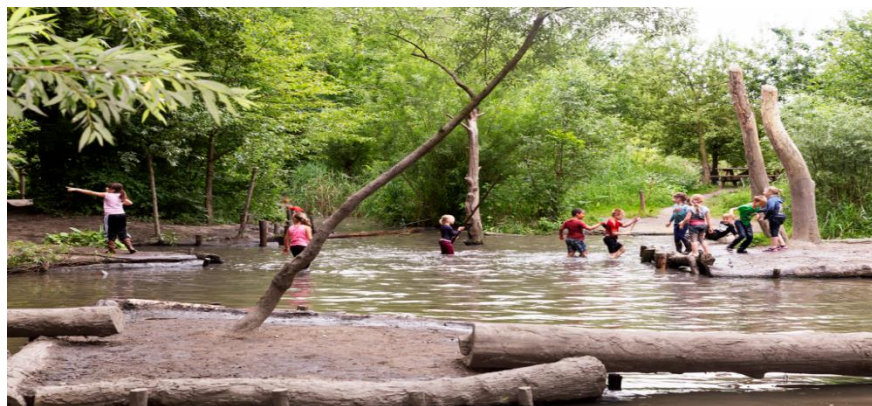# Learning in collaborative Nature-Based Solutions in the city of Rotterdam

Master thesis research of

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8 August 2020

Word count: 19 050

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Summary

Nature-based solutions (NBS) have been acknowledged as a promising new avenue for building sustainable, healthy and inclusive cities. NBS interventions have the potential to contribute to climate resilience, sustainable urban water management, urban biodiversity, improved air quality, urban regeneration among other. At the same time, collaboration governance and learning are put forward as highly important for such projects. However, empirical research on this topic is limited. Moreover, learning, although put forward as a valuable outcome of collaborative governance, has not sufficiently been researched as such.

This thesis contributes to these three bodies of literature by exploring how different conditions of collaborative governance impact learning in such projects. By using Ansell & Gash's prominent framework for collaborative governance, the research looks into how trust building, face-to-face communication, facilitative leadership and commitment to the process impact cognitive, normative and relation learning. Additionally, stakeholder diversity was also analysed as an important condition of the collaborative process.

The study adapted a qualitative research strategy and a multiple case study design. Three collaborative nature-based solutions projects in the city of Rotterdam were selected for this purpose. Rotterdam is a particularly well-suited city for this research because of the high attention that has been given to urban sustainability, but also collaboration with citizens. Data was predominantly collected through semi-structured interviews.

The results showed that all five conditions have a positive impact on learning. Face-to-face communication and commitment were the two conditions which had a strong positive impact on all types of learning. Trust building was important for relational and normative learning but was not essential for cognitive learning. Facilitative leadership played an important role, especially through bringing different actors together and stimulating knowledge and idea exchange. Conflict mediation – another facilitative leadership activity did not prove to be of high relevance, contrary to what theory suggested. Finally, diversity had a positive impact on cognitive learning. Its potential negative effect on relational and normative learning were countered by the effect of trust building, commitment and face-to-face communication.

Keywords: nature-based solutions, learning, collaborative governance, partnerships, urban nature

Acknowledgements

Contents

List of figures:

List of tables:

Abbreviations:

EC	European Commission
EU	European Union
HHSK	Hoogheemraadschap van Schieland en de Krimpenerwaard
NBS	Nature-based solutions
NGO	Non-governmental organization

Chapter 1 Introduction

1.1 Background

Cities are nowadays faced with multiple complex challenges, with climate change and rapid urbanization being the most pressing ones. With more than half of the world's population living in cities, and considering that the figures are only expected to grow (United Nations, 2018), cities are deemed to become the "human habitat" of this century (Seto & Reenberg, 2014). Urban settlements around the world will need to find a way to accommodate a growing number of citizens, while also preserving the already degraded environment. Today more than ever, there is a need for holistic approaches that have the potential to simultaneously tackle different urban problems. Nature-based-solutions (NBS) is one such approach that is already starting to gain popularity among local and national authorities around the world and whose potential as a useful tool for dealing with complex issues has been recognized by many experts. NBS are solutions which use, are inspired or are supported by nature and provide diverse environmental, social and economic benefits. Examples of such interventions on an urban level can be parks and urban green and blue areas, allotments and community gardens, among others. The NBS approach to urban development is also suggested as a way towards sustainable urbanization (Kabisch et al., 2016) and is put forward as a more efficient and cost-effective solution to climate change adaptation compared to traditional grey-infrastructure (European Commission, 2015).

At the same time, complex urban challenges also call for new ways of working on the part of public authorities. City officials need to resort to more innovative ways for making and implementing policies, thus shifting their role from 'governing' which implies more direct control and hierarchy to that of 'governance'. That is, the authorities need to collaborate with "a wide range of actors in networks that cut across the public, private and voluntary sectors, and operate across different levels of decision making" (Newman et al., 2004, p.204). Collaborative governance is one of the most prominent examples of such new approaches to decision-making and it has been suggested as an essential requirement for the successful implementation of NBS (Frantzeskaki, 2019). Since NBS involve innovative governance models (EC, 2015) collaborative governance is particularly relevant for such projects. Involving actors in multi-stakeholder collaborations for NBS has been recognized by the European Commission: "the individuals, organisations and governments, in interaction with

others, play a pivotal role in identifying new ways, innovations and knowledge for better cities" (EC, 2015, p.28). It is precisely by interacting with others, that actors can have access to and exchange ideas and experiences, thus generating new knowledge and creating new perspectives through a process of learning. Learning, therefore, can be an important outcome of collaboration and insight about how to create the right environment for this process to happen, is essential. The need to support learning is in fact another common point which comes up often in the literature on NBS (Nesshover et al., 2017). Both collaboration and knowledge generation have been identified as important opportunity areas for facilitating action for NBS (Kabisch et al., 2016) and thus, there is a need to understand better how collaboration and learning work out in practice and what factors within collaboration could facilitate learning.

1.2 Problem statement

Despite its growing relevance, the concept of nature-based-solutions (NBS) still leaves much to be answered, especially when it comes to two essential processes for successful NBS – collaboration and learning. Many experts recognize the need for more open and inclusive collaborative governance approaches for NBS, however, empirical knowledge is still underdeveloped (eg., Kabisch et al., 2016). Further, learning from such endeavours is extremely important for all the stakeholders that are involved. Yet, learning as an explicit outcome of collaboration has been given less attention in the academic literature (Armitage et al., 2008; Plummer, 2017). There is a need to better understand how different conditions of the collaborative process (such as trust building, face-to-face communication, facilitative leadership and commitment) can influence the process of learning. Moreover, the increasing recognition of bringing together different stakeholders for the design and implementation of NBS requires further examination of the impact that such potential diversity in interests and perspectives can have on learning.

The city of Rotterdam, Netherlands was chosen for the empirical part of this study, because of the growing attention that has been given to urban sustainability, both on a national and local level. Actions for greening the city and NBS have been on the agenda of the municipality for years (e.g., Gemeente Rotterdam 2019a; 2019b) and the number of community-based green initiatives is increasing. Rotterdam faces serious climate change and social challenges and thus, the implementation of NBS will likely become ever more needed. Therefore, this thesis has the objective of investigating collaboration and learning for NBS in this specific context. For this purpose, three projects for nature-based solutions created in

collaboration were selected for the multiple case study research: Tuin de Bajonet – a community garden, Voedseltuin –a food garden, and Essenburgpark – one of the newest parks in Rotterdam.

1.3 Research objective

By combining different bodies of literature, the objective of this study is to contribute to the academic knowledge on nature-based solutions, collaborative governance and learning by exploring the effect that the collaborative governance process has on learning in such initiatives. In order to explain this process, the influence of several conditions of collaborative governance on learning will be analysed (trust building, face-to-face dialogue, facilitative leadership, commitment to the process sand diversity).

1.4 Research question

How does collaborative governance influence the process of learning among stakeholders, in the context of urban Nature-based Solutions in the city of Rotterdam?

1.4.1 Sub-research questions

- How do trust, face-to-face dialogue, facilitative leadership, commitment and diversity develop in the three studied cases?
- How do cognitive, normative and relational learning develop in the three studied cases?
- What is the influence of trust, leadership, diversity, face-to-face dialogue and commitment on the three forms of learning?

1.5 Relevance

1.5.1 Scientific relevance

The scientific relevance of this study is two-fold. First, there is a growing recognition, both in the literature and in practice among experts and public authorities, of the potential of nature-based solutions for tackling environmental issues, while also providing benefits for other social challenges (e.g., European Commission, 2015; Kabisch et al., 2017). Nevertheless, as the concept is relatively new, there are still many areas which need further theoretical and empirical research. How the governing mechanisms for such approaches work in practice is still less researched empirically, especially when it comes to involving stakeholders in NBS (Kabisch et al., 2016). Collaboration among key stakeholders and bringing together community, expert and professional knowledge is indeed recommended for NBS, yet it has

received less empirical attention in the literature. Moreover, learning processes in the context of environmental policy is still limited (Gerlak et al., 2018). In their analysis, Gerlak et al., (2018) discover that even though substantial attention is paid to the "venues" which support learning (such as collaborative forums or multi-stakeholder processes), there is less knowledge and empirical research on the factors within those venues which facilitate learning. Thus, by exploring how different factors can impact learning in the context of collaboration for NBS, this study will contribute to the scientific knowledge on NBS but also on learning in this field, in general.

On the other hand, collaborative governance is by all means not a new term in the public sector, especially in Western societies, and is touted for the manifold positive outcomes that it can bring, such as increasing democratic legitimacy and tackling complex societal issues among many other (Pahl-Wostl et al., 2007; Ansell & Gash, 2008). However, learning is one particular outcome that is expected to occur in collaborative governance which has been less researched as such. Collaboration is put forward as a way to generate new knowledge and integrate different insight (Bodin, 2017) and collaborative processes are often identified in the literature as venues which are favourable for learning to occur (Gerlak et al., 2018). However, evidence about the factors within such venues which facilitate learning is still underdeveloped (Gerlak et al., 2018). One reason for this might be that learning is also studied as part of the process of collaboration and it can be hard to disentangle the process from its outcome since they are "likely to be tied together" (Innes and Booher, 1999, p. 415 as cited in Emerson et al., 2012, p.17). That is, there is a "dichotomy" in the relationship between learning and collaboration (Muro & Jeffrey, 2008). Learning is indeed both essential for collaboration and an outcome of this process (Berkes, 2009). Nevertheless, this research focuses on learning as an outcome of collaboration and thus, aims to help fill in the gap on the conditions within collaboration which can facilitate learning. Especially in the context of nature-based solutions, whether actors gain new knowledge and change their perspectives and relations as an outcome of the collaboration is particularly important.

1.5.2 Social relevance

Nature-based solutions have a big potential for providing solutions for multiple societal changes, such as climate change adaptation, urbanization, health, quality of life and social cohesion. Therefore, interest in applying such actions from policy officials, local communities, the private and the non-governmental (NGO) sector is deemed to increase. The insights from this study could serve to guide actors, especially urban planning and development professionals

in the implementation of such projects. The research could be all the more relevant for NBS which involve multiple stakeholders from different sectors who come together to find solutions for urban challenges and more importantly, to learn from them. More knowledge on which factors of the collaborative governance process could enhance learning among stakeholders in such arrangements will be crucial in the upcoming years. Public authorities will be ever more confronted with complex challenges and the need to collaborate with citizens, businesses and the third sector. If nature-based solutions could be one of the answers to our societal challenges, than it is imperative that we learn from our experience in implementing them and in involving relevant stakeholders in the process. Learning can provide the tools to improve NBS practices and guarantee their long-term success, while also supporting the diffusion of useful knowledge and its application in subsequent projects.

On a more local level, this research can also be of relevance to the specific NBS cases which will be studied by helping them to discover factors which contribute to the creation of a learning environment. Even if learning is a successfully achieved goal within such projects, an external perspective can always be useful. On the other hand, if there are certain constraints to the process of learning, then this study might help stakeholders identify some of them or at least, bring their attention towards learning and provide them with cause for reflection on how to improve the learning environment.

Finally, the knowledge on learning and what factors can facilitate this process that will be generated through this research could potentially be applicable to other collaborative initiatives, outside of the context of urban environmental governance. This could in help stakeholders create the right conditions for learning from each other and from their engagement in the collaboration.

Chapter 2 Literature review

2.1 Introduction

This chapter outlines the theoretical background of each of the three main concepts on which this study is focusing: nature-based solutions, collaborative governance and learning.

2.2 Nature-based solutions

Nature-based solutions (NBS) is a new concept that promotes the use of nature for tackling environmental challenges, while also providing social and economic benefits. One of the most popular definitions of NBS is the one put forward by the European Commission: NBS

is defined as "actions which are inspired by, supported by or copied from nature" with aim to "help societies address a variety of environmental, social and economic challenges in sustainable ways" (EC, 2015, p.5). NBS are set as a priority area for investment in various EU projects and specifically, within the Horizon 2020 agenda (Raymond, Breil et al., 2017).

NBS interventions have the potential to contribute to climate resilience, sustainable urban water management, coastal resilience, enhancing and conserving urban biodiversity, improved air quality, urban regeneration (Raymond, Breil, Nita et al., 2017). Furthermore, the implementation of NBS could address broader social challenges, such as social justice and social cohesion, public health and well-being and create potential for new economic opportunities and green jobs (Raymond, Breil, Nita et al., 2017). NBS is also seen as an approach that "recognizes the dependence of human societies and their development on natural systems" (Wamsler et al., 2020, p.1). This new approach for urban sustainability is also suggested as a way to make cities more liveable and better adapted to face current societal challenges (Muro & Jeffrey, 2008). In her study, Frantzeskaki (2019) discovered that by enhancing the physical features of deprived neighbourhoods though small-scale experiments with NBS, cities can enhance the residents' perceptions of place and the value that they attach to it.

Before the emergence of the concept of NBS other similar concepts were used in the literature "to promote the maintenance, enhancement, and restoration of biodiversity and ecosystems as a means to address multiple concerns simultaneously" (Kabisch et al., 2016, front page). Such concepts include "eco-systems services", "ecosystem-based approach" and "green Infrastructure" among other. Although much confusion still exists, some authors have tried to improve the understanding of NBS by comparing it to its predecessors (e.g., Pauleit et al., 2017; Kabisch et al., 2016; Nesshover et al., 2017). One of the main conclusions of such comparisons is that unlike the other concepts, the NBS approach is a more holistic one. Pauleit et al., (2017, p.29) conclude that the concept of NBS is the most recent and the broadest of them all and thus serves as an umbrella concept, while also putting the focus to "deployment of actions on the ground".

Since NBS is promoted as an approach that can provide solutions for social challenges, it could reduce the concerns over risks of environmental inequalities generated by green projects. Wolch et al., 2014 suggest that governments should aim for a 'just green enough' strategy wherein community concerns, needs and desires shape the design of green space projects, instead of using conventional planning approaches or ones that focus only on

ecological restoration. In this context, it becomes obvious that if NBS are to be beneficial not only for the environment, but also for communities, citizens need to be involved in the process of designing and implementing such projects.

Collaborative governance has been highly recommended as an important approach for NBS (Haase et al., 2017; Frantzeskaki, 2019; EC, 2015; Dushkova and Haase, 2020). Engaging citizens in the design and implementation of NBS provides planners with local knowledge, but it also ensures the understanding of the specific needs and preferences of local communities and thus increasing the liveability of urban areas (van Ham & Klimmek, 2017). Collaborative approaches to NBS are also recommended because they can catalyse local and tacit knowledge and provide platforms for new ways of working with citizens (Frantzeskaki, 2019 p.107) and fostering citizen engagement compared to conventional physical adaptation (Brink & Wamsler, 2018).

Because of the potential of NBS to provide multifunctional benefits for society and their promising ability to contribute to sustainable urbanization, city governors across the world are looking for ways to successfully design and implement such approaches. In this context, the need for learning from existing NBS experiences, the challenges that were encountered therein, as well as the particular measures which might be different for each case, is an important part of this process (Kabisch et al., 2017). Therefore, there is a growing need to support learning within and across NBS projects (Nesshover et al., 2017). Gathering knowledge from both successful and less successful NBS approaches will be useful for the effective employment of subsequent NBS (Kabisch et al., 2016) and the improvement of existing practices. All involved stakeholders, whether they are civil servants, policy makers, private sector representatives or local community members can gain from this process, enrich their knowledge and social capital.

Further, in the context of environmental governance, the combination of collaboration and learning has been proven to be essential for the better perception of outcomes by stakeholders (Plummers et al., 2017). This is an important finding as whether participants perceive the process as successful, will be determining for their motivation for future engagement and thus, for the long-term sustainability of the initiative.

Lastly, collaboration for NBS requires diversity and learning from social innovation (Frantzeskaki, 2019). In order for NBS to produce sustainable and socially inclusive urban space, they need to include different groups of actors, but also different demands and views

into the planning and implementation of NBS, even if they might not match those of experts (Haase et al., 2017).

2.3 Learning

2.3.1 Importance of the concept

The growing role of learning in public administration theory can be seen as part of the transition to new modes of governing, especially when it comes to environmental governance: "…[learning] complements the shift in focus from management to governance as well as the contemporary emphasis on conditions of complexity, uncertainty and value conflict" (Baird et al., 2014, p.52). Learning is an essential outcome of collaborative governance as it allows the stakeholders to develop new knowledge and shared understanding of the issues at stake, but also through problem-solving to create valuable solutions together. The concept is gaining particular relevance when it comes to governance processes for environmental challenges (Baird et al., 2014). Facing the complexity of the contemporary world and finding solutions for complex challenges such as environmental degradation and climate change requires the ability to constantly experiment with new ideas and learn from past experience. In nature-based solutions, as a fairly new concept, this is particularly relevant.

Learning could also be used as a measure to increase the level of social cohesion and social justice since it could provide more people with opportunities for learning about nature, acquiring new skills and developing new relational capacities, such as trust-building, tolerance and respect between groups (Raymond, Breil et al., p.34). Learning is also promoted as an important process for increasing community resilience, (Berkes & Ross, 2013) and building adaptive capacity (Plummer and Armitage, 2010; Fazey et al., 2007; Berkes & Ross, 2013). Finally, the process of learning is key for spreading knowledge and innovation, which could lead to changes in private and public strategies and policies.

2.3.2 Different perspectives on learning

The scholarship on learning is rich and multidisciplinary: theory on learning can be found in diverse academic disciplines, from management and organizational theory to psychology, educational science, environmental science and public administration. This explains why there exist numerous ways of defining and conceptualizing learning. While in the 1960s and 1970s learning was understood as a change in behaviour (Muro and Jeffrey, 2008), the concept has nowadays significantly expanded its meaning, which makes it hard to find an

overarching definition and conceptualization for it in the literature. In fact, research on learning is often focusing on just one particular type of learning such as social, transformational learning, cognitive learning, policy learning, single, double-loop learning, communities of practice etc. Nevertheless, as Muro and Jeffrey (2008) maintain, what differentiates all the theories and conceptualizations of learning is the underlying assumptions about the nature of the process, but they should be regarded as complementary and not competitive.

Furthermore, learning can be analysed on different levels of the collaboration: some authors concentrate on how groups or organizations learn (e.g., Heikkila &Gerlak, 2013), others place the focus on citizens or policy managers. It is argued that learning can have lasting effects on the level of the individual stakeholder involved in the process, on the level of the organisation and on complex forms of collective action (Leach et al., 2014). However, the line of reasoning that will be followed throughout this study is that it is equally important both for the involved stakeholders and the organizations that they represent to learn from the collaborative process. In line with the approach of Crona and Parker (2012), the choice of studying learning on the individual level is justified by the fact that before new knowledge is incorporated into new practices and policies, it is first incorporated into the individual's own stock of existing knowledge.

It is also worth noting that learning can entail different things for different stakeholders. On one hand, learning about the environment, urban nature and climate change might occur for most of the stakeholders, but certain types of new knowledge will be more relevant for some actors than others. For example, project initiators could learn about the intricacies of working with the municipality and how best to amass support and resources for such initiatives. Civil servants, on the other hand, could not only acquire new knowledge about the local community and practices but also learn about working together with them and the challenges and opportunities that this implies. Learning about what works and what not when partners have to make decisions together is also important for everyone. Finally, beside new technical knowledge, actors could acquire social knowledge as well. Learning also entails a possibility for change of perspective and values: again, from an environmental and a social perspective which are both important because of the multifunctional purpose of NBS. Finally, belief change as part of learning can lead to political consensus and collective action (Leach et al., 2014).

For this study the conceptualization of Baird et al. (2014) was chosen since it analyses learning effects in terms of their nature and thus encompasses three different, but equally important dimensions of learning: cognitive, normative and relational learning. Moreover, their

9

framework is specifically developed for the context of environmental governance and climate change adaptation in particular, though it is also useful for a more general context. Cognitive learning is the one type that can be found across many authors. Here, it corresponds to acquiring new knowledge and restructuring previously existing knowledge. Normative learning is defined by changes and convergence of group opinion. By engaging with other others, individuals are likely to adapt their perspectives to those of other actors which leads to views within the partnership converging or becoming complementary (Muro & Heffrey, 2008). Finally, relational learning is said to occur when new relations among participants are created and actors improve their understanding of the mind-sets of others. This sub-type is closer to the concept of social learning because of the focus on the social interactions among participants.

2.4 Collaborative governance:

2.4.1 Importance of the concept

The increased focus on collaborative governance in public administration is part of the larger trend in Western societies towards network governance by involving private sector actors and the civil society in the process of governance is one of those new ways for designing and implementing solutions. Since no single actor has all the knowledge, skills and capacities needed to tackle complex societal problems, stakeholders have to work together and combine their resources. Moreover, what is meant by resource is not just the financial funding, which is by all means important, but also non-material resources including time, expertise and skills, technical, administrative and organizational support (Emerson et al., 2012). In other words, through collaboration stakeholders can achieve together the desired outcomes that could not have been achieved separately (Emerson et al., 2012). The importance of collaborative and participatory approaches for environmental governance has also been highly promoted in the literature (e.g., Pahl-Wostl et al., 2007, Newig, Challies, Jager, Kochskaemper & Adzersen, 2018), which can be explained by the growing focus in sustainability science on using more relational approaches in the face of socio-ecological challenges (Wamsler et al., 2020).

Collaborative governance is related to other terms such as network governance, co-management, interactive governance (Ansell and Gash, 2007; Emerson; Gibson, 2014). Participatory governance is another similar concept, but the focus there is more on involving citizens who do not normally participate in the decision-making process, whereas "collaborative governance", on the other hand, stresses the process of working together (Newig

et al., 2018). Another similar concept, which has been especially used in environmental governance is (adaptive) co-management, which can be seen as collaborative problem-solving (Carlsson and Berkes, 2005 as cited in Berkes, 2008).

2.4.2 Defining collaborative governance

In their article, Ansell and Gash (2008) define collaborative governance as "a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets" (p.544). Through this definition the authors highlight six criteria for a governance arrangement to qualify as collaborative governance: it is initiated by public agencies or institutions, participants include non-state actors and they take part in decision-making, the forum is formal and aims to make decisions by consensus and finally, the focus of collaboration is on public policy or public management (Ansell & Gash, 2008, pp. 544-545). Their definition, however thorough and elaborate, is however, more restrictive and thus, it becomes more challenging to find real-life arrangements that fit all of the criteria.

Emerson et al. (2012) on the other hand, propose a definition that is broader and thus provides more flexibility when it comes to whether a certain initiative can be considered collaborative governance: "the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished" (p.2). Defined this way, collaborative governance is no longer necessarily a formal arrangement, nor a state-initiated one. Such broader definition also allows for community-based, private-social, co-management and other "multipartner" governance arrangements to fall under the collaborative governance umbrella. For this reason and similar to the study of Sisto (2018), the definition of Emerson et al. (2012) was preferred over Ansell and Gash (2008)'s one as the working definition that will be used in this study.

2.4.3 Learning as a valuable outcome of collaboration:

The literature on collaborative governance draws special attention to the manifold positive outcomes which can result from the collaborative process: from the most praised one – providing a solution for tackling wicked problems by harnessing complexity, to increasing effectiveness and efficiency, but also improving democratic participation (Ansell &

Gash, 2007; Koppenjan & Klijn, 2004) and legitimacy (Gibson, 2014; Emerson et al., 2012). Collaboration is also touted for spurring public sector creativity via collaborative innovation (Crosby et al., 2017).

However, one key outcome that has been less researched as such is learning. Yet, the literature on learning often places an emphasis on collaborative and multi-stakeholder processes as important venues for learning (Gerlak et al., 2018). The argument lies that since collaboration brings together people from different backgrounds, sectors and institutions, it creates the perfect conditions for learning to happen. By connecting different knowledge systems, collaboration enhances stakeholders' understanding of the problem at hand (Tengö et al., 2014) but also, it spurs the generation of knew knowledge that is shared among the participants. Crosby et al. (2017, p.656) claim that in the face of wicked or unruly problems, public managers should act as "orchestrators of networked interaction and mutual learning", that is, they should be facilitating the process of learning among actors in collaboration. In this context, it is important to distinguish key conditions within the collaborative process which could create a learning environment and facilitate the process of learning.

2.5 Key factors in the collaborative process which could influence learning:

In this part, first some of the most prominent features of collaborative governance processes will be discussed in order to select the ones which are more relevant in the context of learning.

Since the concept of collaborative governance has in the past decade gained a prominent place in the public administration literature, many authors have analysed the factors and conditions which affect the collaborative governance process (e.g., Emerson et al., 2012; Bryson et al., 2006). Nevertheless, the conceptual framework developed by Ansell and Gash (2008) remains the one that has been most widely recognized (Figure 1). This model will also serve as part of the analytical base for the theoretical framework of this thesis, by providing some of the main variables that influence the outcomes in terms of learning of the collaborative governance process.

Ansell and Gash (2008) distinguish between variables that act as starting conditions, factors within the collaborative process and two additional conditions that directly influence the process: the institutional design and facilitative leadership. The core of the model is composed of the set of factors within the collaborative process itself: face-to-face dialogue, trust-building, commitment to process, shared understanding and intermediate outcomes.

Starting conditions were left out the analysis because of the limited scope of this thesis and because on the long-run, these conditions might become less relevant for learning, especially if the collaboration between actors improves beyond its initial status. Furthermore, not all of the factors of the collaborative process will be used. The development of shared understanding, for example, is part of the process of learning, but here, as was stated in the beginning of the research, learning (or one part of it) is incorporated as part of the process of collaboration. In fact, Ansell and Gash (2008)'s framework is a good example of the ambiguity regarding learning and its double role – on the one hand, it is sometimes analysed as an element of the process of collaboration, and on the other – it is also one of the highly valued outcomes of collaboration. The authors both suggest that learning is a valuable outcome of collaboration and incorporate shared understanding, which is one dimension of learning, as part of the process. Moreover, learning, as will be discussed further on, is examined in this research in a more holistic manner and encompasses dimensions of learning which go beyond the development of shared understanding. Since the focus here is on learning as an outcome of the collaborative arrangement, shared understanding will be left out of the conditions that contribute to learning and can, instead be considered as part of normative learning. The factors intermediate gains and institutional design were also purposefully left out of the theoretical framework, since it could be argued that their impact on learning would be rather indirect.

Finally, the literature on learning distinguishes diversity as an important determinant for learning (e.g., Muro & Jeffrey, 2008; Siddiki et al., 2017) and therefore, it will be added as
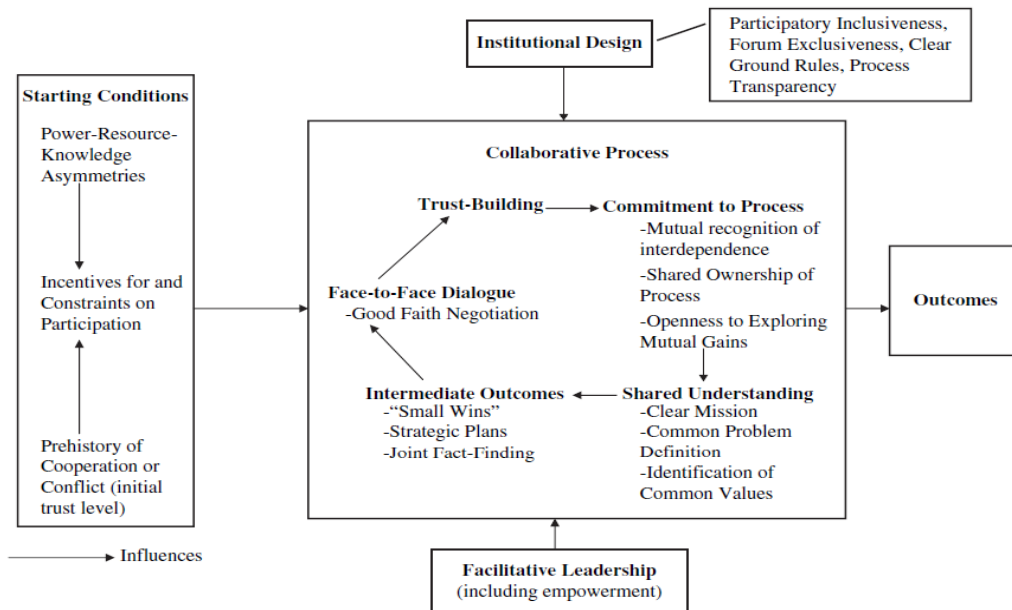
Figure 1: A Model for Collaborative Governance. Ansell & Gash (2008)

an additional variable in the framework. The degree of diversity of the involved parties can be considered as another condition of the collaborative governance process, since it is a factor that is internal to collaboration. In fact, to some extent, the degree of diversity of participants is close to the 'participatory inclusiveness' factor of institutional design in the framework of Ansell and Gash (2008), which further supports the relevance of this variable. In this way, although institutional design is left out of the conceptual model, it partly appears under the condition 'diversity of stakeholders and interests'.

In the following sub-sections each factor will be analysed separately, by first discussing its role in the collaborative governance process, and then more specifically, its relevance for the process of learning.

2.5.1 Trust building

Trust is one of the main building blocks in establishing any type of partnership. If trust is missing actors will be less likely to choose to join forces and work together. This is especially true when it comes to working on complex issues, where the lack of trust will further increase the level of uncertainty that the involved actors experience. Moreover, collaborative governance implies that decision-making is not performed unilaterally. Instead, stakeholders act together and as a consequence, they also share the responsibility for the outcomes of the process (Ansell & Gash, 2008). Hence, trust becomes even more important because partners need to trust each other in order to agree to share responsibility (Ansell & Gash, 2008). Trust is also important for stakeholders' level of commitment to the collaborative process, since commitment is said to depend on "trust that other stakeholders will respect your perspectives and interests" (Ansell & Gash, 2008, p.559).

One of the main arguments in the literature in favour of trust is its potential to stimulate learning (Klijn et al., 2010). In their empirical research Leach et al. (2014) find that trust was one of the most important factors when it comes to learning in collaborative partnerships. It is argued that trust enables people to step outside of their own personal frames of reference and acknowledge other participants' views, interests and needs, thus contributing to the establishment of mutual understanding (Emerson et al., 2012). Trust is also found to be a key tool for fomenting knowledge exchange in networks (Koppenjan and Klijn, 2004). If partners trust each other, they will be more prone to openly share information and ideas with each other, and this will in turn enhance learning and knowledge generation (Klijn & Koppenjan, 2016).

Expectation 1: A high level of trust among partners will facilitate learning.

Trust, especially in the context of NBS and participation, is very important for the creation of an environment where experimentation and learning can take place (Frantzeskaki, 2019). Stakeholders will be more confident in testing out new ideas and taking risks if they trust each other. What is more, trust plays a very important role in mediating the effect that the diversity of collaborating participants could have on learning. The research of Siddiki et al. (2017) shows that trust can enhance the positive impact of belief diversity on cognitive and relational learning. Thus, it could be argued that trust could have both a direct and indirect positive impact on learning.

Although many different typologies of trust exist, trust is most commonly conceptualized in terms of vulnerability, risk or expectations (Edelenbos & Klijn, 2007). By trusting each other, partners agree to put themselves in an open and vulnerable situation wherein they run the risk of the other partner resorting to opportunistic behaviour, but expect that they will refrain from doing so. Thus, trust can be defined as "a more-or-less stable perception of actors about the intentions of other actors, that is, that they refrain from opportunistic behaviour" (Edelenbos & Klijn, 2007, p.30). In terms of measuring trust, Klijn et al. (2010) suggest using five items based on the literature on trust. Those are agreement trust, or trust in that other actors will honour the agreements they make with each other; giving each other the benefit of the doubt; trust in the reliability of partners to keep in mind the intentions of others; absence of opportunistic behaviour; and goodwill trust, or assuming that the other actors' intentions are good in principle.

2.5.2 Face-to-face dialogue/ communication

The next variable in the collaborative governance process is face-to-face dialogue, although other authors often only refer to it as face-to-face communication. Ansell and Gash (2008) contend that face-to-face dialogue lies at the core of collaboration and that the presence of "thick communication" is important for removing set stereotypes and for discovering mutual gains among stakeholders. The two authors further highlight the role of communication by arguing that it is essential for other factors of the collaborative governance process, such as trust building and commitment to the process (Ansell & Gash, 2008). The role of face-to-face dialogue for building trust in other actors in the collaborative process is also discussed by Edelenbos and Eshuis (2012).

More importantly in the context of this research, face-to-face interaction has the potential to enable social learning (Newig et al., 2018) since meeting other stakeholders and

exchanging views and knowledge with them is the logical prerequisite for learning to take place. Learning is indeed more likely to take place if stakeholders interact frequently (Gerlak & Heikkila, 2011). Analysing the literature on learning, Gerlak et al. (2018) discover that in most articles, specific attention is given to venues that provide opportunities for face-to-face interactions because they are believed to be key factors that foster dialogue and learning.

Face-to-face communication is important for the exchange of ideas and opinions but it might be even more relevant for relational learning. Newig et al. (2018) suggest that intensive face-to-face interaction could enable social learning, which in theory is very similar to the relational learning sub-type in the framework of Baird et al., (2014). Building new relationships between participants requires that they meet and interact with each other.

Expectation 2: Regular face-to-face communication between partners positively influences learning.

2.5.3 Facilitative leadership

Leadership holds a central role in the collaborative process as it can be one of the key determinants of its outcome. However, in network and collaborative governance the more traditional, authoritative role of the leader is not suitable (Pahl-Wostl et al., 2007). Instead, leadership in multi-stakeholder collaboration needs to be facilitating, activating actors and contributing to the better collaboration between them (Klijn, 2016). Some authors refer to "collaborative leadership" where the capacity to mobilize energies, to help create trust and support the creation of a clear common direction is of essential importance (Pahl-Wostl et al., 2007). Ansell and Gash (2008) talk about facilitative leadership to describe leadership as empowering. Leadership is further a key element for building trust (Ansell & Gash, 2008; Siddiki et al., 2017). Additionally, facilitative leadership activities are not necessarily performed by one actor, instead, it is likely that several individuals take on such activities (Pahl-Wostl et al., 2007).

Leadership in such contexts should be performed by an actor who is among other things, able to facilitate learning (Bartels, 2016). Armitage et al. (2009, p.101) mention the importance of key individuals who would "maintain the focus on collaboration and the creation of opportunities for reflexion and learning". Gerlak and Heikkila, 2011. Leaders have the potential to "foster new ideas, openness to information sharing, as well as a willingness to experiment, take risks, and make mistakes" (Heikkila & Gerlak, 2013, p. 496).

The role of "convening" leadership activities– bringing actors together, mobilizing energies and keeping the collaboration going (Pahl-Wostl et al., 2007) is also particularly important for the process of learning (Gerlak & Heikkila, 2011). In order for the actor(s) to perform convening activities, however, it is important that they are themselves well connected and socially active within the organizations taking part in the collaboration. Bodin (2017) suggests that the centrality of the actor(s) who execute leadership activities is another important characteristic of facilitative leadership, and that those who have more social connections are better suited for this role in the context of collaborative governance. This claim is also supported by the study of Gerlak and Heikkila (2011). This aspect is particularly similar to the role of the 'boundary-spanner' or "broker" in the network governance literature, who can facilitate information transmission, especially in the case of more fragmented structures (see e.g., van Meerkerk & Edelenbos, 2014).

Furthermore, the fact that conflict can be a frequent part of collaboration creates the need for facilitation activities, performed by an "honest broker" (Cundil, 2010). Social dynamics where there are high levels of conflict can inhibit learning, since the stakeholders might be less prone share or respect others' ideas (Heikkila & Gerlak, 2013). Therefore, in such cases, conflict-resolution activities performed by one or several actors could help to eliminate such patterns in the relationships between actors. The presence of one or several actors who mediate conflict and who are at the same time respected by the other participants is an important driver for learning (Siddiki et al., 2017).

Expectation 3: The presence of one or several individuals performing facilitative leadership activities will stimulate the learning process.

2.5.4 Commitment to the process

Commitment to the process is the final key factor which will be used from the framework of Ansell and Gash (2008). In their article, the authors argue that commitment is related to actors' initial motivation for participation but that it also goes further beyond this, since commitment supposes continuous engagement in the process beyond simple participation. In fact, one of the dimensions of commitment identified in the literature is ownership of the decision-making process. In collaborative governance settings, as discussed in the previous sections, stakeholders collectively share the ownership of and the responsibility for the process. This is why trust is so important for commitment to the process: its presence is

at the basis of sharing ownership and responsibility, because no actor would be willing to take such a big risk in the absence of trust.

In the framework of Emerson et al., (2012) commitment to the process holds an important place as well. The authors argue that commitment can "enable participants to cross the organizational, sectoral, and/or jurisdictional boundaries that previously separated them and commit to a shared path" (p.14). The action of crossing boundaries is essential for facilitating the process of learning. After all, if stakeholders are not able or willing to cross the boundaries which divide them, learning is less likely to happen. Inversely, if stakeholders share a high level of commitment to the process, they will be more actively engaged in all the aspects of the collaboration process, which in turn will create more favourable conditions for learning to take place. Because commitment on the part of all stakeholders is required for the collaboration to be fruitful and to deliver the desired outcomes, it could be logically argued that it is also a prerequisite for learning as one of those outcomes to take place. After all, in the absence of commitment, collaborative governance processes can rarely be sustained in the long run, let alone lead to processes of learning. Thus, commitment to the process should be equally important for cognitive, normative and relational learning.

Expectation 4: Stakeholders' commitment to the process will contribute positively to learning.

2.5.5 Diversity

Diversity is put forward in the academic literature as an important catalyst for learning in collaboration because it leads to the pooling of various sources of knowledge (Leach et al., 2014). When participants come from different backgrounds and possess different skills and knowledge, this contributes to the richness of the process of learning. Participants can thus be presented to a diverse range of viewpoints and have the opportunity to understand different perspectives, consequently expanding their mental models and acquiring new knowledge. Diversity of knowledge sources, both expert and non-expert are needed for the success of the collaboration (Armitage et al., 2009).

Furthermore, participatory diversity is particularly important when it comes to environmental governance and implementing nature-based solutions, since, as discussed in the previous sub-chapter, they are promoted as approaches that have larger benefits for the community. It is thus essential that multiple and diverse interests and needs are taken into consideration when implementing such projects. Especially in the context of complex

challenges, "the coming together of actors with different educational backgrounds, roles, and occupations" can be particularly beneficial (Bodin, 2017, p.2).

However, the diversity of stakeholders in collaborative governance settings could also have a negative impact on learning. By opening the process of collaborative governance to a diverse range of stakeholders, a risks emerges that actors with opposing or irreconcilable views might fail to work together. Moreover, the diversity of actors might also translate into an unfavourable power and resource imbalance which could hamper the success of the collaboration (Ospina & Saz-Carranza, 2010). Participants might be less open to creating new relationships with others who have different backgrounds and affiliations (Siddiki et al., 2017). In that sense, trust and facilitative leadership could have a moderating role. Leach et al. (2014, p.612) suggest that belief change and knowledge acquisition can be facilitated by "exposure to diverse viewpoints in a nonadversarial setting marked by mutual trust and respect". Additionally, in their study, Siddiki et al. (2017) discover that trust can attenuate the negative and enhance the positive impact of diversity. The authors also suggest that the existence of actors who mediate conflict is especially important for highly diverse multi-actor groups. Crona and Parker (2012) also acknowledge the important role of facilitation in bridging divergent interests. Thus, diversity can have both positive and negative effects on learning and how this dynamic plays out might depend on the facilitative leadership activities and the level of trust between participants.

Expectation 5: Participatory diversity will stimulate the process of learning if there are high levels of trust among participants and/or if the process is mediated by facilitative leadership activities.

There is no common conceptualization of diversity, since the concept is measured in many different ways, depending on the context of the study. Beside the most commonly discussed facets of diversity, based on social, ethnic or religious differences, researchers in the field of learning also measure diversity in terms of whether or not people who are of critical opinion towards the initiative are included in the process (Leach et al., 2014), whether representatives of different stakeholder groups are participating in the process (Brummel et al., 2010; Siddiki et al., 2017), and in terms of their beliefs (Siddiki et al., 2017). For the purpose of this study, diversity will be measured in more general terms, by looking into the extent to which different stakeholder groups and interests are represented. Additionally, the indicator of power imbalances (Ospina & Saz-Carranza, 2010) will be added to account for a potential negative impact of the diversity of stakeholders on learning. Power imbalances, which could

translate into some of the partners having less voice in the decision-making process, can potentially endanger the collaboration and the participants' willingness to remain open to new perspectives and ideas.

Chapter 3 Conceptual framework

3.1 Conceptual model

Ansell & Gash, (2008)'s model of collaborative governance was used for identifying some of the main factors that define the collaborative process. Diversity was added to the model as another important variable which could influence the process of learning. Regarding the second part of the model, Baird et al. (2014)'s framework used in assessing learning in adaptive co-management processes was borrowed for the dependant variable learning. Their conceptualization of learning proposes a typology of three types of learning: cognitive, normative and relational learning. The indicators used for the operationalization part are also taken from their framework. The arrow indicates the relation between the independent and the dependent variable. The study also takes into consideration the ambiguousness in the relationship between diversity and learning, and thus the model includes the important role that trust and facilitative leadership can have on moderating the negative impact that the diversity of actors might have (illustrated by the dashed lines). Finally, even though potential linkages between the collaborative governance variables might exist, those are not included in the model in order to keep it clear and concise. They will, nevertheless, be discussed and analyzed in the next chapters.

One final explanation is due. It should be acknowledged here that the relationship between learning and some of independent variables can go both ways and that by working in collaboration and learning, partners can further increase the level of trust among them and their commitment, for example. However, for the purpose of this research, the focus is explicitly put on how those factors influence trust and not vice-versa.
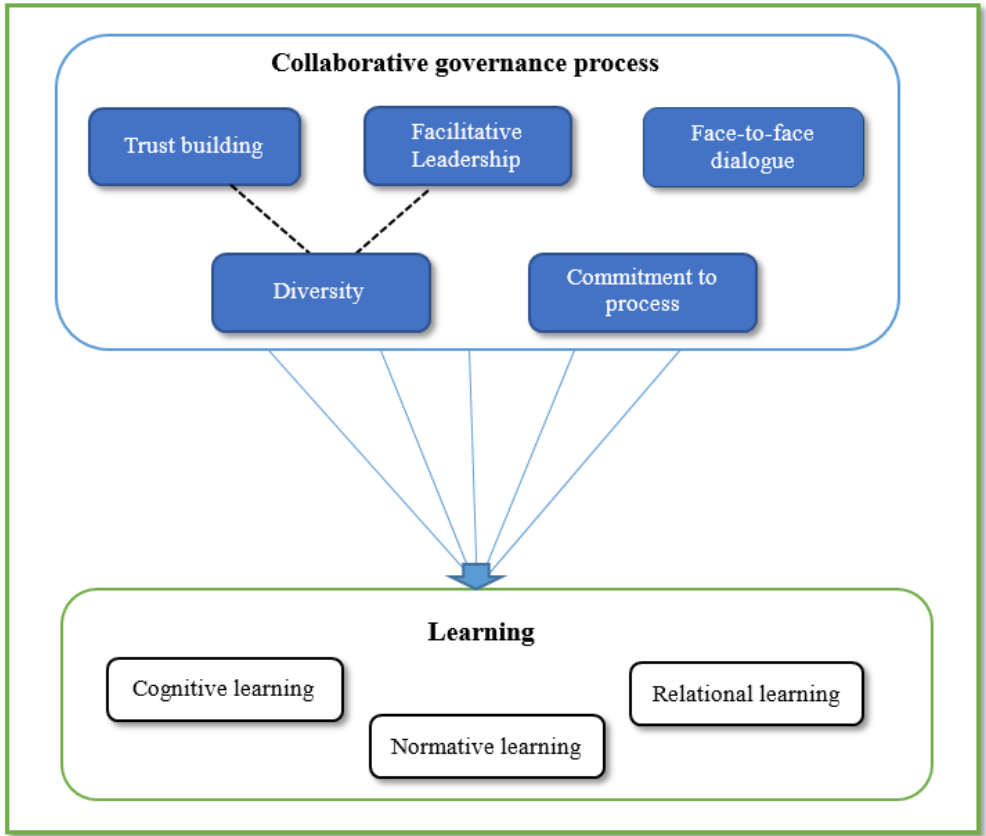
Figure 2 Conceptual model. Adapted from Ansell &Gash, 2007 and Baird et al., 2014.

3.2 Operationalization

After having presented the main concepts and variables and having explained how they are situated within the conceptual framework, each individual variable will now be operationalized. The variables and indicators are derived from the literature review.

Concept	Variable	Indicators	Indicator explained
	Face-to-face dialogue	Thick communication *(Ansell & Gash, 2008)*	Partners had regular face-to-face meetings
	Trust building	Trust that partners will respect the agreements *(Klijn et al., 2010)*	Partners trust that the others will honour their formal or informal agreements
		Trust in the reliability of other actors *(Klijn et al., 2010)*	Trust in the reliability of partners to keep in mind the intentions/interests of others
	Facilitative leadership	Connectedness *(Bodin, 2017)*	One or several actors had many useful social connections

21

Collaborative governance		Stimulating information exchange and fostering new ideas *(Heikkila & Gerlak, 2013)*	
		Creating opportunities for reflection and learning *(Armitage et al., 2009)*	One or several actors who performed one of those facilitative leadership activities during the collaborative governance process
		Conflict mediation *(Sidikki et al., 2017)*	
	Commitment to the process	Perceived level of commitment *(Ansell & Gash, 2008)*	Reported level of commitment and perceived commitment of other participants
		Sense of ownership of and responsibility for the process *(Ansell & Gash, 2008)*	Involved actors felt they were responsible for the project and its outcomes; that it was 'their' project
	Diversity	Stakeholder diversity *(Brummel et al., 2010)*	Partners have different interests; possess different types of knowledge and competences
		Power imbalances *(Ospina & Saz-Carranza, 2010)*	Actors had unequal roles in the decision-making process
Learning	Cognitive learning	Acquisition of new knowledge *(Baird et al., 2014)*	Actors acquired new knowledge through their participation (of social, ecological or technical character: about nature, the dynamics of working together, different social groups, etc.)
	Normative learning	Changes in norms/values *(Baird et al., 2014)*	New norms/rules were created; new shared values emerged
		Convergence of group opinion *(Baird et al., 2014)*	Actors started agreeing on more things than at the outset of the collaboration
	Relational learning	Improved understanding of mind-sets of others *(Baird et al., 2014)*	Actors understand better each other's perspectives and ways of thinking as a result of the collaboration
		Building of new relationships *(Baird et al., 2014)*	New relationships were created as a result of the collaboration

Chapter 4 Research design and methods

This chapter discusses the research design and methods which were utilized in this study. The first section explains the choice of a multiple case-study research design. Consequently, the data collection and data analysis methods are presented, together with an explanation of the case selection process. Finally, the level of reliability and validity of the study are discussed.

4.1 Research design

The objective of this study being to gain more in-depth knowledge into how the collaborative governance of nature-based solutions affects learning in such initiatives, a multiple-case study design was selected. The case-study is a research method which allows for complex real-life social phenomena to be studied in an extensive and in-depth manner (Yin, 2009). The preference for several cases instead of a single one is justified by the fact that collaboration between partners never works out in the same identical way and thus, might produce very different outcomes. Therefore, it will be interesting to study three different NBS projects in Rotterdam, which differ in terms of scale, duration and type of collaboration. A qualitative research strategy will be used for this study because it allows the researcher to gain insight into the participant's perspective, while the focus remains on the context. It also puts the accent on the processes (Bryman, 2012), which is particularly useful for this research question. Finally, the choice for qualitative strategy is further explained by the need to better understand the important contextual details of each case.

4.2 Case selection

For the purpose of this research, several collaborative initiatives for nature-based solutions in the city of Rotterdam were selected. Rotterdam was chosen because of the city's high level of preoccupation with climate change adaptation as a consequence of its geographic location and the attention given to nature-based solutions (see e.g., Gemeente Rotterdam, 2013; 2019a; 2019b; Tillie & van der Heidjen, 2016). Furthermore, in tune with the Dutch tradition, the municipality is active in engaging and collaborating with citizens, the private sector and other non-governmental institutions. The three cases – Voedseltun, Tuin de Bajonet and Essenburgpark were selected on the basis of their focus for both urban nature and social outcomes and because they represent different types of collaboration. Voedseltuin is a food garden project, initiated in 2011 with the goal to provide fresh food for Rotterdam's Food bank. Tuin de Bajonet is a communal garden, resulted from the collaboration between neighbours, a

housing association and other private organizations in 2016. Finally, Essenburgpark is one of the newest parks of Rotterdam, which emerged as a result of the local community's ambition to transform an abandoned spot along the railways and the collaboration with the water boards and the municipality in 2017. All three NBS projects are situated in Rotterdam West. They all comply with Emerson (2012)'s definition of collaborative governance, as well as with EC (2015)'s definition of NBS. However, the three cases differ in the way they were created, as well as in terms of the type of collaboration which was established between partners (further details will be provided in Chapter 5). While the idea for both Voedseltuin and Essenburgpark came from local citizens, it was the housing corporation Woonstad who owned who had the initial desire to create a community garden on one of its properties. The municipality was not actively involved in this project from the start, whereas it is one of the three main partners for Essenburgpark. When it comes to Voedseltuin, the collaboration between the local authorities and the initiators has been predominantly based on the rent of the land. This contextual variety makes the three cases very suitable for exploring how collaborative governance conditions play out in different real-life contexts and how in turn, this reflects on the process of learning. The focus of this research is on social interactions – working together and learning from and with each other –but as such, they are never completely the same and what might hold true in one case might not work in the other. Thus, by examining three different projects the study has the potential to yield richer results and to examine how different collaboration dynamics could have a different impact on learning.

4.3 Data collection and analysis methods

A first step in the data collection was to conduct desk research in order to gain a better understanding of the three cases, their activities, mission and structure and thus, prepare for the primary research which followed. Information was gathered through consulting the webpages of the projects, other online articles, publications and documents. This first step also provided the opportunity to find the main individuals who were involved in the projects for the subsequent data collection via interviews.

Relevant data was collected through semi-structured interviews with key informants representing the different stakeholders - participants from each project who were actively involved in the process and have an overview of the project. The benefit of the semi-structured interview approach is that it provides enough structure for the same line of logic to be followed throughout all the interviews, while at the same time also providing a certain degree of flexibility to gather additional information. It also puts the emphasis on how the interviewee

understands and frames the problem and what they think is important (Bryman, 2012). The interviews were based on a topic list (Appendix 2) in order for the collected data to be more easily comparable in a structured way. Purposive sampling was used for selecting the key informants which were approached for interviews, while a snowball sampling was used later on for contacting other relevant factors that could have been missed in the initial research. A total of eleven individuals were interviewed with the goal of including as many different stakeholders per case as possible. The sample included the initiators of the projects, municipality representatives and a representative from the water authorities in the case of Esenburgapark. Two of the participants were interviewed twice: a first 'introductory' interview was conducted together with a second one following the topic list. An attempt was made to gather information from the housing corporation Woonstad as well but unfortunately, it was not successful which presents one limitation in including the viewpoint of all the stakeholders. One additional interview was conducted with a civil servant who has recently been appointed to a newly created position – that of a 'green broker' for the city, connecting local green initiatives and the municipality. The interviews were conducted over a period of one month (in May and June 2020) and had a duration of around 40-60 minutes. Because of the unusual conditions during which this research is taking place (coronavirus pandemic), the interviews were conducted on the phone or via video calls with the exception of two in person interviews and one participant who expressed the wish to answer via email (see Appendix 1 for more details).

For the subsequent data analysis, the interviews were recorded so that they can be later transcribed and coded on the basis of the conceptual model and the operationalization of the concepts discussed in Chapter 3. The ATLAS.ti software was used for the data analysis (see Code list in Appendix 3). Beside the codes based on the indicators, several inductive codes were added in order to account for new information collected from the interviews which was not included in the theoretical review.

4.4 Reliability and validity

Reliability and validity are used as criteria for assessing the quality of social research (Bryman, 2012).

Reliability refers to the extent to which the result of a study can be repeated (Bryman, 2012). For qualitative research, however, the possibility for future replication is rather low due to the specifics of this type of research. One way of countering this problem is by keeping a

database, where the steps taken by the researcher are carefully documented (Yin, 2009). Thus, the reliability of this research is guaranteed to a certain extent by carefully documenting the steps which were undertaken and following a systematic approach. The interviews were recorded and transcribed, and the collected data was coded in a schematic way, following the conceptual model derived from the literature. Furthermore, the interviews were conducted by following a topic list which is also available for potential review.

The external validity of a case study research is generally low because of the difficulty in yielding generalizable findings which can be used to explain different contexts (Van Thiel, 2014). The case study design, even if several cases are studied can hardly yield results which are generalizable and applicable to other cases. At the same time, however, internal validity tends to be high as a result of the rich and detailed information collected for each case. Internal validity is further guaranteed by using theoretical operationalizations and framework based on academic literature.

One way of ensuring higher levels of reliability and validity is by performing data triangulation, which implies using a diversified set of data resources and different data collection methods (Van Thiel, 2014). In this research, analysis of secondary data, such as policy documents, newsletters, online publications was used in order to provide for cross—checking the data and to create a more complete idea of the context of the research. Furthermore, for each case stakeholders representing different interests in the collaboration were interviewed with the aim of avoiding a one-sided portrayal of reality.

Chapter 5 Case description and local context

This chapter provides insight into the studied projects, how they were created and who the main partners in their creation were. The information was gathered through the interviews and through additional online sources, such as the websites of the initiatives and other relevant online articles.

5.1 Tuin de Bajonet

Tuin de Bajonet or The Bajonet garden is a community garden, created in 2016 and situated in an inner courtyard in the Oude West district of Rotterdam. Local residents together with the care and educational institutions and a local entrepreneur came together for the creation of the garden. The idea came from the housing corporation Woonstad who owned the building and the plot and wanted to renovate it together with the courtyard. They contacted a landscape designer and urbanist who was already very involved in the local network and had participated in the creation of another community garden. They asked him to help them to investigate the idea, to consult residents and create the design for the garden. Together, they organized a series of interviews with the local residents who lived or worked in the area in order to learn about their wishes and ideas and then organized workshops. During the workshops everyone was able to share their vision for the garden and in this process a core group of interested partners was formed, all of whom are still at the heart of the organization.

Moreover, since the garden was open to the public and became a place for socialization in the neighbourhood, they received the attention of the local neighbourhood commission and were able to receive some funding from the municipality. Furthermore, Water Sensitive Rotterdam – a program of the municipality for climate-change adaptation projects together with citizens, became an important partner in the process. They helped the garden by installing rain barrels and other water retention facilities. Ever since, the garden has become an exemplary project which both the municipality, but also HHSK and the housing corporation often use for official visits.

5.2 Essenburgpark

Essenburgpark is a natural city park created in 2016 out of the collaboration of several different partners. It is situated between the railways close to the Rotterdam Central station and the Essenburgsingel canal. It used to be a neglected, underdeveloped area along the rail tracks, which had allowed for nature to grow unencumbered and to create a wild green urban area on the land which at the time belonged to the NS Dutch rail company. For several years the rail

company had failed to provide proper maintenance of the area. When in 2014 it became known that the owner had plans to redevelop and build new housing on this spot, local residents started to protest against it. Three active local green initiatives - De Pluktuin, Spoortuin and Ieders Tuin joined forces, and started lobbying against the plans of the NS and in favour of keeping this area green and turning it into a new urban park with water storage facilities which eventually led to the municipality buying off the land from NS. In the meantime the three citizens' initiatives approached the regional water authority - Hoogheemraadschap van Schieland en de Krimpenerwaard (HHSK) and received the support for the creation of the park as it offered the perfect opportunity for creating more space for water collection for a climate-proof city. The whole process led to the collaboration between local citizens, the municipality and HHSK, who together signed a 'collaboration contract', agreeing to work together as equal partners and to create the design for the park together, based on the wishes of local residents.

5.3 De Voedseltuin

De Voedseltuin or the Food Garden is a vegetable garden in the Keilehaven area in Delfshaven. Its objective is to produce sustainably grown vegetables for the Food Bank of Rotterdam, while also helping people at distance from the labour market reintegrate, grown their own food and acquire new skills. The initiative started about ten years ago, on a vacant plot just behind the Food Bank at the former harbour area, where the municipality initially had plans for redevelopment. The group of citizens decided to use the vacant space and started planting vegetables there with the intention of supplementing the food packages that the Food Bank distributes with sustainably-grown fresh vegetables. As at the time there was little interest from investors for that area, the city allowed the citizens to continue for the next five years. After the initially agreed upon period was over, the area around Voedseltuin had started developing. The garden was attracting many creative people and projects who started setting in there. The municipality saw the potential that the Food garden had as a place-maker and decided to allow them to continue growing vegetables on the plot for another five years under some conditions. A plan was created to turn the Food garden into a Food park in 2016, with the city government creating a path that goes through the park so that it is more convenient for people to walk through it. Nowadays, this agreement is coming towards its end but the Food garden can still remain there, with a new agreement which will be renewed every two years.

In conclusion, all three projects – Tuin de Bajonet, Essenburgpark and Voedseltuin perfectly fit the definition for nature-based solutions as each of them uses nature in a way which combines the ecological and environmental benefits with contributions to the health and

individual and social well-being of citizens. The three projects all provide social activities and work together with other care and social organizations. Moreover, all three projects have helped improve the living environment around the areas which they are situated in and what is more, they all contribute to transforming Rotterdam in a climate-proof city. However, they differ in terms of the type of collaboration which was formed for their creation.

Chapter 6 Results and analysis

In this chapter the results of the empirical research will be presented, starting by answering the first sub-question about how different collaborative governance factors take place in practice. A brief summary is provided in Table 1. For each factor, its linkages with other factors are discussed at the end. The next section will discuss the process of learning in the three cases by looking into the three types of learning. Finally, the factors which had an impact on each of them will be discussed, thus providing an answer to both the second and third sub-questions.

6.1 How do collaborative governance conditions play out in the three cases

6.1.1 Trust building

Trust is one of the essential pieces of building a partnership and is seen as a requirement for a multi-stakeholder collaboration to be successful. Trust has been an important part of the collaboration for the three projects but the degree to which it was present differ in each context.

In terms of agreement trust, all respondents indicate that they trust other parties to respect their agreements. In the case of Voedseltuin, the only formal agreement that exists is the land contract by which the municipality rents out the land to the foundation which until recently was for five-year periods. From now on it is said to be renewed every two years. The organization believes that the municipality will respect their formal agreement for renting the ground, based on their experience in working together for all those years which has helped them build trust in each other. The same could be said for the Bajonet garden, where Woonstad has been honouring the formal agreement which they have with the local residents and institutions regarding each party's responsibilities. Indeed, they take care of the bigger maintenance in the garden and residents mention that they can reach them whenever they need and they will take care of their responsibilities. In the case of Essenburgpark, working together has been formalized between the three parties – the municipality, HHSK and the collective of the local initiatives signed a 'collaboration contract' by which they agreed to work together as

equal parties in an open and transparent way. It was followed by a maintenance contract specifying the roles and responsibilities of everyone in the maintenance and land management of the park. Even though the perceived level of trust, reported by the stakeholders in Essenburgpark is high, the local initiative understands that the collaboration contract has few specifications and is a 'soft' contract in a legal sense. Thus, this agreement has not been so important for building trust in the eyes of the citizens' initiative. Instead, they have had to build trust and 'live up' to the trust they receive. As their claim to the park will always depend on trust, building it up has become even more important for the citizens' initiative. Moreover, the 'learning community' which was initiated at the start of the collaboration had as one of its goals to enhance trust among partners, especially in the ranks of HHSK which was new to this way of working with citizens.

When it comes to the perceived reliability of partners, things become more complicated. Only in the case of Tuin de Bajonet have partners expressed complete trust in the reliability of others. After the initial process and the creation of the garden which took six months ended, Woonstad entrusted the residents and local organizations with taking care of the project by leaving it in their hands and taking a 'background' role. Similarly, the citizens report high levels of trust in the reliability of both the housing company and the municipality and know that they can count on them and call them if they have questions or need resources. By creating an open and transparent process in the beginning, partners have created a strong basis for building trust which helps them go through discussions and disagreements without harming the trust between them. In Essenburgpark, building reliability trust has been very important for both citizens and the two institutions. It was acknowledged by the municipality as a goal in itself so that citizens can come to see them as a 'partner' and not only as 'the authority'. That is, by building trust they are hoping to change the relationship that they have with citizens and encourage them to work together with them. Since they acknowledge that their claim to the park depends on trust, citizens have had to prove that they can be trusted to take care of it. It was essential that the municipality had trust in their capacities and motivation, but also in their committed for the long term. A similar pattern appeared in the case of Voedseltuin, where the foundation has also been able to earn the trust of the municipality by proving that they are serious in their intentions and by keeping their word.

Nevertheless, one interesting pattern was retrieved from the collected data: in both Voedseltuin and Essenburgpark the threat of actors changing roles and leaving the partnership has been present. In Essenburgpark, HHSK is satisfied with the work of volunteers and citizens

and has entrusted them with certain tasks which would usually be performed by them. However, working with non-professionals is different from their usual collaborations with the municipality – an institution which provides formal guarantees that the maintenance of the project will continue even if people change. While they trust the citizens' initiatives and the volunteers currently, the fact that this is not their profession and they can leave or move elsewhere and quit the project is a challenge. Ironically, however, a similar doubt is expressed by citizens, who think that it is not them who will leave the collaboration but the other way around. A concern was expressed regarding the possibility of a new civil servant or new project manager coming to the project in the future who might not honour the initial agreements. The risk of actors changing positions within their respective organizations means that every time trust and particularly reliability trust has to be gained and re-built which could hamper the continuity of the project:

"...But what we actually found was that the issue was inverse. The functionaries, that they move on, they change position, they go away and we are left here like 'Oh, no! Yet again a new functionary that we have to show around, that we have to explain everything for the hundredth time.' And they move position, change career, and then... you know, you have to start again" (Respondent 5)

The level of reliability trust between the municipality and the Voedseltuin foundation is also affected by the same issue. For the ten years for which the project has existed the organization has had to work with four different civil servants. An additional challenge in the relationship between the partners in this collaboration is the fact that there is a high interest for developing the area around Voedseltuin and many interests are at stake. The foundation admits that they have to stay alert to changes happening in the municipality, to new decisions being taken because they do not believe that they will be the first ones to know about them. As a consequence, there is a certain degree of distrust towards the municipality in this regard.

Overall, trust building in two of the three cases (Essenburgpark and Tuin de Bajonet) has also played a role in bridging the different interests in the collaboration. The fact that the partners trusted each other helped them to go beyond their differences and find common ground. Thus, in the presence of trust, partners with diverse set of viewpoints and opinions can more easily overcome them and reach common ground.

6.1.2 Face-to-face communication

Thick communication played an essential role in two of the three projects – Essenburpark and Tuin de Bajonet and formed the basis of the collaborative governance setting while at the same time providing stakeholders with the opportunity to exchange their views and ideas. In both projects all parties had frequent face-to-face meetings, in the form of interviews and workshops in the case of Tuin de Bajonet and formal meetings and a 'learning community' in Essenburgpark. Those meeting opportunities became the platform where partners worked together on the design of the projects but also on defining the common goals that they wanted to work on. Woonstad together with the landscape architect organized interviews with the local community and then invited interested residents and organizations to take part in a set of workshops. Since they decided that the citizens will take over the community garden, Woonstad is not actively participating in meetings anymore, but the other partners meet every three months to discuss how everything is going. They also meet in the garden itself, as all of them live and work around it.

For Essenburgpark the so called 'learning community' was set in motion – a series of meetings where all three partners had the opportunity to discover each other's interests and build trust, while an external party mediated the process. But even before the formal process of collaboration had begun, stakeholders were already looking for ways to meet each other and to get to know each other's perspectives and interests. After the creation of the park, a 'development team' with representatives from each organization was established with the aim of partners meeting every three months to do a tour of the park together, discuss the developments and make decisions about the maintenance of the park.

The collected data about Voedseltuin, on the other hand, has demonstrated that frequent face-to-face communication between the foundation and the municipality has been less present. Partners used to have meetings four times a year in the context of the consultations for the area but those meetings no longer take place. The citizens are now uniting with other active actors in the area under the form of an association representing the interests of the local community, so that they can have a more formal way of communicating with the municipality. The municipality is still responsive to the questions and requests of Voedseltuin: if they need to discuss things they don't agree on, they usually arrange meetings. However, this way of communicating seems to have a more ad-hoc character and therefore, cannot be considered as thick communication. An additional obstacle to the communication between the two parties is

the fact that the citizens' initiative occasionally has to talk to different departments which do not communicate well with each other.

Looking into the linkages with other factors, face-to-face communication was an important factor for enhancing the decision-making process. Frequent meetings give partners the opportunity to work together and keep each other up to date, but also to work out their differences and reach consensus. Thick communication was very important for overcoming challenges and differences. Thus, face-to-face communication plays an important role in bringing out the positive impact that diversity can have on the process. Moreover, face-to-face communication was a determining factor for building trust between partners, especially in the case of Essenburgpark.

6.1.3 Facilitative leadership

When examining facilitative leadership, two of the indicators - .stimulating knowledge exchange and creating opportunities for reflexion and learning proved to be very close to each other in practice and difficult to disentangle during the data analysis. Actors who performed the one, also performed the other. Thus, they are not discussed separately

In all three cases particular actors who had strong networks and many connections in the community proved to be of crucial importance for the collaboration. Their role as people who 'stand within the neighbourhood' – they are known and respected, makes them valuable actors for the partnership. As stated by one respondent, knowing those people makes it easier to work with other parties and to meet people in the area. They serve as intermediaries and can use their networks to bring people together.

In the case of Tuin de Bajonet it was the landscape designer, currently the chair of the organization, who took on this role. In fact, it was precisely because of his many connections in the neighbourhood that Woonstad contacted him for this project. He was also in contact with a local community organization with long history in the area – Aktiegroep, which is still a valuable partner for the garden. The landscape designer had the biggest role as a facilitator – he interviewed people in order to learn about what they wanted to have for the garden. Thus, he actively created opportunities for reflection and stimulated the exchange of knowledge and ideas. As a result, the idea for how the community garden should be like came about and it was the product of many discussions and exchanged ideas. Currently, facilitative leadership activities in the project are still performed by the same actor, making his presence in the project essential for its continuation.

In the case of Essenburgpark, the two representatives of the citizen group were widely recognized as having played an important role in bringing people together because they had big networks in the neighbourhood and knew who to involve in order to make this project a success. The director of Spoortuin, in particular, knew very well the local ecosystem because of his involvement in other community initiatives and his role as a director of Huize Middelland – a coalition of local initiatives which run the community centre in the neighbourhood. The position that this actor had within the neighbourhood allowed him to also serve as an intermediary between the interests of the local community and the partners in the collaboration. He further stimulated knowledge exchange by 'translating' the language that citizens used to describe their ideas for Essenburgpark in more professional way to the experts and inversely, to explain the importance of certain technical measures to the citizens who do not have technical expertise. This process of boundary-spanning and translating information was particularly useful for improving the level of trust in the local government within the community. Finally, the outside mediators who were invited to lead the process in the learning community for Essenburgpark were also helpful by organizing the conversation around how the park should look like and how partners could work together.

Similarly, at the Voedseltuin foundation the two main initiators played an important role as facilitators by using their networks and experience with working with the government. Their connections helped in bringing the project forward. However, evidence for creating opportunities for knowledge exchange and reflection between partners is scarce which again, could be explained by the different character of this collaboration.

When it comes to conflict mediation, this activity was less relevant in the three cases. The housing company – Woonstad did, indeed help in mediating the challenge emerged some years ago in Tuin de Bajonet but this activity is less relevant in this context as the conflict was not between the partners. Overall, several respondents stated that what actually helped the collaboration go through challenges was the active discussion and communication between partners. On the other hand, facilitative leadership activities proved to be important for building trust among partners in the case of Essenburgpark, thus further shining light on the interdependence between the conditions of collaborative governance.

6.1.4 Commitment

When it comes to the level of commitment to the process – the third condition of collaborative governance settings which is expected to have a positive impact on learning, the

results show that in all three projects the stakeholders were very committed to the process. Some nuances are nevertheless worth discussing.

In the Bajonet garden the high level of commitment was present from the very beginning and this was an important driving force behind the success of the project. The housing corporation decided to renovate the plot of land and they were very committed to doing this together with the local residents. At the same time, the latter united into a newly formed group of local partners who were enthusiastic to take part in the creation of the garden. Even after the initial process, they still report that that Woonstad and the municipality are committed to keeping the garden alive because they know they can count on them in any situation. A further proof of the commitment of the partners emerged as a result of a big problem with one of the volunteers which was referred to as 'a black page' for the garden. An incident with a person with mental health issued threatened to close the whole garden and stop the collaboration. In this moment, however, the housing company and the municipality stepped in and all the partners united to find a solution to this problem. This episode further increased the perceived importance of commitment and trust and served as a learning point for the collaboration. What is more, even though both institutions do not have an active role in the organization of the garden currently – Woonstad only takes care of large maintenance, this incident put forward the shared responsibility that actors have for this project. In other words, the fact that the local group is the one who manages the garden and expresses a sense of ownership over this project, this does not diminish the level of commitment and the responsibility of the other partners.

The commitment for Essenburgpark was also very high with partners sharing the responsibility and ownership over the project. For the citizen collective, the realization of the park was a much awaited moment, for which they had been working years before the start f the collaboration. For the local government and HHSK, this project was not only important because of the multiple environmental and social benefits that were at stake, but also because of their desire to experiment with this new innovative way of working with citizens. But also, the individual drive was reported to be very important. Essenburgpark turned into a special project of which each partner feels proud. On the other hand, however, the citizens' group admit to feeling more committed to the park than the other partners which might to a big extent be due to the fact that their persistence and lobbying through the years have been the spark for the start of the process.

In Voedseltuin the municipality and the foundation are both committed to keeping the project going in the future. For the municipality a big part of the commitment stems from the fact that they realized the high social value that the garden creates for the neighbourhood. A project that was only supposed to be temporary has already been existing for ten years. However, in the eyes of the citizens this commitment and interest was not there in the first years of the project and only appeared later on, in 2015. On the one hand, this could be explained by the fact that the nature of this collaboration is different from the other two projects. Here, the central part of the partnership was based on the fact that the municipality provides the land to the foundation. Moreover, even if they are committed to keeping the food garden there, they cannot provide a guarantee that it will be able to stay in the same form in the long run because of the fast development of the area and the many external interests involved. At the same time, however, the foundation is committed to keeping the project afloat and makes investments in it despite the high level of uncertainty for the future of the project, hoping that this will be another argument in favour of keeping it. Thus, in terms of ownership and responsibility, the foundation was the one who reports higher levels of these indicators.

Finally, an interesting pattern retrieved from the data is that commitment has a strong impact on the level of trust. In all three cases the perceived strong commitment of the citizens to the project increased the trust that the other partners had in them. In made them a more reliable partner and one who can be entrusted to take responsibility over the project. Furthermore, the commitment helped partners remain in the collaboration even when their differences threatened the process.

6.1.5 Diversity

Results showed high levels of stakeholder diversity the collaborations for Essenburgpark and Tuin de Bajonet which brought together both expert and local knowledge. In Essenburgpark, HHSK and the municipality provided the technical knowledge, while the citizens knew a lot about the social fabric in the area. What is more, some of the citizens also provided professional knowledge, and skills and helped in the process. For example, one of the initiators from the local group was a professional architect and had a strong implication in designing the park. At the same time, the partners' different understandings of and visions for nature became an obstacle at the beginning of the collaboration. They had a different 'language' and perspectives on how nature should look like in the city. In the case of Tuin de Bajonet involving a diversity of people from the neighbourhood was a goal in itself. The diversity of the people and organizations around the area who took part in the process provided a varied

picture of what the garden should look like. The project also brought together professional and local knowledge which was very important for the process. When it comes to the Food garden, analysing the level of diversity becomes more complicated. In reality, even though different stakeholders are involved with the garden in one way or another– such as the Food Bank, the PlusPunt foundation, the volunteers, the core collaboration for the realization of this project included the Voedseltuin foundation and the municipality. Therefore, the level of stakeholder diversity is lower compared to the other two cases.

Turning to power imbalances, the decision-making process in Tuin de Bajonet was open and inclusive which provided the opportunity for different ideas to come together. Moreover, every year the garden team is growing, interests change and therefore, the partners come together and make new plans for the development of the garden. In Essenburgpark the equal footing on which partners worked was so important for the process, that the partners also signed a formal contract establishing their role in the decision-making. They collaborated on the analysis and design of the area. However, one interesting finding pointed towards a certain level of power imbalances existing in the beginning of the process. Before the collaboration as it is in its current formed had started, the citizens felt that their role was going to be less important and decisive and decided to turn the process around. Eventually, this led to the collaborative governance partnership which they have today. Furthermore, HHSK initially had some concerns over how can the citizens be included if they will not be contributing financially to the project. Nevertheless, the valuable knowledge, both local and professional, that the citizen group could provide in the project, as well as their active role in the networks in the neighbourhood made them an equal partner in the decision-making process and in the eyes of the other partners.

At the same time, however, the collected data reveals that the collaboration is in fact based mostly around renting the land. As was acknowledged by the foundation, the municipality has a 'hand-off', indirect role by renting out the area for the garden. At the same time, however, throughout time they have come to see the Food garden as a valuable partner in the area, especially because of their role as a place-maker and because of the network that has formed around the garden. Moreover, the bottom-up initiative has proven to be of strong social value for the neighbourhood because of the social activities which it organizes. This is why the municipality invited them to join the discussion about the development of the area. However, the foundation has joined the collective of local initiatives in order to have a bigger voice and a stronger position in the communication with the municipality which suggests that

there are certain power imbalances in the partnership. What further complicates things is the fact that as the area around the Voedseltuin is developing, more and more parties have interest in it. Thus, even though the municipality is committed to keep this project because of its environmental and social value, there is a certain level of insecurity over its future development.

As previously discussed, face-to-face communication, trust building and commitment had a positive effect on stakeholder diversity. This holds particularly true for Essenburgpark, given the initial existence of power imbalances and divergence of viewpoints. The meetings and discussions for Tuin de Bajonet helped in finding common ground among all the different stakeholders. Furthermore, facilitative leadership activities are also positively related with diversity (again, in the first two cases). However, it is mostly not the moderating role, suggested by theory which was important but rather the connectedness of certain actors and the fact that they brought different interests together, thus enhancing the level of stakeholder diversity. An exception to this is the role that the external actors played in mediating the discussions within the learning community for Essenburgpark. Table 2 provides summarized information on all of the important linkages between the conditions of collaborative governance which resulted from the data.

Condition	Indicator	Tuin de Bajonet	Essenburgpark	Voedseltuin
Face-to-face dialogue	Thick communication	**High** (workshops and meetings for the creation, regular meetings now)	**High** (regular meetings, a 'development team' was created for this purpose)	**Low** (the partners used to meet more often before; relationship mostly revolves around land renting)
Trust building	Trust that partners will respect the agreements	**High**	**High**	**High**
	Trust in the reliability of other actors	**High** (the open decision-making process is crucial in this regard)	**Medium** (Affected by the threat of actors changing position)	**Medium** (Foundation concerned over threat of actors changing position and the uncertainty for the future) Municipality sees them as very reliable
Facilitative leadership	Connectedness	**High** (Landscape designer was very involved in the area)	**High** (Two initiators of the citizen group were very well connected)	**High** (Two initiators of the foundation had valuable connections)
	Stimulating information exchange and fostering new ideas	**High** (Landscape designer organized workshops, interviews, meeting)	**High** (One of the initiators played an important role in bringing people from local community the to the table)	**Low**
	Creating opportunities for reflection and learning	**High** (Landscape designer organized workshops, interviews, meeting)	**High** (One of the initiators played an important role in 'translating' professional language to non-experts and vice-versa)	**Low**
	Conflict mediation	not relevant	**Low** (external mediators assited the initial process in the 'learning community')	not relevant
Commitment to the process	Perceived level of commitment	**High**	**High**	**High**
	Sense of ownership of and responsibility for the process	The garden 'belongs' to the local group even though the land is property of Woonstad; both Woonstad and the municipality share the responsibility with local group	Shared between the partners	Foundation invests in the garden, it is 'their' project; they take the main responsibility
Diversity	Stakeholder diversity	**High** (local group formed of residents, organizations, business owner; Woonstad, municipality)	**High** (citizens' group formed of three initiatives; water authority; municipality)	**Low** (the Voedseltuin foundation and the municipality)
	Power imbalances	**Low** (open decision-making process)	**Low** (a certain level of imbalance in the beginning but now all partners are equal)	**High** (the municipality owns the land and has a bigger say in its redevelopment)

Table 1: Collaborative governance conditions per case[1]

[1] A subjective scoring was attempted on the basis of the information collected through the interviews. Each case is scored from Low to High and an explanation is given in brackets where needed. However, for one of the indicators – sense of ownership and responsibility this was not possible due to the nature of the indicator.

	Trust building	Diversity
Trust building		Trust helped in bridging diverging interests and overcoming differences
Face-to-face communication	Regular meeting were essential for building trust	Thick communication and discussions were very important for overcoming challenges and differences
Facilitative leadership	Facilitative leadership can have a positive impact on trust building	Facilitative leadership did not have a moderating, but rather a supporting role in stakeholder diversity thorugh bringing different partners together
Commitment to process	Citizens' commitment to the process increased other partners' trust in their reliability	

Table 2: Linkages between the different conditions of collaborative governance

6.2 Learning types per case

In this section, the results on the different types of learning will be analysed. In terms of type of learning, cognitive learning was present in all three cases, while relational and normative learning were less significant in Voedseltuin.

6.2.1 Cognitive learning:

In all three cases data showed that cognitive learning has taken place in the collaboration. However, the results show that this process has been most intense in Essenburgpark, where all parties gained a lot of new knowledge, while for the other two cases it was mostly the municipality who was able to acquire new valuable insight about the specifics of working in collaboration with citizens.

In Essenburgpark, both the municipality and HHSK gained a lot of useful insight about how to make a successful collaboration with citizens and treat them as a "professional and equal party" (Respondent 8). Learning to see from the perspective of the citizens and to try and see their interest is something that the civil servants found to be very important. For HHSK, in particular, this new knowledge was very useful as they were new to working in this way with citizens. Learning how to work with non-professionals, to learn together and decide together with them as equal partners:

"*What was new was the cooperation with non-professionals so these inhabitants, that was quite new. Normally it's more like that you explain what kind of project you start but this time we really worked together to make a plan*" (Respondent 6)

Moreover, knowledge exchange was also very high. HHSK and the municipality provided specific documents for the citizens to learn about the maintenance of the park, by

illustrating and simplifying the complex technical language, otherwise not understandable for them. At the same, the citizens knew a lot about the local environment, but also about the neighbourhood itself. Thus, their engagement in the local community helped the other two institutions reach out the residents and understand the local fabric of initiatives more easily. Further, citizens with professional knowledge and skills, such as the architect from the civic group, for example, were highly valued by the partners.

Similarly, in the Bajonet garden, the municipality was able to acquire new knowledge on working in collaboration. The idea of including citizens as 'local experts' and the importance of working together with them was highlighted by the representative:

"The people really living there they know it, they feel it and the see it every day. So it's really very important to have them involved also as an expert because they're experts on the environment" (Respondent 2)

Their social connections and networks are something particularly useful which they could bring to the table. On the other hand, the partnership with Water Sensitive Rotterdam, for example, expert knowledge on climate change adaptation and water retention was brought in and this new insight was later 'transported' in the local network of green initiatives.

The same pattern appeared in the Voedseltuin garden where the foundation's ability to yield high societal value by transforming an abandoned area and creating a whole new network of stakeholders around it was very instructional for the municipality. Furthermore, Voedseltuin's successful work with disadvantaged people and social integration was also very inspiring. As in the previous two cases, the local government has been able to tap into the local knowledge of the neighbourhood and the stakeholders in it.

Finally, a complimentary finding was that three of the respondents also reported to have learned a lot about their own personal capabilities and agency and to have been able to work on their personal development. The main actor in Tuin de Bajonet – the landscape designer who took a central role in organizing and facilitating the project, shared that he has learnt a lot about leadership but also about his personal way of working. The representative of the citizens' collective for Essenburgpark, on the other hand, was able to gain insight into his personal agency and how things can be achieved.

6.2.2 Normative learning:

In Tuin de Bajonet, after the incident which put the project to the test, partners realized that their flat organization needed more structure and rules. They agreed that it was important

that everyone can have separate responsibilities and decide to change the structure and create separate working groups. This moment was an important learning point for them. Moreover, the many different ideas that the partners had for the garden in the beginning were brought closer through the workshops and discussions and eventually, generated the idea for the garden as it currently is. Additionally, partners report to now agree on more things than at the outset of the collaboration which further testifies for a certain degree of convergence of opinions. What is more, through that process, a shared appreciation for the value of community was generated. Thus, stakeholders decided that they want to make this project for the neighbourhood and to be involved in the local community. As one of the respondents explains very well:

"*...if you start a project like the Bayonet Tuin, it's not...you are busy with your own project, but also it's also very necessary to look further than your own project. That you be part of a bigger network in the area. Yeah, this is very important for the partners as well. It's not only about the garden itself, but it's more than that. It's more…how your goal is to make the whole neighbourhood climate-proof and to involve a diversity of people…*" (Respondent 1)

A good example of normative learning in Essenburgpark was the creation of the development team for the maintenance of Essenburgpark. As a matter of fact, the decision to create this team came as a result of the difficulties that partners encountered when trying to make decisions about how the maintenance will take place and how the responsibilities for it will be divided among partners. Thus, they came to the agreement that those decisions will be made as the park develops. Deciding along the way, as the park develops became an important new norm for making decisions. This level of flexibility was new for the two institutions who were used to a more straight-forward approach. Furthermore, through meeting and discussing, partners were able to agree on the value of nature and leaving the park develop more organically.

In Voedseltuin, too, participants report to have come to know each other better now and are more easily able to agree on things, however results show that common norms or values were not created. The normative type of learning was not so relevant in this case.

6.2.3 Relational learning:

Evidence that relational learning had occurred was present in all three cases. Participants were able to build new relationships, to strengthen pre-existing ones and to

understand better the mind-sets of the other actors. One aspect of relational learning which was not accounted for in the conceptual model but which resulted to be very important for respondents was the creation of new networks.

In the case of Tuin de Bajonet the relational aspect of learning has been highly valued. Respondents reported to have become closer and to have started friendships: they support and help each other in difficult times. But they also started looking beyond their own project as they became a part of a bigger network in the area. Through the project, partners have been able to become closer and build valuable relationships not only within the partnership, but also in the neighbourhood as a whole. The network that has been created around the Bajonet garden has given ground for new social structures and partners are committed to other projects in the neighbourhood, especially such involving urban gardening and climate change adaptation. They have also become part of the Water Sensitive Rotterdam network. Sufficient data for the indicator 'improved understanding of mind-sets of others' was not present for this case.

In Essenburgpark partners were able to establish new valuable relationships but also to become a part of each other's professional networks. Thus, by taking part in this collaboration, they have expanded their own networks and opportunities for new collaborations have emerged. Working together has also improved the relationship of the two citizen's initiatives:

"*Our relationship is basically based on the fact that we work together for the Essenburgpark. Well, we knew each other beforehand, of course but still, this has been greatly enhanced and we know each other way better now. And we respect each other way better now.*" (Respondent 5)

In the process of learning parties were able to better understand the interest of the others and thus to realize that they can overcome their differences if they work on finding the common goal. Thus, improved understanding of mind-sets of others was also present. In this case, evidence for the additional aspect to relational learning – participation in networks, was also retrieve. The creation of the Essenburgpark was a key moment for the Green Connection – an 8-kilometers long ribbon across the Delfshaven district which runs along green and social initiatives, as it allowed to 'close the loop', forming the physical connection of such projects in the northern part of the district. As a result, a strong network around it was created and Essenburgpark is an important part of it.

In Voedseltuin, too, participants have come to know each other better now and are more easily able to agree on things, the municipality sees them as a serious partner which helps them to increase their network. In the meantime, the project has become an important part of the

local ecosystem and has attracted the attention of other actors as well. With the goal of finding nature-based solutions for water retention in the context of extreme rainfall and drought, De Urbanisten, an urban landscape company, together with the municipality and the Food garden started the experimental water retention project – the Sponge garden. Moreover, the garden works closely with the care institution PlusPunt. It is also a valuable partner in the new local collective which has been forming in the area. As mentioned previously, this network of initiatives and entrepreneurs which has evolved around the garden is strongly appreciated by the municipality. However, relationship building and improved understanding of mind-sets of others is compromised by the fact that civil servants responsible for this project have changed several times already:

"*But before there was another one, and before there was another one. So sometimes you have to start all over again…that you know that person that understands what we're doing. And then somebody else come and cost you another… a lot of time to be on the same level.*" (Respondent 9).

6.3 Which are the most important factors per type?

In this section the particular conditions of collaborative governance which could be more or less relevant for the different types of learning will be analysed.

6.3.1 Factors contributing to cognitive learning

The diversity of stakeholders can be particularly valuable for learning in collaborative governance. By bringing together different actors – both experts and citizens, different types of knowledge, perspectives and ideas created a fertile ground for learning. More importantly, local residents' detailed understanding of and implication in the social fabric around them but also their professional knowledge and skills contribute greatly to learning:

"*…But they also have a job or education or a hobby or something like that. And it's the enormous diversity of the backgrounds of people is really what makes me but also my colleagues learn every day. So it's really amazing what you can pick up just by listening and talking to people a in a closer environment.*" (Respondent 2)

By providing opportunities for knowledge exchange, face-to-face communication also played an essential role in the process. In their meetings actors could discuss and contribute new knowledge and viewpoints.

Facilitative leadership and particularly, the stakeholders who were well connected had an important role for helping bring different knowledge and perspectives together.

Additionally, in the case of Essenburgpark the initiator who acted as a boundary-spanner and understood both the expert jargon and what the local residents wanted for the park, enabled the process of knowledge exchange.

One more finding calls for further exploration. In Voedseltuin, cognitive learning was neither due to high stakeholder diversity, nor to intensive face-to-face communication as both those indicators scored low. Facilitative leadership activities and trust-building were not relevant for this type of learning either. Thus, one suggestion is that even though partners did not meet frequently, the duration of this collaboration of more than ten years can perhaps explain why the municipality learned a lot from this project. The partners commitment kept the garden going which could also have contributed to this process, although indirectly. This is an interesting finding because it suggests that a certain degree of cognitive learning can also take place in the absence of thick communication if instead the duration of the process spans over a long period of time. That is, communication might not be regular on the short run, but on the long term, it could still have a certain contribution to cognitive learning.

6.3.2 Factors contributing to normative learning

Face-to-face communication was crucial for normative learning. As discussed, the opportunity to meet and discuss their differences but also their common goals gave stakeholders the possibility to create norms and rules which defined the process through its development. Moreover, in those continuous discussions partners were bring closer their viewpoints and opinions and thus, to agree on certain values which would guide the collaboration.

Trust also had a role in facilitating normative learning because it kept partners more open to new perspectives and ideas without risking that the other actors would take advantage of this. A good example of this connection is the flexibility to which the water authority agreed despite their formal ways of working:

"...So they [HHSK] had to consciously step over this objection. They had to approve: 'Okay, we approve this plan, although there is not this this maintenance thing.' And then they had to trust us that we would actually do the mowing ourselves, which is an issue because it's quite hard to do' (Respondent 4)

Commitment to the process also provided the right ground for normative learning by keeping partners to the collaboration and the discussion table, in particular, even when

challenges aroused. The commitment of actors helped them overcome their differences and reach common ground because they all wanted the collaboration to be successful:

"Especially in the beginning, it was quite hard. And there were many moments that could have gone awry. And it didn't, it held on based on the ideal, which we all liked for different reasons". (Respondent 4)

The diversity of interests and perspectives could have become to a challenge for normative learning but the other three factors and commitment, in particular, helped in moderating its negative influence. Because of its determining role in keeping actors involved in the collaboration even in difficult times, commitment proves to be key for learning in general.

6.3.3 Factors contributing to relational learning

One of the factors which seemed to have contributed the most to relational learning is trust building. The investment of time and effort into building a relationship with and understanding the other actors between partners is crucial for the success of the collaboration and it imminently goes through building trust. Moreover, because of its importance for trust-building, commitment to the process also played an important role in stimulating relational learning. However, as several respondents indicated, trust is one thing that cannot be transferred from one project to another and this can compromise relational learning. If the person who represents one of the organizations who work together, changes their position and is replaced by a new actor, trust has to be re-established and thus, the relational learning is in a sense lost. As the representative of HHSK pointed out:

"…*But every time you have to start over again and build on new relationships and earn the trust of the other parties to bring it further. So it's not really that you have this experience that works every time and leads to success projects. If you don't invest in the relationship and to understand the other new partners then it's not going to be a success*." (Respondent 6)

Partners have to invest time and effort to become closer, it is a 'human thing', not something which you can take with you from a previous project. Nevertheless, it could be argued that the experience which was gained through establishing this relationship can be helpful in regaining trust and creating rapport with the new person in charge of this role. On the other hand, even though a given actor in the partnership might leave the collaboration, this connection can still be useful: they remain part of each other's professional networks.

The other collaborative governance condition which has the biggest positive influence on relational learning is face-to-face communication. In Voedseltuin and Essenburgpark where its level was high, partners had regular meetings in person and could thus, build stronger relationships. On the other hand, the municipality and the Voedseltuin foundation do not have such regular face-to-face contact which translated into a more formal type of relationship.

Chapter 7 Conclusions

In this final chapter, the main research question will be answered by looking into each collaborative governance condition and the expectations generated earlier in the process. Subsequently, methodological limitations are discussed and recommendations are suggested.

7.1 Answering the main question and discussion

This research set out to explore the question "**How does collaborative governance influence the process of learning among stakeholders, in the context of urban Nature-based Solutions in the city of Rotterdam?"** by looking into the impact that trust building, face-to-face communication, facilitative leadership, commitment and diversity have on cognitive, normative and relational learning.

Trust building

E1: *A high level of trust among partners will facilitate learning*. Trust building did indeed prove to have a positive impact on learning, especially for relational and normative learning. Having high levels of trust between partners was particularly important for relational learning which is a logical result given the fact that trust is the essential prerequisite for building relationships. Trust was also important for normative learning, by enabling partners to feel less vulnerable and open to other's perspectives. Thus, it can be concluded that E1 is correct. However, an interesting finding is that trust is not indispensable for cognitive learning: it is important for the collaboration but perhaps not enough for cognitive learning to occur: actors can still learn from each other even if there is a certain level of distrust. At the same time, trust building poses a particular challenge. Trust does encourage relational learning. However, in the face of the risk of actors changing, this outcome of the collaboration is threatened. The potential volatility of the partnership configuration is a challenge for building trust and thus for relational learning which could affect the stability of the collaboration and its successful long-term continuation.

Face-to-face communication

E2: *Regular face-to-face communication between partners positively influences learning*. Face-to-face communication is one of the conditions which was essential for all three types of learning. Thick communication lead to partners knowing and understanding each other better which stimulated relational learning. It also provided opportunities for knowledge, idea and perspective exchange which enabled cognitive and normative learning, respectively. Additionally, commitment also contributed indirectly to learning, by having a positive effect

on building reliability trust. Therefore, E2 holds true. Nevertheless, an unexpected finding is that it was not intensive and regular face-to-face communication which led to learning in the third case, but rather the fact that the collaboration was sustained in time which still allowed for fruitful meetings and discussions to take place over the long run.

Facilitative leadership:

E3: *The presence of one or several individuals performing facilitative leadership activities will stimulate the learning process.* Even though facilitative leadership played a role in stimulating learning, not all activities were equally relevant. Facilitative leaders' level of social connectedness, stimulating information exchange and creating opportunities for reflection and learning all had a positive influence on cognitive learning. Therefore, E3 can be confirmed. Nevertheless, conflict mediation, on the other hand, was less important for the process of learning, which in this case contradicts theory.

Commitment to process:

E4: *Stakeholders' commitment to the process will contribute positively to learning.* Commitment to the process was the one condition which had a positive impact on all cognitive, normative and relational learning by keeping actors' attention on the common goal and not letting individual differences inhibit the partnership. The fact that the stakeholders remained committed throughout time, allowed them to learn from each other, to create common norms and values, but also to understand each other better and create valuable relationships. Thus, E4 is also confirmed.

Diversity:

E5: *Diversity will stimulate the process of learning if there are high levels of trust among participants and/or if the process is mediated by facilitative leadership activities.* The level of stakeholders' diversity was an important driver for cognitive learning because it allowed the pooling of diverse sources of knowledge. Combining professional knowledge with citizens' understanding and knowledge of the local context and social networks helped partners gain new valuable insight. On the other hand, diversity can have a negative impact on normative and relational learning because of the differences and the power imbalances which might exist between partners. Nonetheless, this potential negative impact can successfully be avoided when face-to-face communication, trust building and commitment are high. Facilitative leadership's expected moderating role through conflict mediation, however, did not demonstrate to be of relevance. Therefore, E5 holds partially true. Diversity can stimulate learning even in the absence of facilitative leadership, given that the other three conditions are present.

7.2 Discussion and limitations of the study:

Even though the research yielded interesting results and provided ground for the theoretical expectations to be confirmed several consideration should be mentioned.

First, the impact that collaborative governance conditions had on learning varied in the three cases, a clear pattern became obvious. Even though all three cases fitted the definition for collaborative nature-based soltuions, results showed that the collaborative governance setting in Voedseltuin was different than expected. In reality, the relationship between the municipality and the Voedseltuin foundation was of a more formal character and revolved around renting the plot. Moreover, a certain level of insecurity over the future of the garden was reported, which was due to the growing interest in redeveloping this area of the city. Those specific dynamics seem to have conditioned the collaboration and thus to have been a challenge for the process of learning.

Second, when looking into the results for Tuin de Bajonet it should be taken into consideration that a representative from Woonstad could not be interviewed. Thus, an important stakeholder's perspective was not included in the study which might have led to important details being missed, especially when it comes to learning. It further limits the degree of representativeness of the sample.

Finally, the fact that the majority of the interviews was not conducted in person due to the extraordinary circumstances might have limited participants' degree of openness and willingness to share more delicate information.

7.3 Scientific recommendations:

This research intentionally focused on learning as an outcome of collaboration and not simply part of the process. The choice for separating learning from the other conditions demonstrated to be an insightful approach because of the many details which emerged from the analysis might not have otherwise been discovered. Moreover, learning did indeed have more than one facet and choosing to see it simply as 'shared understanding' as in the framework of Ansell &Gash (2008) provides a very limited view of this process and its determinants. In this regard, future research could focus on exploring further details in the three types of learning and the potential connections between them which were not analysed here due to the scope of this research. Finally, another interesting venue for future research is the outcomes of learning,

that is, what happens with the new knowledge which was generated and how can it be used for and transferred to other collaborative projects.

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Appendix 1: List of interviews

Case	Number of respondent	Description	Date of the interview	Medium used
Tuin de Bajonet	Respondent 1	Co-initiator and designer of the project	14-May	Phonecall
	Respondent 2	Project manager at the municipality	08-Jun	Phonecall
	Respondent 3	Local businessowner and partner	22-Jun	Phonecall
	Respondent 4	Director of the citizen initiative	15-May	Face-to-face interview
Essenburgpark		District committee member		Phonecall
	Respondent 6	Project manager at HHSK	14-May	Phonecall
	Respondent 7	Project manager at the municipality	12-Jun	Email + Follow-up Phone interview
	Respondent 8	Manager Outdoor space at the municipality	29-May	Email + Follow-up questions via email
Voedseltuin	Respondent 9	Initiator of the project and business coordinator	14-May	Phonecall
	Respondent 10	District manager, working for the municipality and the port auhtority	20-May	Videocall
Additional	Respondent 11	Civil servant, 'green broker'	25-May	Phonecall

Figure 3 Interviewed people per case

Appendix 2: Interview guide

Introduction questions:

- Can you tell me a bit more about the project?
- What has been your role in this partnership? For how long? How did you come to join?
- What were the main objectives in establishing this collaboration? How do you see your contribution and/or your organization for the achievement of these objectives? How do others contribute?

On diversity:

- What interests do different partners have in the collaboration?
- Have there been occasions when these different interests have posed an obstacle for the collaboration process? (Could you tell me more about it?)

If applicable, how was the problem solved? Who was involved? What was the problem? Who helped solve this problem?

If not: What are the challenges in taking every partner's interests into account? Are there problems? How are they solved?

- What is/was the role of the partners in the decision-making process? Was everyone's opinion equally considered? Can you explain?

On face-to-face dialogue:

- Do partners engage in face-to-face communication? How often does that happen?

- Are there parties who are not actively involved in those meetings? (Why?)

On Commitment:

- How do you think different partners are committed to the process? Why? (Is there a partner who is less committed?)

- How responsible do you think the partners are for the project? Why do you think so?

- Do they have a sense of ownership over the project?

On Trust:

(Ask for the specific stakeholder + opinion about the other parties)

- Do you trust that other actors in the collaboration will take into account your interests? Why/why not? (reliability) Do you think other actors feel the same way?
- Do you trust them to respect the agreement established for the collaboration? Why/why not?(agreement) Do you think other actors feel the same way?

On Leadership:

- Is there one or several actors who is/are particularly well connected and has many social contacts? Has this been useful for the project? How? Why?

Has one or several actors:

- Stimulated the exchange of information and the communication between parties? Who? How? (stimulating information exchange and fostering new ideas)
- Organized opportunities for learning among the partners? (organized workshops/tutorials/informal learning process) Who? How? (creating opportunities for learning and reflection)
- Helped in mediating a conflict between the partners? Who? How? (conflict mediation)

On learning:

(Ask for the specific stakeholder + opinion about the other parties)

Cognitive learning:

- Have you/other partners been able to acquire new knowledge as a result of taking part in this collaboration? What type of knowledge? How important is it?

(this could be for example, knowledge about urban environment/nature/different social groups/technical knowledge/working dynamics)

Normative learning:

- Were any common norms or values created as a result of your collaboration? (working process norms/reaching consensus) Could you explain?
- Do you now agree on more things than you used to at the outset of the collaboration? Could you explain?

Relational learning:

- Has participation in this project given you the opportunity to establish new valuable relationships and/or connections? If so, could you explain? (what new relationships, how?)
- Do you consider that the stakeholders have started understanding each other's way of thinking better as result of collaboration?

Final questions:

- Is there anything that you would like to add or to ask?

Appendix 3: Code book

Actors changing	Health care and social services		
Challenges in the process	Initial ownership of the land		
Citizens with professional knowledge	Initiatiative starter		
Climate change	Interest/ motivation for participation		
Cog. learning: Acquisition of new knowledge (other)	Invlovement of partners		
Cog. learning: Acquisition of new knowledge (self development)	Involvement of partners: municipality		
Cog. learning: Acquisition of new knowledge (social aspect)	Involvement of partners: water boards		
Cog. learning: Acquisition of new knowledge (working together)	Knowledge exchange		
Cog. learning: Acqusition of new knowledge (nature)	Leadership		
Cog. learning: Acqusition of new knowledge (technical)	Learning		
Cognitive learning	Learning community		
Commitment	Local knowledge		
Commitment to process: Actors feeling proud	Meta: people knowing other actors from the research projects; network		
Commitment to process: Perceived level of commitment	Municipality interested		
Commitment to process: Responsibility for the project	Networks		
Commitment to process: Sense of ownership	Networks: new networks created		
Communication: not face-to-face	Networks: project already embedded in networks		
Conditions of collaborative governance	Normative learning		
Different departments/Lack of coordination in the municipality	Normative learning: Common objectives created		
Diversity	Normative learning: Common values/rules created		
Diversity: knowledge	Normative learning: Convergence of group opinion		
Diversity: objectives	Normative learning: New norms		
Diversity: Perspectives	Objectives of the project		
Diversity: Power imbalances	Organizational structure		
Diversity: Role in decision-making: equal	Previous experience in working together		
Diversity: Role in decision-making: unequal	Relational learning		
Diversity: same objectives	Relational learning: Building of new relationships		
Diversity: Stakeholder diversity	Relational learning: Improved understanding of mind-sets of others		
Fac. leadership: having influence	Results/future-oriented		
Fac.leadership: Bringing people together	Role: citizens		
Face-to-face communication	Role: intermediary		
Facilitative leadership	The Green Connection		
Facilitative leadership: Conflict mediation	Trust building		
Facilitative leadership: Connectedness	Trust building: Agreement trust		
Facilitative leadership: Creating opportunities for reflection and learning	Trust building: challenges		
Facilitative leadership: Fostering new deas	Trust building: Trust in the good intentions of others		
Facilitative leadership: Stimulating knowledge exchange	Trust building: Trust in the reliability of others		
Formal agreement	Uncertainty		
Funding	Using it for future projects		
Further spreading the knowledge	Water boards interested		
	Woonstad interested		
	Work with specific actors within an org. who support the project		
	Working together with citizens		

Figure 4: List of codes generated with ATLAS.ti