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Public-private collaboration in climate adaptation to rainproof Rotterdam

Succes factors towards a comprehensive implementation

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Public-private collaboration in climate adaptation to rainproof Rotterdam

Success factors towards a comprehensive implementation

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"A Hard Rain's a-Gonna Fall"

Bob Dylan

Summary

The effects of climate change are becoming increasingly visible. Extreme precipitation events which result in sewage overflow and combined urban flooding nuisance (revised Waterplan 2, 2013), alternate with effects of drought and heat. These effects are magnified within the urban conditions and may result in traffic disruption, flooding damage, pollution and overall economic loss. Therefore, Rotterdam has, like other cities, a major task to deal with Climate Adaptation.

Problems with flooding due to heavy rainfall are getting more urgent within Rotterdam. There is an urgency to scale up the implementation making use of integration opportunities that benefit a wider urban perspective and avoid future costs outweigh the current investments to rainproof Rotterdam. Rotterdam has a front-runner's role in climate adaption, showcasing internationally appreciated innovative solutions. Nevertheless, to live up to the implementation challenge and precede in this role, new innovations focussed on up-scaling and governance are desired.

The objective of this research is to contribute to a comprehensive governance approach for public private collaboration (PPC) and up-scaling the implementation process to 'rainproof' Rotterdam. Therefore, this research aims to explain and assess why and which different factors in public private collaboration influence the success of implementing climate adaptation.

A combination of academic literature, empirical findings and reviews of CA policy, regulation and PPC approaches in Rotterdam's context, generate theoretical findings and practical advice for governance opportunities. This qualitative research with a multiple case study strategy, is a deliberate choice to study a large number of variables within different types of urban development projects. Data collection through interviews with involved public, private and social parties, result in a rich understanding of the situation.

The outcome of this research elaborates on specific points of attention towards influential factors, explains the most successful approaches and PPC models and eventually describes which conditions generate most success. In brief, the main findings are that connective public leadership is exclusively important to deploy the adaptive capacity which is potentially present within society. The municipality has best comparative advantage to perform this connective leadership role, due to its extensive knowledge of the urban fabric, urban goals, stakeholders, implementation processes, and the total water system. Mainstreaming CA generates most opportunities for public private collaboration, as added value for collaborative stakeholders is then at large and mainstreaming generates interdependence which is an important driver.

The majority of respondents specify the tactical level is little exposed in Rotterdam's policy cycle in general and in CA specifically. To accomplish that mainstreaming can indeed lead to up-scaling of the CA, interventions need focus onto this tactical level, through elaboration of specific CA policy and a comprehensive CA program. Joint elaboration of a CA program will increase receptivity, which is besides interdependence, another important driver for collaboration. CA policy can provide a structured framework for translation of strategic visions into better operational projects outcomes, allow mainstreaming and other actors, public, private and social, to initiate and perform projects which can immensely increase CA capacity. This demands less time-consuming municipal interference in the actual operationalization of individual CA projects, which enlarges feasibility of up-scaling, especially considering the current scarce municipal human resources.

Public private collaboration based on the alliance model, in which the municipality performs a public connective leadership role and empowers other stakeholders to perform CA action, has most potential for long term collaboration and repeated performance of networks. In this alliance, the social stakeholders have an important role which often shows under-appreciated. Specifically, the group of social entrepreneurs, a group which recently raised in bottom-up self-organisation, showed to perform an important and successful 'brokerage role', which relate to competences of boundary spanning. Ultimately, boundary spanning capacity is the utmost important prerequisite for different conditions in the collaborative process which needs attention for overall success of the implementation of CA through public private collaboration.

Keywords Climate change, Adaptation, Public private collaboration, PPP, governance

Abbreviations

PPC	Public Private Collaboration
CA	Climate Adaptation or Climate Adaptive
WSR	Water Sensitive Rotterdam
GRP	Municipal Sewage Plan
NOA	Network Administrative Organizations (Governance form)
STOR	Stedelijk Team Openbare Ruimte
GIS	Geographic Information System
IHS	Institute for Housing and Urban Development

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Table of Content

Summary ..... **iv**
Keywords ..... **iv**
Acknowledgements ..... **v**
Abbreviations ..... **v**
Table of Content ..... **vii**
List of Boxes ..... **x**
List of Tables ..... **x**
List of Figures ..... **x**
List of Illustrations ..... **x**

Chapter 1: Introduction **1**
1.1 Background 1
1.2 Problem Statement 2
1.3 Research Objectives 4
1.4 Research Question(s) 4
1.5 Significance of the Study 5
1.6 Scope and Limitations 5

Chapter 2: Literature Review **6**
2.1 Concepts of the study 6
2.1.1 Public Private Partnership and Governance 6
2.2 Conceptual Framework 27

Chapter 3: Research Design and Methods **28**
3.1 Operationalization: Variables, indicators and questions 28
3.2 Research strategy 35
3.3 Data Collection Methods 36
3.4 Data Analysis Methods 38
3.5 Validity and reliability 38

Chapter 4: Research Findings **39**
4.1 Introduction 39
4.2 Research context of Rotterdam 39
4.3 Case description 44
4.4 Analysis of the influencing Factors 48
4.5 Analysis of mainstreaming climate adaptation 72
4.6 Analysis of Public Private Collaboration 76

4.7 Analysis of success of implementation 79
4.8 Relations between variables 86

Chapter 5: Conclusions and recommendations 90
5.1 Alteration of the conceptual framework 90
5.2 Factors which influence the implementation 91
5.3 PPC approaches and models for CA 99
5.4 Determinant factors and PPC model for success 101
5.5 Why and which factors determine successful implementation through PPC? 106
5.5 Recommendations 107

Bibliography 110

Annexes 120
Annex 1: Purposive sample for multiple case study 120
Annex 2: Questionaire interviews 121
Annex 3: National, regional and local climate adaptive policies and programs 141
Annex 4: Overview of PPC in direct democracy approach of Kendoe 148
Annex 5: Response Sense of Urgency 149
Annex 6: Response on factor Explication of goals, aims and responsibilities 150
Annex 7: Response on factor Stakeholders 151
Annex 8: Response on factor Policy and planning 153
Annex 9: Response factor implementation opportunities 154
Annex 10: Response factor trust 156
Annex 11: Response on factor Leadership 157
Annex 12: Response on factor Organisation 159
Annex 13: Response on factor Instruments 162
Annex 14: Response on Mainstreaming 164
Annex 15: Response on PPC 166

List of Boxes

Box 1: Climate scenario's Royal Dutch Meteorological Institute 1

List of Tables

Table 1: Model of collaborative governance 8
Table 2: Progressive stages in participation 9
Table 3: Models of Public Private Collaboration 10
Table 4: Model of receptivity 18
Table 5: Perspectives of project management and process management 22
Table 6: Types of management and organisation strategies 23
Table 7: Different rationales of public and private domain 24
Table 8: Operationalisation table 29
Table 9: Non-probability, purposive quota sample of interviews 37
Table 10: Resource interdependencies related to climate adaptation 52
Table 11: Different types of interdependence 53
Table 12: Preferred instruments 71
Table 13: Example of the spectrum of mainstreaming opportunities 75
Table 14: PPC model within the cases 77
Table 15: Lead organisation governed networks 85
Table 16: Promising stakeholders for implementation of climate adaptation 93

List of Figures

Figure 1: Transformation of water system 2
Figure 2: Model of collaborative governance 8
Figure 3: Conceptual framework 27
Figure 4: Responsibilities for CA in neighbouring countries 40
Figure 5: Significant factors for mainstreaming and PPC 98
Figure 6: Evolution of PPC in Rotterdam's context 100

List of Illustrations

Illustration 1: Case Hofbogen highline 44
Illustration 2: Case Oude Westen 46
Illustration 3: Case Robert Fruinstraat 47
Illustration 4: Integral sustainable concept StraaD 48
Illustration 5: 3DI visualisation of flooding locations 56
Illustration 6: STOR GIS map, a vehicle for analysing process links 63

Chapter 1: Introduction

1.1 Background

Our climate is changing. The effects are becoming increasingly visible all over the world, though extreme precipitation events which can result in sewage overflow and combined urban flooding nuisance (revised Waterplan 2, 2013). The urban conditions which includes scarcity of green and large amounts of hardened surfaces complicate infiltration of extreme precipitation events (Gill et al. 2007). This flooding nuisance may result in traffic disruption, real estate flooding damage, pollution and overall economic loss (Qin et al. 2013). Other related effects of climate change, with a strong presence in urban areas are the effects of drought and heat. Longer periods of drought cause water shortages which is a risk for subsidence of land and real estate. Large amounts of hardened surface and rooftops absorb heat which results in higher urban temperatures and corresponding heat stress. The effects such as, discomfort, reduction of labour productivity, illness and heat-related mortality, can have far-reaching impact on society, especially on people with a vulnerable health condition such as elderly people (van der Hoeven and Wandl, 2015). As a consequence, Rotterdam has, like other cities, a major task to deal with CA (Climate Adaptation) and the management of heavy downpours.

Box 1: Climate scenario's Royal Dutch Meteorological Institute

> "The Royal Dutch Meteorological Institute has developed several possible climate change scenarios for the Netherlands until 2050 (which have been updated in 2014). Although these scenarios vary in the global temperature rise and changes in airflow patterns, there are general projections. First, the temperature will continue to increase in The Netherlands. This will result in softer winters and hotter summers with possibly more heatwaves. The latter implies that there is a higher risk of heat stress. Second, the Dutch winters are expected to become wetter as downpours become more extreme and more frequent. Also, in the summer, the intensity of precipitation events is calculated to increase. This implies that cities might experience more urban flooding events. Third, the sea level will continue to rise, and faster than first projected. This indicates an increase in flood risk" (Uittenbroek, 2014)

The revised Rotterdam Waterplan 2 (2013), a policy document prepared by the municipality of Rotterdam together with the local water boards, describes the challenge towards these downpours. Problems occur at the discharge of rainwater and the existing sewerage system. Changing the total sewage system is decided upon as not being an accurate solution for CA in the existing city as to a recent social cost-benefit analysis. Therefore, alternative forms of water storage are essential for future water management (Municipality of Rotterdam, 2013). In order to process the increase of rainwater, provisions are needed for collection, slow infiltration, storage and drainage. To give an idea of the scale of this challenge; At the moment, at least 80 hectares of extra lakes and canals (600,000 m3 of storage) would be needed to cope with this shortage. This is similar to the surface of the whole city centre triangle (Coolsingel-Goudsesingel-Nieuwe Maas) of Rotterdam with a storage depth of nearly 1 meter (Municipality of Rotterdam, 2013). An extra complication in the implementation is that solutions for CA cannot be concentrated in a few extensive measures. In order to constrain water transportation distances and related costs, CA measures need to be accommodated within smaller scaled measures integrated within the urban veins (Figure 1).

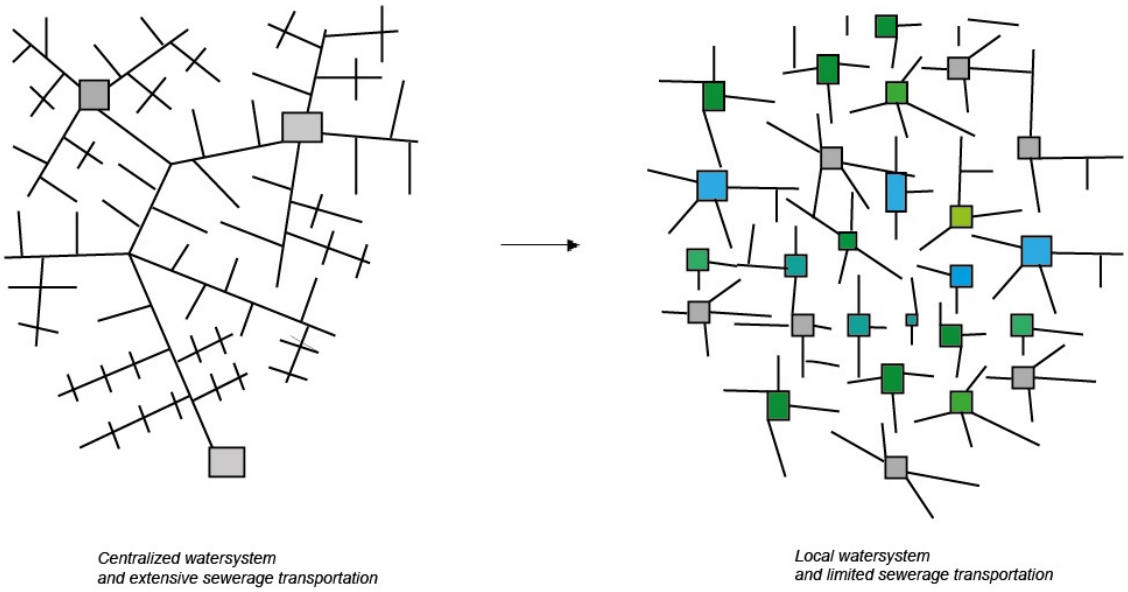
A wide variety of solutions and implementation strategies for the latter issue are evolving and being elaborated. Many of which are technical solutions initiated by the municipality and the water boards. These solutions like water squares, integrated water storage in parking garages and green roofs are mostly well known. Although these are great examples, the contribution to the total capacity that will be necessary to make the city resilient is still limited.

The current strategy to tackle the problems is two folded.

1. The municipality looks for integral solutions as this has most added value for the city, more public support and different resources can be merged together.
2. With collaboration between public and private parties to share responsibility, added value for both public and private interests and increased scarce resources.

This strategy is elaborated on in the Inspirational Document Water Sensitive Rotterdam. Although still in an early phase, the pragmatic 'learning by doing' methodology has resulted in a spectrum of approximately 50 experiments. Besides these experiments the program also includes a platform with different parties that contribute to the task and effort is being made to create broader support within the municipal organization (Municipality, 2015).

Figure 1: Transformation of water system



Source: writer

In 2016 there were several heavy downpours resulting in nuisances and flooding damage on the 3rd and 26th of June. In addition to the inconvenience these events provoke, it creates attention and public support to deal with the problem. The recovery of real estate development and private stakeholders investing in Rotterdam also offers opportunities for implementation as in favourable market conditions and public and private investment opportunities. In 2008 the Dutch national government, provinces, waterboards and municipalities agreed to avoid negative effects of flooding before 2017 in the 'National Bestuursakkoord Water'. This means that the city of Rotterdam needs to implement the necessary measures within the coming 10 years (Ministry of Infrastructure and Environment, 2008). These conditions offer a window of opportunity to push implementation.

This all takes place in the context of a changing social-economic and political order in the Netherlands. As such, a transition evolves from a social welfare state, neo-liberal influences, towards a 'Participation society'. Characteristics of this 'Participation society' arise in private and social parties demanding more influence, while public parties are more dependent on these parties to share responsibilities, in the endeavour to deal with public issues.

Before the economic crises the paradigm was that climate adaptation and water management were public issues in which the government was the main responsible party. During the crises, this paradigm shifted. Private parties got aware that the government was not able to handle all the large future issues on its own, and at the same time private parties want to be more in control and have influence on issues that effect their lives (Sociaal Cultureel Planbureau, 2014).

This research analyses opportunities to make effective use of public-private collaboration in dealing with heavy downpours and the implementation of water storage capacity in Rotterdam.

1.2 Problem Statement

Problems with flooding due to heavy rainfall are getting more urgent within Rotterdam. It is important to stay ahead of the situation in which large amounts of investment money are allocated towards repairing flooding damage and short-term solutions. And aim to allocate resources to solutions that have an effect on the longer term, while also delivering benefits in a wider perspective. As Tompkins et al., (2010) notifies "If cities neglect to invest in climate adaptation today, they will have to deal with the future costs of possible damage to the daily urban systems and services. These future costs could outweigh the current investments needed for cities to become 'climate-proof' (EEA 2012, Tompkins et al., 2010). However, an increasing number of cities are adapting to climate change, the actual implementation of climate adaptation remains slow (Carter 2011). There is an urgency to scale up the implementation in order to avoid negative effects of flooding in Rotterdam as was agreed on in 2013 by the Dutch national

government, provinces, water boards and municipalities in the 'National Bestuursakkoord Water' (Ministry of Infrastructure and Environment, 2008). Rotterdam has a front-runner's role in CA showcasing internationally appreciated innovative solutions, nevertheless to precede in this role and live up to the implementation challenge, new innovations focussed on up-scaling are desired.

To live up to the ambition for climate adaptation towards flooding, a shift in water management from a top down government approach towards governing the process of alternative water storage solutions integrating all possible parties and capacity is essential. As Tropp (2007, p.19) appoints "New forms of governance focusing on process-oriented societal co-steering through, for example, formal and informal networks, partnerships and dialogue, emerge within the water sector". Although in practice the division of responsibilities for adaptation to climate change is often not explicated, public authorities seem to be the primary actors in CA. Nevertheless, governance of CA requires collaboration and shared responsibility of both public and private actors in order to employ an extensive share of society's resources. Engagement of all societal stakeholders could increase efficiency and legitimacy in the approach of CA (Mees et al., 2012). Public private collaboration is one of the paths to achieve this goal, but it needs an approach on an urban scale.

In this perspective, first aim is integral implementation of CA policy and projects in public and private collaboration on a more regular base. Besides facilitating opportunities that arise from private stakeholders this demands a more pro-active attitude and comprehensive approach within the municipal organization to silver-plate PPC opportunities. Influential factors, like stakeholder independencies, PPC instruments, integrated planning solutions, process-coupling implementation opportunities, could be carefully mapped, weighed on their influence on success and enhance a more comprehensive collaboration approach. Water-technical skills and knowledge therefore need to be accompanied with governing capacity as Teisman et al. (2013) appoint, management of water is besides a technical matter, also a governance challenge.

Simply increasing the scale of implementation by replication of the public private climate adaptive projects in the same way as the individual experiments were approached is not feasible. The large amount of organizational capacity and resources accepted in experiments would be disproportionate in relation to the output, if replication would be the up-scaling strategy. In PPC (Public Private Collaboration) implementing CA, each project and process is treated as inevitably unique, with the necessity of a customized implementation process. This can be justified in individual teachable experiments, but a condition for up-scaling CA implementation is a more comprehensive approach and aim for advantages of scale. A successful implementation strategy, needs more balance in effective output of CA policy measures, efficient deployment of resources, efficient allocation of municipal organization capacity, acceleration in implementation speed, with added value for both climate adaptation and other urban resilience goals. The transition from an experimental approach towards up-scaling on the scale of the city as a whole is part of a successful implementation to rainproof Rotterdam (Gemeente Rotterdam, 2015).

Despite good examples effective collaboration between public and private parties on the basis of partnership and equity is not common yet and needs further exploration. The latest counsels in Rotterdam focused in their Coalitieakkoord 2014-2018, on a paradigm shift in which the necessity of collaboration between public and private parties and the notion of mutual interdependence became in evident (Municipality of Rotterdam, 2014). Although this shift is a forward, it is still in an early phase. The implementation path of the so-called Kendoe approach has a dedicated approach which is not quite integrated within the main work-processes. Change of paradigm depends not only on the cultural shift in attitude of public administration and private parties onto which the current administration puts much emphasis. It should also be related to governing the complexity of policy implementation processes in public private collaboration in which different factors, opportunities within and interrelations are determinant for a successful implementation.

To understand the hiatus within these factors and complexity of the implementation process in public private collaboration a number of factors and gaps within are listed below;

- Interdependence: limited awareness of which urban goals can be connected to climate adaptation; underutilisation of possible resources from dependant partners; neglecting trade offs within the total life cycle.
- Planning; missing of a clear definition of the water technical goals in a local scale; limited emphasis on opportunities for adaptive policy linkages; lack of insight on location-prioritization, limited knowledge of the added value of integral solutions.

- Stakeholder; ignorance of possible relevant partners and their possible contribution; confined joining of stakeholder's main interest with the climate adaptive interest;
- Management; limited insight on opportunities for process-linkages, what are the possibilities to connect the implementation with other development processes, what role does a manager take, and what management skills and strategies are most effective?
- Organization; weak integration of policy domains and private and social networks with municipal sectoral departments

It needs to be said that the program manager of Water Sensitive Rotterdam (WSR) is aware of these gaps and tries to deduct them within the experimental projects as much as possible, but the programs capacity is limited and successful governance of climate adaptive policy implementation has implications on the municipal organization as a whole and beyond.

The problem with public private collaborative implementation of climate adaptation is that there is, besides the focus of municipals authority on facilitating bottom-up self-organization initiatives and a program that stimulates a cultural shift within the administrative organization towards that type of public private collaboration, the translation towards governing this complex way of policy implementation within all facets of the municipal organisation is still under construction. The emphasis within the municipal organization towards embedding public private collaboration is on the execution of projects, while in order to be able to implement different policy fields and climate adaptation specifically, through public private collaboration, there should be an emphasis on a governance approach that is embedded within all facets of the municipal organization. In order to steer towards a more comprehensive approach of climate adaptation through up-scaling and mainstreaming implementation climate adaptation it is necessary to develop a governance approach and make adjustments within the municipal organization.

1.3 Research Objectives

Primarily, understanding is needed on the factors within public private collaboration and interrelations between these factors, in order to develop a comprehensive governance approach towards the implementation of climate adaptation. The strategic choices that are made within these factors and the way they interfere determine the success of the implementation process. Some factors have a relation with the water system or planning while others relate to employing stakeholder and resource interdependence, or management and organization amongst others.

The main objective of the research is to explain and assess why and which different factors in public private collaboration influence the success of implementing climate adaptive policy measures for more and intense rain, in order to be able to steer towards a more comprehensive governance approach. This will be done towards Rotterdam's experimental project phase in which the implementation is now and towards the ambition to up-scale and mainstream implementation of policy measures, to contribute to the achievement of the ambitious aim to avoid negative effects of flooding in the whole city of Rotterdam before 2027, as was agreed on in 2013 by the Dutch national government, provinces, water boards and municipalities in the 'National Bestuursakkoord Water'. This research aims to contribute to a more coordinated and comprehensive collaboration between public, private, societal partners and community within the implementation of climate adaptive policy measures for flooding.

1.4 Research Question(s)

The main research question aims to explain;

"Why and which different factors determine successful implementation of climate adaptation through public-private collaboration?''

The sub-research questions are;

1. Which factors influence implementation of CA through mainstreaming and public-private collaboration in Rotterdam's experimental projects?
2. Which public private collaboration approaches and models influence successful implementation of climate adaptation in Rotterdam?
3. How do the factors, approaches and models in public private collaboration influence the success of up-scaling implementation of climate adaptive policy measures?

1.5 Significance of the Study

Scientific relevance

This research is based on public private collaboration. And builds on the combination of theoretical concepts for PPP and governance. The collaboratives governance framework of Ansell and Gash (2007) and Emerson et al. (2011) is used as a lens and for the factors within public private collaboration the framework as Emerson et al. (2011), is used as a structure. This has scientific relevance as Emerson et al. (2011) recommend to further explore PPC through evaluative application of their framework to cases of collaborative governance. They also appoint empirically examination of the components within their framework could benefit scientific knowledge of governing collaborative approaches.

This research builds onto research on PPP and governance within the domain of climate change as it combines the planning and water technical practice with managerial and governance science. This offers more specific knowledge on governance aspects needed for the implementation of climate adaptation. Thereby empirical experience in the implementation of public policy through public private collaboration is combined with the insight of the strengths and weaknesses examined within the research field of public administration. This empirical experience can contribute to framing research issues with relevance to society in the public administrative research domain.

This research aims at the broad context of governing CA. and includes the whole policy cycle in relation to a public private collaboration approach. It is not limited to the phase of executing projects, which is often the limitation in scope of research on Public Private Partnership (PPP). Thereby it attempts to encompass specified components within the scholar of governance.

Policy relevance

This research is relevant for public policy in general as the governance approach is topical in the context of the transition from a well fare state, towards a participation society in which the municipality needs to rediscover its role and responsibility and invent work processes that correspond.

This research intends to contribute to speed and scale up policy implementation. A lot is said and researched about climate change, but the urgency of action is becoming increasingly clear. This thesis tries to actually contribute to the implementation of policy measures. It searches for a comprehensive approach and induct Success factors to scale up implementation, in a setting of PPP, in which a customized one-off approach is often prevailing.

The municipality doesn't have a stand-alone investment budget for adaptation measurements, but needs to link adaptation to other developments in the city. An integral strategy linking different policy goals and opportunities and linking private and social partners is therefore inevitable to implement and scale up policy goals. Involving private stakeholders has an impact on the implementation opportunities and available resources. For example; the ratio between public and private land is 40%-60% as is mentioned in policy publication the StraaDkrant (STOWA et al., 2016). The measures that are now implemented are mostly on public land. Besides other societal resources such as process capacity, knowledge and finance (Inspiration document WSR, 2016) this research aims to include private land in the endeavour of scaling up the implementation of CA (climate adaptation) through a governance strategy.

Recently during the economic and real estate crisis, extensive partnerships with private parties amongst which are real estate developers and housing cooperation was not obvious. Whereas partnering with smaller social stakeholders, like resident's groups or social entrepreneurs showed very successful although the CA impact was limited as a result of relatively high transaction costs and small scaled measures. This research attempt to exploit insights from recent social bottom up initiatives and strives for involvement of capacities of social parties in PPC (public private collaboration) while increasing impact and the private market parties while balancing economic benefits with broad societal added value.

1.6 Scope and Limitations

The scope of this research towards climate adaptation focusses onto flooding risks through heavy rainfall. It is not about water safety due to sea level rise and the larger influx of river water from the hinterland. Water technical or integral planning solutions are related to the approach for implementation, but is not the subject of this research, as it focusses on governance aspects of the implementation. The approach to implement climate adaptation is integral and focusses on connection and co-benefits for

other urban goals. Co-benefits related to other climate effects like drought and heat stress are often included in the solution for heavy downpours. Implementation of water technical solutions that solely focus on water technical aims without connection with other urban goals are therefore not relevant to this study. Climate adaptive measures will always be connected to other climate issues or development goals, and even in many cases won't be the central or most important goal.

The municipality aims to move their approach from a project based experimental phase towards a more comprehensive implementation that justifies the great task the city stands for. The research is therefore not limited to the experimental phase in which climate adaptation in Rotterdam is now, but aims to contribute to scale up implementation of climate adaptive policy measures. The factors of influence onto public private collaboration will be similar within both phases, but there will be a difference of coloring between the factors that are determining for the experimental phase and up-scaling and mainstreaming to a citywide scale.

Main focus of the research is to 'understand' the way different factors influence the success of CA implementation. As this research is commissioned by the department of water management of the municipality of Rotterdam, the decision to select cases within Rotterdam has been both deliberate and pragmatic, as it will be focused on the urban context of Rotterdam. The influence of context specific characteristics is certainly relevant for PPC and governance whereupon this selection of cases contributes to the validity of conclusions and enables later application.

The complexity of the collaborative process is overwhelming. Therefore, the conceptual framework departs from the frameworks on collaborative governance (Ansell and Gash, 2007; Emerson et al., 2011), which is comprehensive, but simultaneously with an attempt to practically simplify the factors for success and their relationships to the context of PPC in Rotterdam.

Chapter 2: Literature Review

2.1 Concepts of the study

2.1.1 Public Private Partnership and Governance

2.1.1.1 Reason for PPP

Many scholars argue that in implementation of climate adaptation policy, collaboration with different actors in Public Private Partnership is inevitable (Klijn et al., 2010; van Buuren et al., 2013; Uittenbroek et al., 2013; Frantzeskaki and Tillie, 2014; Mees et al., 2014;). Advantages of this collaborative approach are extensive. Edelenbos and Teisman (2008) outline reasons to explain the rise of PPC range from financial and economic considerations, ambitions for innovation bypassing bureaucratic restrictions to strategic factors (Osborne, 2000).

Emerson et al. (2011) identify numerous successful benefits from collaboration such as increased capacity; better formulation of requirements and key concerns; natural deliberation of interests; mutual understanding and enhanced trust among dependent parties; better integration of local context and relevant knowledge; and greater legitimacy within the collaborative network and public support.

Risk distribution

Who is responsible for the adaptation to climate change? Usually the government is the first party that is thought to be responsible when there are new social issues. Yet it is not obvious that the government always takes the lead in both policy or in the implementation of climate adaptation in (Rijswick and Salet, 2010). The problem-solving ability of governments is, according to many legal, policy, scientific, sociological and economic studies, limited. And besides that, not every changing situation is a public task. Therefore, it makes sense to look at other societal actors who can contribute to solving the climate issue. But also, fundamentally, some responsibilities can be deposited better at social parties than to the government (Driessen and van Rijswick, 2011).

Interdependence

Adaptation measures cannot be implemented solely for this purpose, but need to be associated with other developments and related actors to be effective (van Buuren et al., 2013). Interdependence is an important driver in PPC. Interdependence means actors are not able to act independently as they

depend on each other's resources such as finance, land, time, knowledge, permissions, and licences. In cases where parties are interdependent, PPC is inevitable (Koppenjan and Klijn, 2004).

Added value

In order to succeed, parties must be able to agree on a plan. Although striving for consensus complicates collaboration, it also results in added value (Edelenbos and Teisman, 2008). It is assumed that intensive co-creation of public, private and social actors will result in better outcomes. In the literature on PPP, this is also appointed as added value (Osborne, 2000; Ghobadian et al., 2004; Klijn et al., 2014). The Dutch Knowledge Centre (2017) on PPP makes a distinction in securing efficiency, which refers to the same outcomes for lower costs and more added value, referring to greater outcomes for the same cost.

More innovative results

Another benefit is the potential for innovative solutions (Steijn et al., 2011). Bartley (1996) describes that sharing knowledge in PPC, results in better results and opportunities for innovation.

2.1.1.2 Governance in PPP

In general, governance can be defined as new forms of conducting and collective decision-making with cross-links between different interdependent parties and institutions; public, semi-public, private, voluntary, and community, that collaborate in complex collaborative networks (Dool et al, 2015). Governance involves a shift in mutual relationships between different government levels with civil society and to fading of boundaries between and within these public and private domains (Rhodes 1997).

PPP processes can evolve through governance, in which governance refers to as a collaborative process and joint efforts between different parties and organizations (Edelenbos and Teisman, 2008). In public management, governance refers mainly to the abridging roles of government agencies within Public Private Collaboration (Hill and Lynn, 2005). Several researchers view Governance through the network approach, also referred to as network governance, in which development of policy and implementation are established in networks of collaborative parties and organisations (Kickert et al., 1997; Klijn and Koppenjan, 2012).

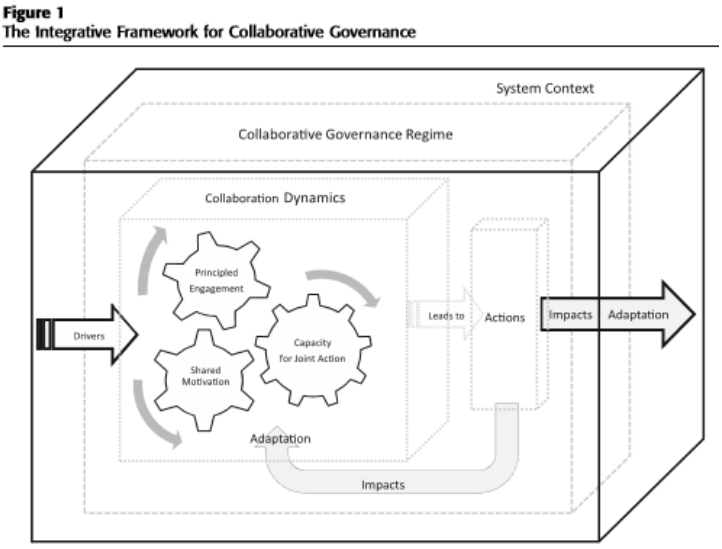
A new form of governance emerged during the last decades, to replace top-down and constrained participation in policy making and implementation. This new form, known as Collaborative governance, engages public and private stakeholders in collective platforms with the intention for consensus-based decision making (Ansell and Gash, 2007). Collaborative governance is for many public administration scientists, a new course for democratic consensus-based policy making and implementation (Frederickson 1991; Jun 2002; Kettl 2002). As Ansell and Gash (2007) elaborate "Collaborative governance is a type of governance in one or more public agencies directly engage non-state stakeholders for decision-making collectively in distinctive ways, using particular processes, to establish laws and rules for the provision of public goods".

Emerson et al. (2011) define collaborative governance broadly as; "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". This definition is broader than the approach proposed by Ansell and Gash (2007). And unlike the definition of Ansell and Gash (2007), Emerson et al. (2011) do not have the restriction of governments per se initiating the governance process. Neither is it limited to formal engagement of government and non-governmental actors.

The framework of collaborative governance views PPP in a broad context and includes various components of the governing process, including drivers, planning, policy making, and management (Emerson et al., 2011). This meets the practise of PPP within the context of implementation climate adaptation. First, in comparison to PPP, collaborative governance entails more varied collaborative initiatives beyond the classical approach of public sector that initiates the process and includes the public, private, and civic sectors, passing on the richness of societies collaborative initiatives. Second, the collaborative governance framework reasons from a broader context and includes contextual factors that influence collaborative governance (Emerson et al., 2011). The adaptability of this framework is appropriate for the contextual factors that influence transition of CA and appeals to the flexibility needed to evolve from an experimental phase towards mainstreaming climate adaptation.

The integrative framework of collaborative governance is the lens which is used in this thesis research, looking at the implementation with public and private partners of climate adaptation for heavy rainfall and flooding risks.

Figure 2: Model of collaborative governance



Source: Emerson et al. (2011)

Table 1: Model of collaborative governance

Table 1
A Diagnostic or Logic Model Approach to Collaborative Governance

Dimension and Components	System Context	Drivers	The Collaborative Governance Regime: Collaborative Dynamics: Principled Engagement	Shared Motivation	Capacity for Joint Action	Outputs Collaborative Actions	Collaborative Outcomes: Impacts	Adaptation
Elements within Component	- Resource Conditions - Policy Legal Frameworks - Prior Failure to Address Issues - Political Dynamics/ Power Relations - Network Connectedness - Levels of Conflict/Trust - Socio-economic/ Cultural Health & Diversity	- Leadership - Consequential Incentives - Interdependence - Uncertainty	- Discovery - Definition - Deliberation - Determinaton	- Mutual Trust - Mutual Understanding - Internal Legitimacy - Shared Commitment	- Procedural/ Institutional Arrangements - Leadership - Knowledge - Resources	Will depend on context and charge, but might include: - Securing Endorsements - Enacting Policy, Law, or Rule - Marshalling Resources - Deploying Staff - Siting/ Permitting - Building/ Cleaning Up - Enacting New Management Practice - Monitoring Implementation - Enforcing Compliance	Will depend on context and charge, but aim is to alter pre-existing or projected conditions in System Context	- Change in System Context - Change in the CGR - Change in Collaboration Dynamics

Source: Emerson et al. (2011)

2.1.1.3 Different models of PPP

In literature, we come across various types and categories of PPPs as public contracting, DB (Design & Build), DBM (Design, Build & Maintain), franchising, partnering, joint ventures. Even some see privatization as a form of PPP (Eversdijk and Korsten, 2009).

The Dutch administrative literature reduced the variation of PPP's to two main categories, namely the concession model and the alliance model (Koppenjan, 2005; Edelenbos and Teisman, 2008). Montfort et al. (2012) distinguish another form of PPP, and describes 'the third direction' also known as bottom up self-steering initiatives, besides the alliance and concession model. The description of these three types is as follows;

Concession model

The concession model is a form of collaboration in which the government disposes the long-term exploitation rights (the concession) for a certain prize. This concerns engagements between public and market parties in the field of buildings, infrastructure, exploitation of natural resources and civil engineering projects. The concession can take different forms, such as a design-build-maintenance-operate contract (Savas, 2000). In the concession model government parties focus mainly on formulating output criteria. The implementation is outsourced to the market (Klijn and Van Twist, 2007). The concession form is also known as the "contract form" and is sometimes referred to as “economic partnership” (Hodge & Greve, 2005).

An evaluation of PPP based on the concession model and analysis of three cases in the Netherlands show that PPP’s show the conception of these large PPP’s is too idealistic while in practise concession based PPP’s are less rosy and show less added value and shared risk as is often stressed (Klijn and Teisman, 2003). Klijn and Teisman (2003) argues that “The majority of partnerships in the Netherlands seem to face inter-organizational partnership problems, which results in lack of transparency, low levels of trust, time consuming contractual processes and inordinate compromises. The parties involved have difficulties in combining the demands of partnership with their internal demands. It seems that the inter-organizational capacity is too weak to achieve added value” (Teisman, 2008, p. 323).

Alliance model

Koppenjan (2005) emphasizes a condition for successful partnership is collaboration through the form of an alliance model, defining PPP as structured collaboration in public service delivery (Koppenjan, 2005). Osborne (2000) defines PPP as a strategic alliance with the intention to realise longer-term goals and aims.

Alliances have a larger variety than the contractual form, ranging from occasional and more non-binding collaboration in the signing of agreements between partners and the establishment of legal entities. There are various forms of funding and also diverging objectives of gaining economies of scale to the pursuit of an advisory (Van Montfort, 2008). The relationships between collaborating parties are much less based on the hierarchical relationship between client and contractor and more horizontal relations and mutual trust. The added value in the alliance model takes shape to a lesser extent (cost) efficiency and effectiveness and has a stronger focus on sharing knowledge and capacities (Edelenbos and Teisman, 2008; Klijn and van Twist, 2007).

Third direction; bottom up self-organization initiatives

Another model of public private partnerships (PPP) can be distinguished, besides the two main directions of the concession- and alliance model (Klijn and Teisman, 2003; Edelenbos and Teisman, 2008). This model is elaborated on as a third direction model in PPP which is better known as bottom-up self-organization (Montfort et al, 2012; Sociaal Cultureel Planbureau, 2014). PPP and participation are related, but often confused concepts. Edelenbos (2000) elaborated on the participation ladder which was initially formulated by Arnstein (1969) and describes different stages in depth of participation. The different progressive stages in participation as Edelenbos (2000) are described in table 2.

Table 2: Progressive stages in participation

Informing	To a large degree, politicians and administration determine the agenda for decision making and inform those involved. They will not use the opportunity to invite interested actors to have input in policy development.
Consulting	To a large degree, politicians and administration determine the agenda but regard those involved as a useful discussion partner in the development of policy. Politicians do not, however, commit to the results of these discussions.
Advising	In principle politicians and administration determine the agenda but give those involved the opportunity to raise problems and formulate solutions. These involved actors play a full-fledged role in the development of policy. Politicians are committed to the results in principle but may deviate (if accounted for) from them in the final decision making.
Coproducing	Together politicians, administration, and those involved determine a problem- solving agenda in which they search for solutions together. Politicians are committed to these solutions regarding the final decision making, after having tested this outcome in terms of a non-conditions.
Co-deciding	Politicians and administration leave the development and decision making of policy to those involved, and the civil service provides an advising role. Politicians simply accept the outcomes. The results of the process have an immediate binding force.

Source; Arnstein, 1969; Edelenbos, 2000

Participation is often confused with PPP. Only the most in-depth stages of participation, namely coproducing and co-deciding, which are based on equivalence of partners, can be related to the third direction model of PPP that Montfort et al. (2012) described.

Blom et al. (2011) defines self-organization as an initiative of one or more citizens which is voluntarily and benefits society. Müjde and Daru (2005) define a citizen's initiative as a form of self-organization, with the aim to increase quality of life and of society, in which multiple persons are involved. Citizens initiatives are run by volunteers, at most by semi-professional, are small scale and none or little institutionalized (Montfort et al., 2012). Within the third direction- model, the initiative lies rather in the society and the government has a facilitating role. Private parties such as local communities or social parties are the initiators for innovation in service delivery. These bottom up initiatives, often fill in a gap that is left by the government in the service delivering in the public domain (Sociaal Cultureel Planbureau, 2014). They are often not evoked or encouraged by government. Montfort et al. (2012) stress that although these initiatives do not directly depend on support of the government, the government needs to relate itself to these initiatives.

Table 3: Models of Public Private Collaboration

Characteristics	**Concession- or contract model**	**Alliance model**		**Third direction model, Bottom up, citizen's self-organization**
Type of relation/ partnership	Clear distinction between commissioner (public party) and contractor (private party)	Government and private actor are jointly involved in the design, construction and operation based on joint commissioning status.		The initiative lies rather in the society with little governmental role.
Type of cooperation	Cooperation limited to the phase preceding the contracting out. This phase is followed by supervision of the private actor carried out solely by the public actor, with little or no mutual interaction.	Collaboration continues throughout the whole process. Initially, it focuses on the nature of goals and the search for connections. Later it is geared towards joint realization of goals		Cooperation limited. Government has a facilitating role in some stages.
Role of contract in the PPP	Strong emphasis on the use of contracts to inject clarity and certainty in the collaboration.	Less emphasis on contracts. More emphasis on mutual trust.		Less emphasis on contracts. Contracts are mainly related to user agreements or maintenance.
Determination of the issues and direction of solutions	The public party largely defines the problem and the solutions.	Public and private parties are both involved in a joint process of defining the problem and solutions.		The private parties largely define the problem and the solutions.
Scope of the process	Tendency to look for clear distinctions and boundaries. Any broadening of scope should take place within demarcated areas of responsibility of actors	Tendency to seek expansion of scope, and from the perspective of coherence, laying connections between elements within the project		Tendency to seek clear short-term scope.
Management principles	Strongly founded on principles of project management: specify clear objectives, set out schedules and supervise them, and organize human resources.	Founded more on principles of process management: goal oriented operation, development of a solid cooperation process (rules and roles) and efforts to interconnect goals.		Management by volunteers, organic informal steering by main initiators. Non-or little institutionalized.

Source; Klijn and Teisman, 2003; Edelenbos and Teisman, 2008; Montfort et al. 2012; Sociaal Cultureel Planbureau, 2014; Municipality of Rotterdam, 2016

An analysis of private initiatives within public space, that was executed in 2014 by the municipality of Rotterdam (Municipality, 2014) showed an extensive amount of at least 200 private initiatives, which were not well known within the municipal organization, let alone influenced existing policy. It was concluded that by including these initiatives within policy, added value for both initiatives and public policies would arise. Added value reflecting in integration of other development goals, quality due to integrated plans and avoidance of counteracting these initiatives as a result of different stands within different departments within the municipality. This conclusion is in line with Montfort (2012) who stresses “The question is not what the government does to stimulate the emergence of such initiatives, but rather what the government is doing to frame the initiative as part of its own policy and make use of it.”

2.1.1.4 Definition of Public Private Collaboration

“The term 'partnership' covers greatly differing concepts and practices” (Mc Quaid, 2000). Some concepts emphasize onto the institutional and contractual forms. Bregman (1990) defines PPP with a focus on a legal form of the partnership arrangement; “Legally structured collaboration between government and private parties in the field of construction in the broad sense” (Bregman, 1990). Steijn et al. (2011) describes the opportunity for less formal institutional arrangement of PPP; “Most partnerships are structured around organisational arrangements that are meant to simplify co-ordination and secure the shared risk and profits. These arrangements can be rather informal and can take the form of an informal project group, newly established consortiums or other hybrid organisational forms” (Steijn et al., 2011). PPP is not primarily focussed on the legal or contractual forms and arrangements. As Steijn et al. (2011) argue the aim is to establish a working process with a continuous exchange of interest and contribution, division of roles and responsibilities, as in a negotiation process with many small unwritten agreements and when necessary consolidation of arrangements possibly in a legal form.

Many definitions of PPP mainly focus on partnership between government and market oriented parties. Kouwenhoven (1991) defines characteristics of PPP, amongst other things, the interaction between governments and companies. The OECD (2014) defines PPP’s as collaboration based on long-term contracts in which government and private parties agree to share risk, while private parties invest funds and provides long term public services. This is a narrow definition which excludes a range of Public Private arrangements in which other parties are involved in the delivery of services. Nevertheless, there are scholars that explicitly include societal parties, for instance civil society, NGO’s, creative sector, social organisations, and community groups. The Dutch PPP Network defines PPP broader, as a term for various partnerships between public and private sector, NGO’s and the community. Parties for partnerships within climate adaptation can range from; public parties such as municipalities and waterboards, private market based parties, e.g. real estate developers, insurance companies, investment banks, societal organisations, e.g. civil society, environmental and nature preserving organisations, social organisations, social entrepreneurs, housing cooperation’s, community groups (Edelenbos and Klijn, 2006).

A classical approach of PPP is based on profit-sharing or ‘marketability’ of services in which financial and economic considerations predominate (Huxham and Vangen, 2005). In relation to climate adaptation, solutions such as a separate sewerage system and extended water system is not marketable as such, you can’t earn money on the system as it is. Bartley (1996) explains the infrastructure of a sewerage system is a public good which can be counted as a toll good, as it is excludable but non-rivalrous. Large scale investments are needed and there are high positive externalities in terms of health benefits and possible negative externalities such as pollution. The sewage system is therefore eligible for direct public provision. The most obvious PPP possible in the traditional sewage service delivery would be contracting out specific work (Bartley, 1996). In the case of climate adaptation service delivery aims at much wider goals than drainage of dirty water, and includes measures for infiltration and storage of rainwater in which implementation can be based on integral policy measures solutions. Although financial and economic considerations might not predominate partnerships for CA, it is certainly a factor that needs to be taken into account. Classical characteristics such as profit-sharing or ‘marketability’ of services can be used to explore opportunities for effectiveness and efficiency in CA service delivery.

Several authors point out that profit sharing in PPP can be defined more widely than solely financial profits, and include broad social benefits such as higher quality of service delivery for governmental parties while private actors have other profits such as quality of life or increased real estate value (Audit commission, 2003; Hodge and Greve, 2005; Steijn et al. 2011). In the case of climate adaptation, a

broad spectrum of societal added value, including social, physical and economic benefits and better service provision, are important considerations for PPP.

In conclusion, the definition of PPP employed in this research will be 1) based on collaboration between public, private, social entrepreneurs, societal actors, and community. The added value of collaboration is not mainly based on financial or economic considerations, but above 2) added value is based on integration of societal benefits and higher quality of service delivery. The aim is to, instead of emphasis on institutional form and contracts, 3) to establish a working process with a continuous exchange of interest and contribution, division of roles and responsibilities, as in a negotiation process with many small unwritten agreements (Steijn et al., 2011). 4) Actors are jointly involved on the basis of equivalence and collaboration continues throughout the whole process, 5) with the tendency to seek an expansion of scope to integrate different goals. In this approach of collaboration which constantly evolves towards partners and scope, elaborates on the concept of Collaborative Governance, and is therefore better defined as Public Private Collaboration (PPC).

PPC consists of sustainable collaboration with continuous exchange, between public, private, societal actors and community, which operate at the basis of equivalence, share costs, benefits and risk, from their own interests and perspectives, make decisions in public and societal policy issues and develop mutual policy measures, products or services.

2.1.2 What is successful implementation of climate adaptive policy?

2.1.2.1 Definition of successful implementation

Criteria for successful implementation

Adger et al. (2004) point out criteria for successful implementation of climate adaptation policy measures can be evaluated through generic principles of effectiveness, efficiency and legitimacy.

Effectivity

Effectiveness relates to the degree to which objectives, climate adaptation and other development goals are achieved and the extent to which expressed objectives are solved (Adger et al., 2004).

Efficiency

Efficiency is related to an optimal use of resources in terms of money, time, labor, knowledge that is needed to achieve objectives. Adger et al. (2014) outlines, adapting to climate change entails optimal balance in costs and benefits. Costs include, implementation costs, but also transaction costs and costs for unnecessary measures due to uncertainty in climate change scenario's (Ingham and Ulph, 2003). While benefits consist of reduced impacts such as avoided costs of flooding, but also enhanced opportunities.

Legitimacy

Adger et al., (2004) define legitimacy as "the extent to which decisions are acceptable to participants and nonparticipants that are affected by those decisions". Legitimacy can be related to legitimacy for actions or non- action that have intergenerational consequence and legitimacy in terms of public support for climate adaptation.

Intergeneration legitimacy: Legitimacy is a goal in its selves which aims at long term sustainability and demands fair representation of public interest which encompasses our relation to nature and future generations. This intergeneration legitimacy is an integral part of the UN Sustainable Urban Development Goals 2030 (UN, 2015). Adger et al. (2004) stresses "it is important to note that present-day adaptations to the risks from climate change are imposed on present-day society as a result of previous actions in perturbing the climate system". The presentation of a new report on climate change by the Intergovernmental Panel on Climate Change (IPCC, 2014), the most famous evidence based authority on climate change appoints importunately on the challenge facing humankind in relation to climate change (Page, 2006). Page (2006) highlights the ethical dimensions of climate change for future generations and interconnects analytical philosophy with climate change science to provide arguments that stress the need for measures to reduce climate change and adapt to climate impact.

Public support: Emerson et al. (2011) describe that democracy promises citizens opportunities to influence decision-making, by a governance systems with greater levels of transparency, accountability and legitimacy (Nabatchi 2010) which is a basic condition for collaborative governance. Brown et al. (2002) underscores the importance of social acceptability for implementation of adaptation actions. Democracy theorists are critical on the current state of democracy and admonish on the decline of

democratic influence, voting behaviour, and social capital (Nabatchi, 2010; Van Reybrouck, 2013). Van Reybrouck (2013) reasoned this decline influences the rise of populism and democracy requires more direct democratic influence to increase public support. In order to strive for a more direct democracy, the Deliberative Democracy Movement promotes new forms of public involvement and civic engagement (Nabatchi, 2010). The Centraal Cultureel Planbureau (2014) stress that collaborative governance is a form of direct democracy in which private, social parties and community as a whole is empowered to influence governmental policy. This direct influence of the community on decision-making is an addition to representative democracy which can increase political support and legitimacy for public policy for CA.

Content outcomes and process outcomes

Often, the appreciation of success focusses on the content outcomes. This would be legitimate if the implementation of CA would be a one-time effort, nevertheless it is clear that the implementation of CA entails a durable process with a recurrent collaborative approach, in which process outcomes certainly play a part. Klijn et al. (2010) distinct content outcomes and process outcomes related to successful performance of governance networks. To give an image, content outcomes Klijn et al., (2010) derived from literature on network governance are; the level of innovation and policy goal integration, apparent impact of stakeholders, problem solving effectivity and future robustness of the solutions and optimal balance in cost-benefits. The process outcomes that are at least as important in relation to repeated performance of networks needed in up-scaling implementation encompass; satisfaction related to involvement of stakeholders, trust levels and conflict resolution, productive use of different perspectives, and support for the results.

Performance of governance networks

In literature on network governance the success of collaborative outcome is related to the concept of the performance of governance networks, defined by Provan and Kenis (2007). Provan and Kenis (2007) emphasize that goal-directed networks, set up with a specific purpose such as climate adaptation, evolve largely through conscious efforts to build coordination. These networks have become extremely important for collective action in the approach of public and societal problems (Provan and Kenis, 2007).

Provan and Kenis (2007) examined the performance of governance networks and the impact of goal-directed network governance forms on network effectiveness. The writers argue that goal-directed network governance is critical for effectiveness and necessary to ensure that participants engage, conflicts are addressed, and resources are utilized efficiently and effectively in collective collaboration (Provan and Kenis, 2007). This goal-directed governance has common ground with literature on strategic alliances in such way that parties with a collective long-term strategic goal unite within a collaborative network and contribute to this goal.

Provan and Kenis (2007) contributed to knowledge of the functioning of networks and the theory on success of PPC, in the sense that they examined the impact of the form of network governance on network effectiveness. The writers distinct three different network governance forms;

a. *Participant governed networks*; this form is most applied and entails the network members themselves govern the network.
b. *Lead organisation governed networks*; comprises that one participating member takes the lead in coordination of the main lines and key decisions.
c. *Network Administrative Organizations (NAO);* is a separated organisation specially designated to govern the network and activities in relation to a certain goal.

Choice of form is related to different key factors, that Provan and Kenis (2007) distinct as predictors, such as trust, network size, goal consensus and need for governance competences, for effective network performance. It is argued that brokered forms of network governance (Lead organisation and NOA) perform better than shared-governance networks, when trust is limited, network size is larger, goal consensus diminishes, and the need for governance competencies increases (Provan and Kenis, 2007).

Besides the effectiveness related to the organisational form of governance, Provan and Kenis (2007) argue that despondence is needed to three tensions in network governance of which the accent of tension differs by form, namely;

Efficiency versus Inclusiveness; tension between administrative efficiency and inclusive decision making. Provan and Kenis (2007) specify; “In shared-governance networks, the tension will favour

inclusion; in lead organization–governed networks, the tension will favour efficiency; and in NAO-governed networks, the tension will be more balanced but favour efficiency".

Internal versus external legitimacy; tension between legitimacy within the own internal organisation and external legitimacy meaning legitimacy within other organisations and the collaborative network. Provan and Kenis (2007) specify; "In shared-governance networks, the tension will favour internal legitimacy; in lead organization–governed networks, the tension will favour external legitimacy; and in NAO-governed networks, both sides of the tension will be addressed but in a sequential fashion".

Flexibility versus stability; tension between the ability to anticipate in a flexible way and the need for a stable network. Provan and Kenis (2007) specify; "In shared-governance networks, the tension will favour flexibility; in NAO and lead organization governed networks, the tension will favour stability".

Eventually the writers appoint the possibility of evolution from one network form to another. Evolution from a shared governance to a brokered form is most obvious. Once a NOA is chosen, evolution from an NAO to another form is unlikely (Provan and Kenis, 2007). The possibility of 'scaling up' in governance model, and the difficulties with evolution in the reversed direction has implications for the choice of models and may plea for a cautious choice for the ultimate NOA.

The main conclusion is that selection of governance form and management of tensions have important influence on performance of networks and effectiveness of goal directed governance which applies to governance of CA (Provan and Kenis, 2007).

2.1.2.2 Successful implementation; from experiments towards up-scaling

Transition from experiments towards up-scaling

The transition towards sustainability and adaptation for climate change can be viewed through the lens of the Multi-Level Perspective on transition governance. Rotmans et al., (2001) formulate transition as "a long term continuous process of societal change during which the structure of society fundamentally changes". A sustainability transition is defined as a "radical transformation towards a sustainable society, as a response to a number of persistent problems confronting contemporary modern societies" (Grin et al., 2010). The MLP was originally developed by Rip and Kemp (1998) and theoretically elaborated by Geels (2011) and others (Rotmans et al., 2001, Geels, 2005, Smith et al., 2005, Grin et al., 2010). The MLP identifies three transition levels of transit: niches, the regime of stakeholders that protects their interest through preserving status quo, and the landscape, comprising of contextual drivers and barriers for transition (Geels and Schot, 2007). Radical changes in history started with niche situations within innovative networks which include organisational, technology and market capacity which are not yet a threat for the regime. This niche practise is related to the current experimental phase in climate adaptation, which supports changes in the regime necessary for up-scaling CA.

Studies suggest experimental situations give room to transition, as they are small enough to be perceived as a serious threat, which allows room for experiments without counterforce of this regime (Smith, 2007). Due to the uncertainty of climate change, several authors stress that adaptive spatial planning is a transition in which experiments are in evident and important as a testing arena, to learn what is effective and what is not (van Buuren et al., 2013). Bulkeley and Broto (2012) argue that in governing CA, especially takes place through experiments which is preferred over policies and plans. Stimulating experiment in this field is one thing, but ensuring it to evolve towards up-scaling needs reflection and learning. As Frantzeskaki and Kabisch (2016) appoint the need for improved evaluation of experiments in order to be used as evidence grounds for adapting planning strategies for up-scaling CA.

In order to do justice to the large extent of the problem, the next step within the implementation of climate adaptive measures, through learning from experiments, is up-scaling and mainstreaming. Emerson et al. (2011) propose the potential for alteration within the collaborative governance regime. The output of experiments within collaborative governance can alternate the collaborative governance regime in order to mainstream and up-scaling the implementation.

Edelenbos et al. (2015) views water governance systems as social ecological systems and describe different conditions for vitality within these systems. Vitality is related to success with importance of both exploration (learning, reflexivity), which can be related to an experimental approach and consolidation (productivity, exploitation), which can be related to mainstreaming. Edelenbos et al. (2015) appoint that exclusive focus on exploration, wastes resources while results are not explicit and effective, while single focus on exploitation lacks an attentive approach (Edelenbos et al., 2015). Elaborating on this,

successful implementation includes both exploration through experiments and consolidation through up-scaling and mainstreaming.

Up-scaling strategies: replication and mainstreaming

One approach to scale up implementation as to Smit and Brouwer (2014) is replication of successful projects. If the implementation of a measure is optimised, a straight forward approach to scale up, is to repeat the implementation of this measure recurrently. As Klijn and Teisman (2010) describe, efficiency can be attained through a principle of a one-time investment that provides recurrent output.

Integration of CA within sectoral policy domains is another approach to scale up implementation which is referred to as mainstreaming (Bouwer and Aerts 2006; Huq et al. 2003; Uittenbroek, 2014). Several researchers exemplify planning solutions in which climate change risks is addressed through mainstreamed CA such as green infrastructure, installing storage capacity in real estate, lowering the building density and considering other materials (Runhaar et al. 2012; Tennekes et al. 2013; Kleerekoper et al. 2012). Research has stressed mainstreaming adds to a successful implementation (Smit and Wandel, 2006; Klein et al., 2007; Uittenbroek, 2014). As Uittenbroek et al. (2012) explains, empirical evidence shows that actors prefer integral solutions for CA with benefits for policy domains such as public space, water management and public health. Besides empirical evidence academic research shows benefits of a mainstreaming approach. Mainstreaming results in broader public support and legitimized solutions (Pelling, 2008). Klein et al. (2007) argue that mainstreaming stimulates efficient and effective use of financial and human resources. This is endorsed by Uittenbroek et al. (2012) who stress a combination of objectives in mainstreaming, establishes sustainable investments through more efficient use of human and financial resources. Schipper and Pelling (2006) argue that mainstreaming may increase awareness of climate change through integration in policy and plans.

Difference between a dedicated and mainstreaming approach

Uittenbroek (2014) distinguishes the difference between a dedicated climate adaptive policy approach, which is related to up-scaling through replication, and the mainstreaming approach, which is related to integration of climate adaptation within other policy domains.

The dedicated approach, which Uittenbroek et al. (2014) refer to is based on direct political engagement. This approach implies the political agenda is set, dedicated resources and organisational capacity is directed for development of policy, networks and physical measures and there are clear goals and aims formulated, which can result in prosperous execution due to political pression. On the other hand, Uittenbroek et al. (2014) appoints, a directed approach and political commitment is not the answer to barriers in climate adaptation such as prevailing short-term objectives, uncertainty and the long-term perspective of climate change, short lifespan of political terms, and lack of resource (Biesbroek, 2014). The necessity of political commitment to apply CA shows only in some cities (Bulkeley and Betsill, 2013). Edelenbos and Klijn (2005), appoint that political involvement by the council is not a decisive factor, and can in some circumstances even be an obstacle.

The mainstreaming approach is based on indirect political commitment. This alternative is focused on response to CA through integration in other policy domains. Integration in other policy domains is a low-threshold approach 'piggybacking' on engagement which is yet acquired in other policy domains (Kern and Alber, 2008; Bulkeley et al. 2009; Uittenbroek et al. 2013). Spatial planning, water management and public health are specific policy domains that are an opportunity for mainstreaming CA, through finding policy synergies and combining resources (Uittenbroek et al., 2014). Uittenbroek (2014) appoints, mainstreaming CA leads to more effective and efficient implementation of public goals. A Risk of the mainstreaming approach on the other hand is the lack of legal obligation to mainstream climate adaptation, which makes the basis for mainstreaming largely voluntary and dependent on commitment of other municipal departments towards CA (Uittenbroek, 2014).

2.1.3 Which factors influence implementation?

The framework of collaborative governance (Emerson et al., 2011; Ansell and Gash, 2007) is used as a lens and guidance to structure the theoretical factors that in the context of Public Private Collaboration influence implementation of climate adaptive measurements.

Collaborative governance is a concept from public administrative literature in which Emerson et al. (2011) elaborated upon the theory of Ansell and Gash (2007) and included related concepts such as stakeholder management, conflict resolution, and environmental management.

The framework of Emerson et al. (2011) is more comprehensive, in relation to the model of Ansell and Gash (2007) in the sense that;

1. The framework integrates knowledge from a broad range of scholars such as stakeholder management, environmental governance, public administration and conflict management. Therefore, the definition of collaborative governance is broader than what is commonly seen in the literature which makes the framework useful for a broad context.
2. The framework integrates a spectrum of elements that influence collaborative governance and includes the context, drivers, and conditions for collaboration, which enables to follow-up on either a specific element of collaborative governance or overall use of the framework.
3. Finally, the framework enables analysis of relations within collaborative governance. Together, these attributes can allow for the.

The comprehensive framework of Emerson et al. (2011) allows broad application of the integrative framework and is not prejudiced to an initiating role in PPC as in the framework of Ansell and Gash (2007). Therefore, this research builds on the framework of Emerson et al. (2011) which is used as a guiding structure for the factors that influence PPC (Public Private Collaboration) in CA (Climate Adaptive) policy implementation.

As the objective of this research is not to test the framework, but to explain why factors, characteristics and interrelations of these factors influence Public Private Collaboration in successful implementation, freedom is taken to expand on the different theoretical factors of Emerson et. al (2011) and include theoretical factors from other scholars. Finally, the opportunity is offered for addition of factors that come forth from the empirical case study in a later stage of the research.

2.1.3.1 Overview of factors influencing implementation

This is a brief overview of the different factors that influence public private collaboration in the implementation of climate adaptive policy measures. These factors will be further elaborated on in the next paragraphs.

Driving factors

I *Interdependence*

Factors related to interaction

a. Principled engagement

II *Stakeholders*
III *Policy and planning*
IV *Implementation opportunities*

b. **Shared motivation**

V *Trust*
VI *Leadership*

c. Capacity for joint action

VII *Management*
VIII *Organisation*
VIII *Instruments*

2.1.3.2 Factors from the system context

Emerson et al., (2011) indicate that collaborative governance is influenced by context factors, which is somewhere related to the regime in the MLP on transition (Geels and Schot, 2007). The political, legal, socio-economic and environmental context influences the challenges, possibilities and constraints in PPC (Emerson et al., 2011).

Government resigned in recent years on many grounds and responsibilities placed on citizens, civil society and especially on market players. This attitude, influenced by neo-liberalism and the concept of New Public Management was a reaction to the failure of the 'social welfare state', a belief that was dominant in the sixties and seventies of the last century (Montfort et al., 2012). After a period of neo liberal influence of which, concession based public private partnerships and privatisation of former public services was one of the consequences, a somewhere softer approach of this shift in responsibility has resulted in a so-called participation society. Besides this paradigm of the participation society, the

economic context and recovery of the real estate development market and investment climate influences the opportunities for PPC within the implementation of climate adaptive policy measures.

2.1.3.3 Driving factors

Emerging from this system context are driving factors which energise and direct the initial PPC (Emerson et al., 2011). Ansell and Gash (2007) image that drivers can be distinguished as circumstances present at the beginning of PPC which can either stimulate or oppose collaboration among stakeholders.

I Factor of Interdependence

An important factor in Public Private Collaboration is interdependence. Interdependence, means independent stakeholders are unable to achieve something solely. Collaboration between different stakeholders is generally initiated to push policy measures that ‘‘could not have been attained by any of the organizations acting alone’’ (Huxham 2003, 403). This is a widespread driver for PPC (Gray 1989; Thomson and Perry 2006). Emerson et al. (2011) appoint that uncertainty, which is an important condition in CA, can cause interdependence in the endeavour to share risk. As Bentrup (2001) appoints: “If parties or organizations had an overview and perfect information about a problem and its solution, they would be able to act independently” (Bentrup 2001).

Stakeholder interdependence

Stakeholder interdependence is an important driver for collaboration. One organisation or actor might have inadequate or insufficient resources which can include money, knowledge, time, permissions, or licences. While other actors can contribute resources, stakeholders rather choose for interdependence, which enables the ability to make decisions and perform, rather than the alternative in which parties are unable to achieve their goals (Koppenjan and Klijn, 2004). The push to collaborate will increase if stakeholders perceive to be interdependent of other stakeholders. Klijn and Koppenjan (2012) describe that stakeholder interdependence contributes to sustainable social relations and enables collaborative networks to establish, emerge, continue to exist. Combining the competences of different stakeholders through assembling of resource can improve both the quality and the effectiveness of the final outcome (Edelenbos and Teisman, 2008). Uittenbroek (2014) accentuates scarcity of land and surface space is an important driving condition for collaboration between private property owners and public actors in the implementation of CA as land and surface space can be considered as an important resource.

Interdependence through policy integration

The mainstreaming approach supports interdependence between different policy domains. This applies to CA response which is organised through policy links and resource combinations that cause synergy (Uittenbroek, 2014). The concept of Water Sensitive Cities as described by Wong and Brown (2009) strives for policy integration to deal with water within the urban context. Driessen et al. (2011) includes competition and prioritization between policy domains as a reason for integration of climate adaptive policy, as the urban agenda is packed and climate adaptation competes with other, urgent social goals, and therefore urban planners, often integrate climate adaptation within traditional policy objectives such as employment, urban feel, and upgrading of the social climate (Driessen et al., 2011). Uittenbroek et al., (2013) emphasises that policy interdependence works both ways as policy domains, such as water management, public infrastructure, transportation, environment, and public health depend on the integration of CA as these domains will also experience the effect of climate change and need to anticipate. For these domains, policy integration of CA can be a well-considered decision that supports sustainability of their policy (Uittenbroek et al. 2013).

Life cycle interdependence

Teisman et al. (2013) point out the needs to give account and recognize the total life cycle within Public Private Collaborative decision making. The network related to this life cycle has become, as Teisman et al., (2013) state, the organizing principle. Decisions made in different phases of a total life are interdependent. Life Cycle Costing and chain management seek to optimise life time cost of services and products through considering all significant costs involved in that life time (Woodward, 1997). Often decision making and balancing costs and benefits is done within one phase of the life cycle. Looking at the life cycle as a whole, and fases of planning, construction, maintenance, operation and demolition, it shows decisions can be balanced, while short and long-term goals and benefits are in line. Life cycle interdependence is an important driver to collaborate with different stakeholders including different municipal departments. As Plenty et al. (1999) notify if future decision-making is confronted with heavy financial consequences from earlier lack of attention during the stage of development, this is a undesirable situation that must be avoided.

2.1.3.4 Factors related to interaction

Interaction is the main subject of private public collaboration. Emerson et al. (2011) focus on three components in the collaboration process:

a) principled engagement
b) shared motivation
c) capacity for joint action

Principled engagement

Principled engagement, encompasses actors with different backgrounds, values and goals engage to collaborate and cross boundaries, find goal consensus and synergy, to solve problems and add value (Emerson et al., 2011; Meerkerk and Edelenbos, 2014). This includes, stakeholders define the problem and its scope, the relevant actors, and specify the activities and aims (Emerson et al., 2011).

II Factor of Stakeholders

The first factor within Public Private Collaboration, which is related to principled engagement within interaction is to get the right people to the table which is generally agreed on as an important factor within Public Private Collaboration (Ansell and Gash, 2009; Emerson et. al, 2011). Collaborative governance requires direct inclusion of actors in the decision-making process (Ansell and Gash, 2007).

Range of stakeholders

Insight is needed towards the different stakeholders, that possibly have an interest in integral measures or parts of it and stakeholders of which interest is directly related to climate adaptation, to be able to join resources such as finance, knowledge, time or land. Klijn and Teisman (2003) distinguish key players and peripheral stakeholders. Key players are directly involved in the process while peripheral actors although they do have an interest and role, they are not directly involved (Klijn and Teisman, 2003). The question is then justified, as Ansell and Gash (2007 appoint directly involved in the decision-making process is a requirement, if and how these peripheral actors are actually involved in decision-making? Rutten et al. (2009) distinguish different stakeholders in urban water management and climate adaptation including municipality, waterboards, social interest groups, real estate developers, real estate investment companies and mortgage banks, social housing cooperation's, NGO's and social entrepreneurs, citizens, knowledge institutes and consultants, and sectoral or local platforms.

Association with stakeholder's interest

Given the largely voluntary nature of collaboration, it is important to associate with stakeholders' reasons and interest to engage in PPC and influence the factors that are related (Ansell and Gash, 2007). Stakeholders wanting to collaborate can be by different sort of reason like Hoffman (2011) exemplifies reasons for PPC such as profit considerations, sense of urgency, a willingness to conduct, a desire for certain resource, or from ideology (Bulkeley and Broto, 2012). Jeffrey and Seaton (2003) appoint that "It is not possible to understand the response and behaviour of people to an artefact, situation of policy instrument, without understanding their perceptions, attitudes and the agendas for change that are relevant for them" (Jeffrey and Seaton, 2003).

Table 4: Model of receptivity

Phaze	Definition
Awareness	Knowledge of a problem or need; Knowledge of an innovation
Association	Recognition of the beneft of this knowledge in association with needs
Acquisition	Capacity to acquire new skills, systems and process and learn behaviours in order to apply the innovation
Application	Motivation and incentives to practically apply and implement the new approach

Source: Jeffrey and Seaton (2003)

Jeffrey and Seaton's (2003) model of receptivity is based on the idea that in transition has most success if policy measures are designed from the perspective of actors involved. Therefore, it is an important condition to understand different levels and degree of 'receptivity' that current actors perceive.

Several researchers stress that if stakeholders feel the need for problems, they are more inclined to collaborate finding solutions for these problems (Ostrom, 1998; Jeffrey and Seaton, 2003; Edelenbos, et al, 2015). Sense of urgency among stakeholders is considered as an important condition for successful PPC. Edelenbos et al. (2015) stress that both top down public urgency and bottom-up societal urgency is needed. Combined interests of the participants, fired by sense of urgency, can enable collaborative actions (Emerson et al., 2011).

III Factor of Policy and planning

Spatial policy and planning has an important role in securing robust climate proof urban developments through integration of CA measures (Van Buuren et al., 2013). Pötz (2016) stresses that if the water system is taken into account in the urban planning at an early stage, much is possible without too many radical extra measures. In order to succeed, within the consensus orientated approach of Public Private Collaboration, parties must be able to agree on the content of policy or plans (Edelenbos and Teisman, 2008). Provan and Kenis (2007) argue that goal consensus, in which planning can play a vital role, allows organizational participants to perform more effectively.

CA policy

Climate adaptive policy can be described as an overall framework for decision making which includes goals, principles and approaches for action, plan-making together with mechanisms for implementation and governing (Davidson, 2014). Climate adaptive policy measures are often intermediate products on the basis of which many projects can be implemented. This CA policy guidance for execution projects may include, securing mainstreaming, increase receptivity, establishing laws or regulations, aggregate public and private resources, deploying human capital, monitoring, managing the process and enforcing compliance (Emerson et al., 2011). Successful implementation in this sense is not only limited to the physical result on the ground, but it includes intermediate spatial, environmental, economic, social or political measures, which Ansell and Gash (2007) endorse as important to recognise.

Clarity of the climate adaptive goals

Implementation of CA requires water technical knowledge, integrated in the planning and governance process, to be able to cope with future challenges (Uittenbroek, 2014). Therefore, information about the water technical aims and goals is needed to be able to implement CA in the planning process. Van Buuren et al. (2013) mention the importance of robust CA aims and norms and legal security, to guarantee the sustainability of economic investments.

Local public water management actors are the main and often only party with exclusive knowledge of flooding risks and related goals, aims, and norms and goals in relation to climate adaptation. Most private parties and other municipal departments lack this knowledge. This can be viewed upon as a resource needed for the collaborative process. As van Kouwenhoven (1991) describes in collaboration it is important to have a clear idea about the different interests of all partners, which includes the water technical interest.

Planning ecosystem services

One of the domains to integrate CA is the outdoor space. The framework of Ecosystem Governance which explains how public space can comprise a broad spectrum of ecosystem services is therefore relevant (Haase et al., 2014). These services can be divided into four categories: Provisioning services, Regulating services, Habitat or Supporting services, and Cultural services (TEEB, 2011). Integrating climate adaptation including water storage and infiltration capacity within public space is a regulating ecosystem service which can coexist with many different other services such as food production, recreation, and ecology diversification. Frantzeskaki and Kabisch (2016) concludes that Rotterdam's public space policy, integrates provisioning and regulating ecosystem services among which is CA scarcely, while main emphasis is explicitly on cultural ecosystem services such as attractiveness of livelihood, recreation and sports. As Frantzeskaki and Tillie (2014) mention there is a challenge to improve the opportunities for integration of new urban goals such as CA to be able to integrate the regulative ecosystem service within the outdoor space.
Pötz (2016) describes a range of specific CA measures that contribute to the regulative ecosystem service of CA;

- buffering (e.g. surface water, green or water roofs, wadi's, wetlands, rain barrels, rainwater storage below Buildings, flexible water levels, realising extra storage height)
- infiltration (greening and reducing pavement, unfilterable paving materials, infiltration boxes, extra surface, open gutters)

- reuse of rainwater (grey water systems, watering gardens, resource for beer)
- flood risk management (information, raised construction, threshold or raised floor level, water resistant materials).

IV Factor of Implementation opportunities

In the mainstreaming approach realignment of different performance processes is essential to increase opportunities for mainstreaming and PPC in order to eventually execute integral projects which include CA.

It is efficient to take adaptation measures at a time when other changes in the policy and planning are discussed. This offers the possibility to implement CA measures, integrated within existing processes (Heurkens, 2012). The question is whether adaptation measures can be connected with interventions that are done in the spatial planning for other reasons, allowing economies of scale and no-regret solutions. Another benefit is that within an integrated project costs and benefits of various measures can easily be balanced with each other (Driessen et al., 2011). The integrative development scholar attempts to combine a number of different elements into a more holistic management approach and stresses the importance of process links for implementation opportunities (Heurkens, 2012).

Adger et al. (2014) stress that interactive processes and links in between are more determinant for CA action or the costs of inaction than the actual physical risk of climate change. Understanding adaptation opportunities therefore requires consideration on the right scale and strategic level within different institutions, to establish implementation opportunities (Adger et al., 2014). This requires tuning of these implementation opportunities and processes within and in between institutions.

Frantzeskaki and Tillie (2014) explored whether Rotterdam features appropriate governance capacity to integrate CA. Their conclusion is that despite the existing capacity to steer these processes, a number of underlying challenges exist including the need for coordination between departments and partners that are related to linking processes for CA policy implementation.

Shared motivation

Emerson et al. (2011) describe in their model, that shared motivation encompasses the relational side of the PPC story (Emerson et al., 2011). Berkes and Folke (1998) appoint, the relational capacity is an important condition to cope with climate change. Edelenbos et al. (2015) reason that “a social system of actors with different backgrounds and from different scales and levels with lively, energetic and productive relationships” can contribute to shared motivation in the approach of complex water governance issues.

V Trust

Trust can be defined as, confidence in the reliability of a persons or organisations, in which actors keep in mind the intentions of the other parties, reject opportunistic behaviour and behave in mutual approved manners, which enables actors to take risk in PPC (Edelenbos et al., 2015). In literature on CA governance, trust is a common theme to establish and enhance PPC (Adger, et al., 2005; Folke et al., 2005; Edelenbos et al, 2015). Klijn and Koppenjan (2012) stress that trust is an important asset in PPC, especially when the relation will be long term or recurrent.

Trust is important for al models of PPC, but especially the alliance model and the model of bottum-up self-organisation, are dependent on trust. In PPC’s based on the consession model, prolonged processes of negotiation attempt to tighten agreements in contracts in an early stage of the collaborative process which implies that trust has a less important role (Klijn and Teisman, 2003; Edelenbos and Teisman, 2008; Montfort et al. 2012; Sociaal Cultureel Planbureau, 2014).

Interdependence and negotiation appears and important part of PPC, but building trust within the collaborative network is just as important (Ansell and Gash, 2007. The existence of trust in the context of PPC, reduces uncertainties, stimulates knowledge sharing and mutual innovation and it is an alternative for complex contracts (Klijn and Koppenjan, 2012). In collaboration, opportunistic behaviour always lurks. Opportunistic behaviour needs to be reduced to a minimum through active emphasis on trust building, which is a requirement for a basis of trust in collaborative social systems (Edelenbos, 2015).

Ansell and Gash (2007) point out that within PPC, attention must be payed to trust building with attention for equity and power relations, as actors often start collaboration in a sceptical state of mind. While successful collaboration in the past has positive influence on trust and social capital, contra wise can a history of conflict and opportunistic behaviour degrade levels of trust and further increase dishonest and

manipulative behaviour (Ansell and Gash, 2007). Although public administration shows attention for PPC, a particular barrier is insensibility of governmental institutes for reciprocity and equity necessary for collaboration, particularly at the headquarters level (Yaffee and Wondolleck 2003).

Another point of attention which Klijn and Teisman (2003) underscore is that governments need adaptive competences in PPC. The only way, to deal with complexity in PPC, is giving mandate within the collaborative organization (Klijn and Teisman, 2003). Successful collaboration in their point of view is not dependent on one person or organization within the collaborative organization, but depends on the quality of the chain and the networks to which it belongs. As Teisman (2016) outlines it is a great challenge to make the connection within a collaborative network and at the same time be accountable within the home organisation.

Provan and Kenis (2007) argue that the governance form of Participants-Governed Networks is very likely to fall apart when low-density of trust is prevalent, while brokered governance forms, either through a lead organization or a network administrative organisation, are better capable to deal with distrust and put effort in establishing a basis of trust.

VI Leadership

Ansell and Gash (2007) emphasize that leadership, as in assembling a collaborative network and guidance through the collaborative process, is a critical aspect in PPC. Leadership is a broad concept in literature, which includes different perspectives such as transformational leadership, transactional leadership, facilitating leadership, and connective leadership amongst others (Northouse, 2016). Within complex systems such as the context of CA, transition cannot be accounted to one specific leader as a variety of leadership actions on different levels and in different networks contribute to successful change (Nooteboom and Termeer, 2013). In the endeavour of CA, connective leadership shows exclusively important, as the practise of CA implementation shows fragmented whereupon the capacity to make connections is precisely important (Edelenbos et al., 2013). Connective leadership is understood as "the capability to establish direction, alignment, and commitment across boundaries in service of a higher vision or goal" (Ernst and Yip, 2009). Edelenbos et al. (2013) explicates the need for connective leadership as "water management shows a lack of cooperation, joint responsibility and integration, while the capacity to connect to other domains, levels, scales, organizations and actors is of utmost importance". Connective leadership is of interest for establish direction, alignment and commitment in mainstreaming and PPC, for integration of CA within other domains within different levels and scales, and for connection of different public, private and social actors and organisations (Ernst and Yip, 2009; Edelenbos et al., 2013). Leadership is specifically understood as the importance of connective leadership within this research context.

Public leadership

What role or task does the government have in adaptation to climate change, and how far does this responsibility reach? The answer to this question within academic literature ranges from a modest governmental role towards a comprehensive indispensable role. Bergsma et al. (2009) describe in their report 'Case study on individual responsibility in adaptive capacity' that in practise the municipality takes all responsibility for CA and needs to reconsider this. Van Buuren et al. (2013) stress that all individual actors in society are responsibility for CA and government needs to support this through stimulating the desired behaviour, by setting boundaries. This role can involve applying rule of law, good governance, and protection of individuals rights (van Buuren et al., 2013). Monfort et al. (2012) stress that government should fill in a coordinating role, for the reason that the enormous repercussions it can have on society, and the new opportunities for social and economic evolution, which is enough reason not to leave the responsibility of action with societal parties, but for government to adopt an active role and take collective action (Montfort et al., 2012; Driessen et al., 2011; Uittenbroek, 2014). Termeer et al. (2012) emphasizes that public leadership is a prerequisite for the successful use and possibly developing steering instruments for the implementation of physical spatial solutions for climate adaptation. Public leaders are needed for creating, seeing and seizing opportunities, breaking and rearranging routines, integrating changes and making connections (Termeer et al., 2012). As Driessen and van Rijswick (2011) stress, the shift towards more polycentric forms of governance does not necessarily imply less involvement of the government.

Meijerink and Stiller (2013) describe several challenges in CA leadership;

1. "influence the policy process as to get adaptation policies accepted and implemented;
2. enhance connectivity across different policy-making levels, sectors and actors;
3. increase the adaptive capacity of governance networks concerned with climate adaptation;

4. enhance the capacity of society in response to feedback from the natural system in particular, and to anticipate long term impacts of climate change" (Meijerink and Stiller, 2013)

If the government performs a leading role depends partly on the extend of risk transfer. In cases of complete risk transfer to private parties, the government acts as a facilitator, through zoning schemes, granting exploitation rights, or setting rules and regulation (Edelenbos and Teisman, 2008). If there is a situation of shared risk, or the main part of risk is with the government, this will have implications for the extent of public leadership. Van Buuren et al. (2013) appoint that government should be clear about the level of protection promised to society, because society needs legal certainty to know from which point onwards they have to take own responsibility.

Capacity for joint action

Saint-Onge and Armstrong (2004) describe capacity for joint action comprises of conditions that creates potential to allow collaborative actors to perform effectively. Capacity is a basic condition to improve policy outcomes and empower stakeholders in collaborative action (Leach, 2006).

VII Management

The implementation of CA policy measures can only come into being through the support of management, in the sense of managing projects and processes. In the operation of urban development or maintenance projects, management performance can establish integration of CA goals and relevant actors within these projects. Management in this research context is understood as process coordination on project level to eventually execute CA policy measures or developments which include CA. Literature on PPC emphasizes the importance of management approaches and strategies for PPC (Stijn et al., 2011). Klijn et al. (2010) describe that various management strategies have been identified in the literature. In general, most of the strategies of network management that have been mentioned can be categorized either as strategies of process management or of institutional design (Gage and Mandell 1990; Koppenjan and Klijn, 2004).

In PPC, Edelenbos and Klijn (2009) distinguish two management perspectives and their characteristics; projectmanagement and procesmanagement (Edelenbos, 1999; de Bruijn et al, 2002). The writers describe which perspectives relate are most effective in different PPC models (Edelenbos and Klijn, 2009). Edelenbos and Teisman (2008) found the concession model can be identified with project management, whereas in the alliance model the strategy of process management is stressed to be most effective. The table below summarizes characteristics of the two management perspectives (de Bruijn et al, 2002; Edelenbos, 1999).

Table 5: Perspectives of project management and process management

Dimension	Project management	Process management
Focus	Substance of the project is leading. A thoroughgoing analysis of the issue. Focuses on a sound, well substantiated project proposal.	Process is leading. Focuses on the most important parties (their issues. Focuses on a sound, well- interests and views) and how to bring and keep them together.
Core element	A thorough solution for the design problems which makes the way of doing things obsolete.	A description of the process, which is intended to lead to a solution of the problems.
Generate support	Through the content of the initiative: it should be so good and attractive that it persuades more everyone, even the criticizers.	Through the process: the relevant parties are allowed to influence the project, which makes it attractive for them.
Dealing with dynamics	Through decisiveness and averting new possibilities: rapid and clear decision making; changing circum- stances have no impact on this.	Through keeping options open and postponing selection and decisions: the initiative must remain attractive for the actors involved.
Communication	Consists of explaining the plan to the actors and persuading them of its merits. This follows decision making.	A process of discussion and negotiation. Decision making is the product of this.
Main problem	Result is not sufficiently accepted by the involved actors.	Creating acceptance via process and process rules takes time.

Source: de Bruijn et al, 2002; Edelenbos, 1999

VIII Organisation

Literature emphasizes the need for certain formalization in an institutional embedding, to enhance and consolidate interaction and collaboration (Hodge and Greve, 2005; Edelenbos et al., 2013). Successful implementation of CA through mainstreaming and PPC is dependent on a clear organisational approach of the integration of policy domains (mainstreaming) and collaborative networks (PPC). Alteration from 'government' to 'governance', includes a different organisation. From top-down, well-institutionalised dominated organisation dominated by the government, to organisation based on horizontal and polycentric governance forms, in which a diversity of stakeholders collaborate. The latter organisation often takes place within mixed institutional contexts that determine decision-making (Jordan et al. 2005; Rhodes 2007; Uittenbroek, 2014). While CA is not implemented from within a totally new organisation or ideal world, but based on, mainstreaming within and collaboration between, existing organisations, these existing organisations are a starting point for these new ways of organisation.

Organisation of network and policy integration

Steijn et al. (2011) investigated that organisational form is very dominant in a classical PPC, especially concession model PPC's. Nevertheless, the researchers conclude, that organisational strategies; co-ordination of activities within the internal organisations network with the collaborative network, are of much greater influence than organisation form and practisers of Public Private Collaboration should pay greater attention to this factor (Steijn et al., 2011). Several researchers appoint that, however there is a need for certain institutional embedding, the main emphasis should not be on the institutional form of PPC projects, but on alternative strategies to organise exploration of policy integration and connection of collaborative actor networks, which has similarities with the description of 'Exploring content' and 'Connecting' in table 5. (Klijn et al., 2010; Edelenbos et al., 2015)

Table 6: Types of management and organisation strategies

Types of strategies	Process agreements (organisational form)	Exploring content	Arranging (organisational form)	Connecting
Main strategies mentioned in the literature	Rules for entrance into or exit from the process, conflict regulating rules, rules that specify the interests of actors or veto possibilities, rules that inform actors about the availability of information about decision-making moments, etc.	Searching for goal congruency, creating variation in solutions, influencing (and explicating) perceptions, managing and collecting information and research, creating variation through creative competition	Creating new ad hoc organizational arrangements (boards, project organizations, etc.)	Selective (de)activation of actors, resource mobilizing, initiating new series of interactions, coalition building, mediation, appointment of process managers, removing obstacles to co-operation, creating incentives for co-operation

Source: Klijn et al. (2010)

Edelenbos et al. (2015) appoint, that informal organisational steering through network meetings and alliances have a more flexible basis, in comparison with formal forms such as organisational integrative bodies or steering committees and project boards on the level of projects (Steijn, et al., 2011). This informal organisation allows actors to get some distance from their fixed roles and collaborate in a liberal mind, which stimulates exchange of knowledge, insights and resources and exploration of shared interest and collaborative opportunities (Edelenbos et al., 2013).

Boundary spanning can be an alternative organisational approach, to establish integration of collaborative networks and policy and process integration, of which the latter is often based in sectoral columns of public organisations. Boundary spanning and the capacity of more formal institutional embedded bodies for integration can go hand in hand. As Meerkerk and Edelenbos (2014), emphasize reorganising organisational form for complex governance issues should at least go together with connective and relational capabilities through reinforcement of boundary spanning capacity.

In the mainstreaming approach and complex governance networks related to PPC, this connective capacity through boundary spanners is considered essential for added value of integrated policies (Healey 2006, Meerkerk and Edelenbos, 2013; Edelenbos et al., 2013; Uittenbroek, et al., 2014). Uittenbroek (2014) stresses boundary spanning can be a deliberate strategy for mainstreaming climate adaptation. Teisman (2016) further elaborates on the challenges of integration of two worlds with quite different demands, the internal governmental organisation and the public private collaborative network. Klijn and Teisman (2003) describe the tension that exists in collaboration between public and private

parties, due to great differences in rationales, which Roberts (1992) stresses, are often very hard to unite (see table 7).

Table 7: Different rationales of public and private domain

	Public actors	*Private actors*	*Tension*
Core business	Objectives: (sectoral) public objectives Continuity: political conditions	Objectives: realizing profits Continuity: financial conditions	Different problem definitions: political risks in expectations versus market risks in annual figures
Values	Loyalty Devoted to a self-defined public cause Controllability of process and approach (political/social) Emphasis on risk avoidance and preventing expectations	Competitive Devoted to consumer preferences Controlled by shareholders on the basis of results Emphasis on market opportunities and risks and innovations	Government reluctant in process versus private party reluctant with knowledge Government reluctant in result versus private parties reluctant with their own effort
Strategies	Search for ways to guarantee substantive influence (primacy of the public sector) Minimizing expectations and insecurity of implementation costs	Search for certainties to produce and/or obtain a contract Minimizing political risks and organizational costs as a consequence of public 'viscosity'	Confrontation leads to a mutual locking-up' of agreements 'and thus to tried and tested types of co-operation (contracts)
Consequences for PPP	Emphasis on a limitation of risks and on agreements that lead to agreed procedures and public sector dominance	Emphasis on certainty of market share and profit, which leads to an expectant attitude and limited investments until the moment when the contract is acquired	The creation of added value through cross-border interaction is not realized

Source: Klijn and Teisman (2003)

Meerkerk and Edelenbos (2014) elaborated onto the boundary spanning literature and investigated the effect of boundary spanning on performance of governance networks and trust through empirical research (Meerkerk and Edelenbos, 2014). This large N empirical research complements the literature on skills and strategies of boundary spanning by directing attention to different boundary spanning agents. First conclusion is that public organisation could benefit extensively by recognising the value of boundary spanning capacity especially in the context of contemporary complex society. Second conclusion is that private and social organisations showed boundary spanning capacity to a larger extend than governmental organisations. This provides the insight that representative stakeholders of private and societal organizations can contribute to boundary spanning capacity within public private collaborative networks.

Boundary spanning competences

Besides strategic choice and deliberate approaches, personal ability or competence of managers influences effectivity of outcomes in complex governance processes (Klijn et al., 2010). Competent boundary spanners are organizational members who are able to link the organization they represent with its environment (Tushman and Scanlan, 1981). Boundary spanners work at the boundaries of their organization, policy domains and responsibilities. Williams (2002) defines boundary spanning as "reaching across borders, margins, or sections to build relationships, interconnections and interdependencies in order to manage complex problems. Boundary spanners develop partnerships and collaboration by building sustainable relationships, managing through influence and negotiation, and seeking to understand motives, roles and responsibilities".

Williams (2002) identifies several main points in public private collaboration which involves particular competences in the boundary spanning role. These are summarised as followed;

1. Building sustainable relationships

Working in a network involves establishing and supporting relationships and willingness to understand the others perspective and the organizations they represent. This allows boundary spanners to identify interdependence and opportunities for mutuality. Competences that Williams (2002) appoint that support these challenges are communication and listening, empathizing and conflict resolving, personal values such as honesty, reliability and openness, and the ability to building and cultivating of trust.

2. Managing through influencing, negotiation and brokerage

The lack of hierarchical powerlines demand decision making through seeking consensus and win-win solutions. The skills needed to be effective in this are influencing, through both persuasiveness and diplomacy and negotiation through careful judgements of benefits and disadvantages for different parties involved; and brokerage of solutions between a number of parties in honest and legitimate ways. Networking is the predominant method, through establishing a central role in the exchange information, the latest information, access to new ideas and happenings in other sectors, and ability to seek support (Williams, 2002).

3. Managing complexity and interdependencies

Interorganizational management within different stages is highly complex. The planning stage includes tasks as formulation and negotiating of goals and joint agendas, fellow partner search, appoint roles and divide responsibilities. The stage of implementation includes task as agreements, budgeting and protocols. The evaluating stage includes joint accountability and evaluation of outcomes. As William (2002) emphasizes, the boundary spanners operate on a strategic level, while able to focus on implementation. The main competences that allow managing interdependence are interorganisational experience, interdisciplinary knowledge and cognitive capability.

4. Managing roles, accountabilities and motivations

Boundary spanners show consciousness of sensitive political or organisational subjects and great sensitivity for mutual relationships and division of roles and responsibilities. Conducting power, resource opportunities and mandate are the motivations to work in public private collaboration. The boundary spanners are accountable as a representative of the own organisation, and are at the same time dependent on accountability of the collaborative network as a whole. This is endorsed by Meerkerk and Edelenbos (2014) appointing boundary spanners are dependent on the way other stakeholders within the public private collaborative network manage the interface with their organizations. An important competence as Williams (2002) appoints is that boundary spanners have a good feeling of the space of operation within their own organisation and understand this for the other actors and the organizations behind.

IX Instruments

Instruments are an indispensable component in the arrangements for PPC (Mees et al., 2014). Mees et al. (2014) appoint that when developing or using instruments for climate adaptation, this should be in line with stakeholder abilities and needs. The application of instruments which lack this quality also lack added value or can even frustrate the implementation process. Mees et al. (2014) classify instruments in three categories of which each type has its own way of conducting stakeholders:

- Legal instruments which either restricts or permits behaviour
- Economic instruments which can steer the balance of costs and benefits
- Communication instruments which is informative

Range of instruments

Driessen et al. (2013) raise the question if there should be attention for innovation of new instruments for CA and conclude that the wide range of existing instruments, and expansion of the possibilities within might provide sufficient opportunities.

A wide range of instruments, beyond the categorisation of Mees et al. (2014) was composed from varying literature (Driessen et al., 2011; Heurkens, 2012; Centraal Cultureel Planbureau, 2014; Laken and Sabee, 2016). These instruments increase opportunities to implement CA and support Public Private arrangement for CA;

- Legal instruments; Water Wet and Rainwater Duty of Care, land use planning
- Fiscal instruments; water tax and sewerage charges
- Financial instruments; grants (with or without benefit sharing), government loan system or bank guaranties, crowdfunding, climate services, social impact bonds, local revolving funds,
- Land policy instruments; exploitation plan, residual land pricing, air rights, development concessions, air rights, land value capture
- Capacity building instruments; process facilitation, design facilitation, technical information
- Market incentives; increased real estate value, increased quality of life
- Insurance instruments; Reduced fare of insurance premium, exclusion of un-prevented damage risk, preventive information
- Communication instruments; dedicated communication campaigns, water label, risk warning systems, communication integrated within work processes executing measures.

Balance between robustness and flexibility

One of the main challenges within the implementation of CA, as van Buuren (2013) brings forward, is a balance between robustness and a flexibility. On the one hand, robust aims, norms and goals in CA can enable social and economic functions to flourish. While at the same time, flexibility is a necessary condition to evolve creative solutions integrating CA with other urban goals (van Buuren et al., 2013).

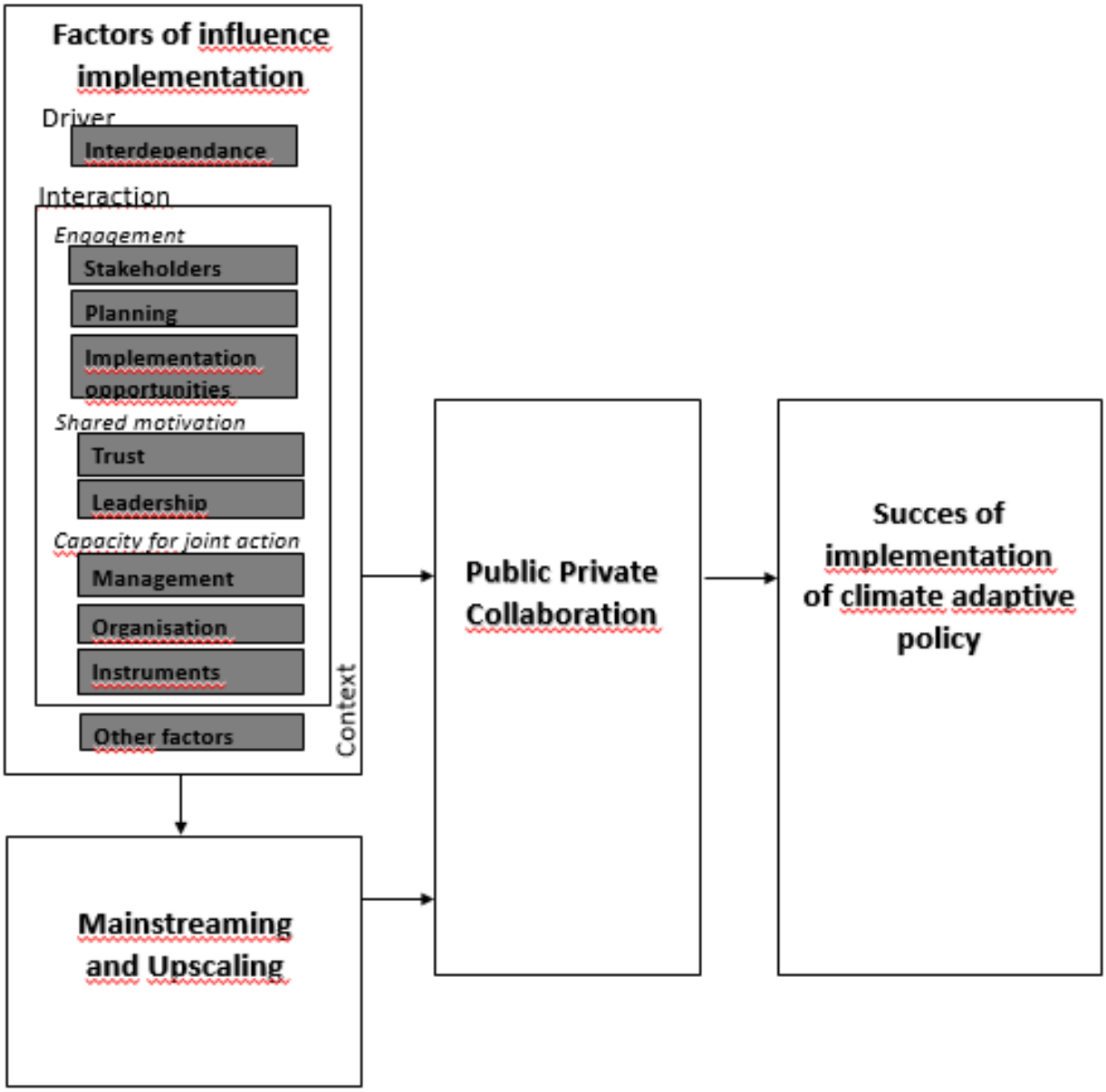
Van Buuren et al. (2013) describe that to create flexibility, CA governance turns away from legal context and prefer informal strategies. Fleurke and Koeman (2005) appoint the legal domain could be supportive for compliance of CA and ignorance of rules and law can eventually become contra productive. Literature subscribes the importance of rules, which can include basic principles in constitution, national law, agreed procedures in decision-making and urban physical and environmental regulation (Ostrom 1990; Bingham 2009; Emerson et al., 2011). Termeer et al. (2011) declare basic legal principles based on societal legitimacy forms the basis for CA policy-making and planning. This finding is endorsed by Driessen et al. (2011) who describe different opportunities within contemporary legal vehicles for integration of CA.

2.2 Conceptual Framework

The objective of this research is to assess and explain why and which different factors in public private collaboration influence the success of implementing climate adaptive policy measures for more and intense rain, to steer towards a more comprehensive governance approach. A distinction is made towards implementation of projects in the experimental phase in which the implementation is now and the ambition for implementation of policy measures in the up-scale and mainstreaming phase. The different factors that have been distilled from literature are structured around the components of Collaborative Governance, namely the context factors, driving factors and factors within interaction. The model leaves flexibility to include 'other factors' that come forth from the empirical research, as the literature review might not be absolute and include all relevant factors.

These factors and mainstreaming and up-scaling define the independent variables, to explain how the dependant variable, which is the eventual success of implementation of CA policy measures, is influenced. Public Private Collaboration which is influenced by the factors in implementation and mainstreaming is an intermediate variable that effects the success of implementation.

Figure 3: Conceptual framework



Source: Author (2017)

Chapter 3: Research Design and Methods

An overview of the research design is listed underneath;

a.	Research aim;	Explanatory (add to existing theory)
b.	Strategy;	Observation (problem statement) Desk research (literature review, cases) Case study (multiple case study)
c.	Sampling	Non-probability sampling - purposive sampling
d.	Approach;	Qualitative approach
e.	Data collection methods	Semi structured intervieuws
f.	Data analysis;	Atlas Ti or manual based on Atlas Ti principles
g.	Empirical cycle;	Empirical research Reasoning was inductive (generalizing from specific information) in the empirical part of the research. The theoretical part, based on literature review framed the inductive research in certain concepts of study, whereby induction and deduction iterated in the empirical cycle
h.	Context and aim;	'Applied research'; Practical solutions to concrete problems.
i.	Phylosophy of science;	Interpretative

This will be further elaborated on in the next paragraphs of chapter 3.

3.1 Operationalization: Variables, indicators and questions

Different variable within the conceptual framework

The aim of the research design is to describe how the dependant variable (DV) is influenced by the independent variable (IV). This can be summarised as; IV -> DV (van Thiel, 2014).

Dependent Variable (DV):
The dependent variable is dependant on other factors that are explored. The dependant variables are expected to change, which is the presumed or desired effect.

Independent Variable (IV):
The independent variable is constant and unaffected by the other variables you are trying to measure. It is the presumed cause.

There is another variable to be distinguished: *Mediating Variable (MV).*

Boston University defines the Mediating Variable (MV) (also called "intermediate" or "intervening variable") as "a control variable that follows an independent variable but precedes the dependent variable in a causal sequence." The mediating variable mediates between the independent variable and dependent variable.

In this research the Dependant Variable (DV), which is the success of implementation of climate adaptive policy is influenced by the Independent Variable (IV), which are the factors that influence implementation and mainstreaming, through a Mediating Variable (MV) which is Public Private Collaboration. This can be summarised as; IV -> MV-> DV

All Variables are operationalised towards questions for qualitative data collection. This is approached by, two intermediate steps; the definition of the variable and explication of this variable through indicators. This is elaborated on in table 7.

Table 8: Operationalisation table

Variable	Definition	Indicators	Questions incl. Values
Factors of influence in implementation (experiments) IV			
Interdependance (Independent variable)	"Stakeholders may not have all the resources they need to make decisions, and therefore depend on others who do have those resources which can include finance, knowledge, time, regulation" (Koppenjan and Klijn, 2004)	* Interdependence of CA * Policy interdependence * Resource independency *Interdependence of life cycle phases	What different urban goals and sectoral policy domains are coupled within the project? o Quality of life o Economic competitiveness o Resilience o Social inclusion o Health o Greening o Infrastructure o Water o Other Did climate adaptation contribute to the opportunity for implementation of the project or was it an obstacle? o opportunity o obstacle o neutral In what way is inclusion of climate adaptation measures interdependent? o Integration within the development process o Integration in greening or building o Dependency on resources (time, finance, knowledge, land) What would be (or is) the main incentive (economic benefits, increased resources, rules, showcase) for you as a stakeholder to include climate adaptation within the project? And would this be an important incentive for an alliance on a more regular basis? Can specific type of resources be related to specific stakeholders, for example social entrepreneurs (process time), private land by housing associations (land), real estate developers by developing profitable sustainable concepts (finance), coordination and knowledge by the municipality (knowledge), co-financing by the waterboards? Are life cycle considerations included in the decision making and in what perspective?
Stakeholders (Independent variable)	Actors that have an interest in integral measures or parts of it and actors of which interest is directly related to climate adaptation	* Key players and peripheral stakeholders *Stakeholder inclusion *Stakeholder's interests	Which stakeholders were key players within the process and which were peripheral stakeholders with an interest in the project? Were there public and private key players related to climate adaptation? Which stakeholders (public, private or social stakeholders) were, conscious or unconsciously, included within the project? And are certain actors missing?

			What public-social-private stakeholders do you regard promising in relation to climate adaptation in areas with heightened flooding risks due to rainwater (old neighbourhoods and city centre)? Do contextual factors such as a more attractive investment climate and recovered market for real estate development in Rotterdam, have influence on the implementation opportunities of climate adaptation in public private collaboration?
Policy and planning	An overall framework for decision making which includes goals, principles and approaches for action, plan-making together with mechanisms for implementation and governing (Davidson, 2014)	*Relevant phazes in the policy cycle for CA *Role of policy and planning for CA	Which phases within the policy cycle does the municipality of Rotterdam emphasize onto regarding implementation of urban goals including climate adaptation? o A sequence from vision towards policy and programs, towards projects o Focus on visions and straight implementation in projects, with a void in program and policy planning o Focus on policies What role did the planning department of the municipality have in this process? o setting aims and boundaries towards requirements and safeguarding basic standards for maintenance o designing an integral plan o strategic planning connecting short term and long term aims, connecting (financial or process) opportunities and connecting different goals and interests o no role Was there a. clarity about the climate adaptive aims early in the planning phase? And was there b. a need for water technical direction of solutions for climate adaptation? a. o The knowledge of climate adaptive aims was lacking early in the process o The climate adaptive aims were clear b. o There is a need for goal oriented formulation towards requirements for rainwater o There is a need for solution oriented formulation Was there a clear aim to mitigate 100% rainwater within the project, or was it nice to have CA as much as possible?
Implementation opportunities	Connecting different performance processes to increase opportunities for mainstreaming and PPC and eventually execute climate adaptation	*Process links of different developments and maintenance	What was the leading implementation opportunity? Which different processes (e.g. restructuring, real estate development, greening, traffic, maintenance or renewal of public space, sewerage renewal, climate adaptation) were coupled in order to increase the implementation opportunity for this project? In what phase of the process and how was the match with other processes aligned?

Trust	Trust can be defined as, confidence in the reliability of a persons or organisations, in which actors keep in mind the intentions of the other parties, reject opportunistic behaviour and behave in mutual approved manners, which enables actors to take risk in PPC (Edelenbos et al., 2015).	*Tendency to focus on trust or on institutional design and contracts *Commitment of members throughout the process	Was trust an important condition within the process or was the emphasis on institutional design and contracts? o Strong emphasis on the use of contracts to inject clarity and certainty in the collaboration o Less emphasis on contracts. More emphasis on mutual trust. o Strong emphasis on trust, little or no contracts What were the most important conditions to build trust within the collaboration? Was there member commitment of the municipality and was the municipality a reliable partner?
Leadership	"the capability to establish direction, alignment and commitment across boundaries in service of a higher vision or goal" (Ernst and Yip, 2009).	*Public role towards CA *Leadership style *Leadership strategies	Who could fill in this leadership role towards the integration of climate adaptation. o public actors (municipality, waterboards) o private parties o social parties What role or task does the government and private parties have in adaptation to climate change, and how far does this responsibility reach? Can you describe what leadership role came across within this project and who filled in these role(s)? o connective leadership o Innovative leadership o Facilitating the process Is there a specific leadership role that relates to up-scaling and mainstreaming of climate adaptation? Is there a specific leadership strategy that relates to up-scaling and mainstreaming of climate adaptation? o initiating o coordination o facilitating What role could the municipality play towards mainstreaming climate adaptation? o Government should set clear aims and goals towards climate adaptation and appeal to the responsibility of property owners both public and private o Government should initiate integrated projects in which climate change is the main concept o Government should facilitate bottom up initiatives towards climate adaptation o Government should coordinate the implementation of climate adaptation through programs, connecting parties, resources
Management	Process coordination on project level to eventually execute CA policy measures	*Management perspective (project-, process- or program/policy management)	What management perspective was relevant in the project? o project management perspective o process management perspective o organic informal steering perspective

	or developments which include CA	*Management strategies; Process agreements, exploring content, arranging, Connecting *Personal ability or competence of managers	And what perspective would, from your experience, be most relevant for up-scaling and mainstreaming climate adaptation policy measures and projects? Were the right management competences available?
Organisation	Organisational approach for integration of policy domains (mainstreaming) and collaborative networks (PPC), with existing organisations as a starting point.	* Integration of the public private collaborative network and the internal organization *Policy integration throughout different organisational columns * Connective capacity	How was the integration of the public private collaborative network and the internal organization arranged? Where in the municipal organization occurred policy and network integration and how? o account management within the department of spatial-economic development REO o body STOR (integration body for public space between urban development SO and urban maintenance SB o Through project- or program managers o Other Did boundary spanning occur and how? Which actors can play a role towards boundary spanning specifically related to mainstreaming and up-scaling the implementation of climate adaptation? Is there a specific phase in which boundary spanning is most evident? o initiation phase o planning phase o execution phase What boundary spanning skills and competences are most relevant for up-scaling climate adaptation in public private collaboration (put in order of importance)? o building and sustaining relationships and trust within the networks and in other organizations o entrepreneurial and innovative competences in order to build new flexible approaches o managing through influencing and negotiation o managing complexity and interorganizational interdependence o managing accountability Is there enough boundary spanning capacity and competence within the municipality? And does this capacity occur on a strategic level or also on the implementation level? What obstacles do boundary spanners come across within the municipality organization which complicates to link the collaborative network to the internal organization (put in order of importance)? o sectoral organized departments o accountability is organized towards sectoral public aims and goals, and parts of the life cycle and not towards added value as a whole

			o changing prioritization through personal or political shifts o lack of capacity to take certain responsibilities and adjust to the speed of the network
Mainstreaming (IV)			
Integration	Mainstreaming climate adaptation is referred to as; ”the integration of climate adaptative policies and measures into sectoral policy, planning and urban development processes through indirect political commitment” (Uittenbroek, 2014).	* Integration of climate adaptation in urban goals, policies, processes and stakeholders on the urban scale	Was climate adaptation integrated within the policy cycle and where? o Climate adaptation was not integrated at all o Climate adaptation was the main strategy o Climate adaptation was integrated within policies o Climate adaptation was integrated within plans, and development processes In which policy domains can CA be integrated? How did integration take place? o In the policy process o In the planning process o Through management strategies o Within the organisation through certain strategic platforms, procedures and positions such as account management How is this information available on the urban scale, in order to upscale and mainstream climate adaptive measures? o Through an overall database/map o Through a policy, plan or program o Through strategic actor(s) o Through the account management department within the municipality o Not available
Indirect political commitment	‘piggybacking’ on engagement which is yet acquired in other policy domains	*Conditions for indirect political commitment *Political influence	Which parties are important for indirect political commitment within this case? What do you think is crucial to incentify established policy domains, plans and processes to implement climate adaptation? Does the way accountability is organised within the municipality incentify an integrative attitude? And if not, in which way should this change?
Public Private Collaboration (MV)			
Public Private Collaboration (Mediating Variable)	PPC consists of sustainable collaboration with continuous exchange, between public, private, societal actors and community, which operate at the basis of equivalence, and from their own interests and perspectives, share profits and risk	*Models of PPC; Concession model, alliance model, bottom up for CA	What relationship was there between the public and private stakeholders? o Relation of commissioner (public party) and contractor (private party) o Joint collaboration of government and private actor based on equivalence throughout the process o The initiative lies rather in society with fascilitating role for government How was the determination of the issues and direction of solutions organised? o The public party largely defines the problem and solutions.

	making decisions in public and societal policy issues and develop mutual policy measures		o Joint process of defining the problem and solutions. o The private parties largely define the problem and solutions. What was the stance towards scope of the project? o Emphasis on clear distinctions and boundaries. Any broadening of scope should take place within demarcated areas of responsibility of actors o Emphasis on expansion of scope, and from the perspective of coherence, laying connections between elements within the project o Tendency to seek clear, small and short-term scope. Which Public Private Collaboration model is relevant to this project and which model(s) are most promising towards mainstreaming and up-scaling climate adaptation regarding the need for small scaled solutions integrated within the veins of densely used urban areas? (including table concession, alliance, bottom up) o Concession model o Alliance model o Bottom up self-organisation model
Successful implementation (DV)			
Content outcomes	The degree to which CA goals are achieved with added value for other urban goals and optimal balance between resource input and outcomes	*Opportunity for up-scaling *Climate adaptation as added value for other urban goals *optimal allocation of resources within projects and up-scaling	Does mainstreaming climate adaptation (within policies, plans, urban development processes), lead to up-scaling of implementation? What is an important condition so that mainstreaming will lead to up-scaling? Can climate adaptive solution, increase added value for other social or economic urban development goals such as quality of life and urban competitiveness? Was their optimal use of resources (time, finance, knowledge, land) from different stakeholders, within the project? And what could be optimised? What types of advantages of scale in relation to resource allocation can be organised through mainstreaming and up-scaling climate adaptation? Within the municipality and other organisations, the allocation of resources is often related to targets, sectoral scopes and different life cycle phases that strive for prioritisation. What is needed to have a better integral consideration and decision making without losing activity and decisiveness?
Process outcomes	Performance of governance networks	*repeated performance of networks *Performance of network governance form *Legitimacy	Was the collaboration only relevant for this project, or are there opportunities for durable relations and repeated performance? Through what network governance form will up-scaling and mainstreaming implementation of the climate adaptive goals be most effective?

			o Through Participant Governed networks; stakeholders themselves govern the network o Through a Lead Organization; a single member, acting as a lead organisation coordinates network level activities and key decisions o Through a Network Administrative Organisation in which a separate administrative entity governs the network and activities To what extend is there support for actions and plans related to climate adaptation? Can public private collaboration and integration in other urban development goals increase public support for climate adaptation? Is it legitimate to demand property owners (public and private) to take an important part of the initiative and costs as a responsibility for processing rainwater that falls on their land as was recently agreed on in the Duty of Care within the Water Wet, or is increased sewerage tax, waterboard tax or more nuisance more legitimate?

3.2 Research strategy

The aim of this research is, as described in chapter 1, to explain; "Why and which different factors determine successful implementation of climate adaptation through public-private collaboration?'' This entails that this research nature is explanatory and adds to combinations of different existing theory.

Desk research on literature, diverging from PPP, Network Governance, Collaborative Governance, Network management strategies, stakeholder management, institutional design, roles of trust and leadership, planning, implementation instruments and processes, have deduced a combination of theory. This theory constitutes the main concepts of the conceptual framework; the factors that influence implementation, Mainstreaming, Public Private Collaboration and Successful implementation. These concepts are operationalized within the former paragraph including the definition of the concepts and variables within, these variables were translated and made more specific into indicators. For each of these indicators, related questions were formulated in order to collect primary data. A combination of literature and empirical insights of these concepts and the conceptual relations within the framework will eventually deliver answers to the problem statement and research questions that were observed and diagnosed.

This research is commissioned by the department of Water management of the municipality of Rotterdam. This applied research context has the objective to seek, besides theoretical findings, practical solutions for the problem to integrate CA on a large scale through a more comprehensive way of governing Public Private Collaboration. A qualitative approach through a case study strategy fits well with the concept of study, which has an interpretative philosophy of science. The qualitative approach although more difficult to generalize, allows a richer understanding of the situation and insight in processes in Public Private Collaboration. In addition, the applied research context is a reason for a qualitative approach as it delivers opportunity to learn from experiments in the implementation of CA policy measures through different PPC in the context of Rotterdam's climate adaptive challenge.

The multiple case study is chosen as a research strategy, as this allows to study a large number of independent variables, namely the factors of influence in the implementation and relations with mainstreaming that influence Public Private Collaboration and successful implementation within a small number of research units. It is not possible and necessary to include all experiments in the research as for time limitation, and therefore represented selection of Rotterdam's experiments in implementation of climate adaptation through PPC will be made, for a multiple case study. The choice of cases is done through non-probability sampling, and specifically through a purposive selection of the different cases of study, founded on theoretically relevant criteria as is shown in annex 1. The selected cases represent similar situations which provides opportunities to compare and induce insight in the different factors of

influence in PPC for successful implementation beyond these specific cases. The findings within and comparing these cases can induce towards more general conclusions on why and which different factors and mainstreaming will influence PPC and successful implementation of climate adaptive policy measures.

3.3 Data Collection Methods

The research is based on a multiple-case study design which allows studying the factors that influence success of the implementation of CA through PPC in the context which it will be applied to (Yin, 2003). This can result in worthful knowledge through specific information and comparable results within and in between cases. A comparison between cases illustrates accordance and deviation which accommodates the researcher with a broad sense of influential conditions and causative relations.

This multiple case study includes three cases in which a climate adaptive component is integrated. The cases include samples that represent real estate development, restructuring existing neighbourhoods and public space projects. The cases are comparative as they all take place in the context of Rotterdam in areas with risk of flooding, in recent years (2014-2017), and through a process of PPC. At the same time, the cases diversify towards; type of development, type of implementation opportunity for climate adaptation, main stakeholders, leadership and role of municipality towards CA amongst others, which allows more in-depth and comparable information on the influence of these independent variables on the dependent variable, complementing the knowledge derived from the literature review.

+ ***Case Hofbogen***
  Characteristics:
  - type of project; commercial real estate development and (temporary) public roof park
  - implementation opportunity for CA; real estate development
  - CA measures (possibly) integrated; in roof park
  - initiating stakeholder; real estate developer and housing association
  - role of municipality towards CA: facilitating a CA plan
  - location; Old North

+ ***Case Oude Westen including greening projects***
  Characteristics:
  - type of project; restructuring existing neighbourhood and collective greening projects
  - implementation opportunity; restructuring existing neighbourhood and social housing renovation
  - CA measures integrated in collective greening
  - initiating stakeholder; social housing associations and social entrepreneurs
  - role of municipality towards CA: facilitating social entrepreneurs and influencing social housing association towards CA
  - location; Centrum-Oude Westen

+ **Case Robert Fruinstraat**
  Characteristics:
  - type of project; small scale street and courtyard redesign
  - implementation opportunity; sewerage renewal
  - CA measures integrated in public space, private courtyard and real estate
  - initiating stakeholder; WSR (Water Sensitive Rotterdam)
  - role of municipality towards CA: initiating and coordinating the project
  - location; Delfshaven-Middelland

The main data collection occurs through semi structured interviews of public, private and social stakeholders within the cases and through desk research on each of the case studied. The questions in the interview elaborated on in the questionnaire in Annex 2, will include both close-ended and open-ended questions. This allows comparison and more valid and reliable findings (Thiel, 2014) and at the same time gives room for induction of new insights. Both public, private and social stakeholders will be interviewed and an interview with the program manager of Water Sensitive Rotterdam (WSR) will be deducted on all cases, to further specify the knowledge on integration and mainstreaming of climate adaptation within these cases. The units of study in the sample for the interviews are divided into public, private and social groups, which van Thiel (2014) refers to as cross-sectional design. Although the sample size is not extensive, this allows drawing conclusions to some extend about the different groups of respondents, namely public, private and social stakeholders.

In each case the main public, private and societal actors are interviewed, which results in a sample representing the main private stakeholders relevant for the implementation of climate adaptation and the public stakeholders in different strategic positions. The choice of interviewees is based on quota sampling in which the ratio of public, private and social parties is equally divided.

Table 9: Non-probability, purposive quota sample of interviews

Case	Private stakeholder	Societal stakeholders	Public stakeholders	Program WSR
Robert Fruinstraat		Resident with adapted garden (Fam Ghisyawan)	Process leader Municipality (Laurence Peels)	Program leader (John Jacobs)
Oude Westen	Housing association Woonstad (Alex Moret-head asset manager /Gerben in 't Hout-asset manager Oude Westen)	Social entrepreneur (Wolbert van Dijk)	Municipal department of housing (Annet Akkerma-strategic advisor Performance agreements/ Jeannette de Waard-policy advisor Oude Westen)	Program leader
Hofbogen	Real Estate Developer (Hofbogen BV, Gijs van der Kleij)	Social entrepreneur (Urbanisten, Florian Boer)	Projectleader municipality (Michel de la Vieter)	Program leader

The multiple case study is besides the interviews substantiated with desk research through content analysis of primary data. This data consists of spatial plans, meeting reports, policy documents, and development strategies, but also exceeds the specific cases and includes analysis of contextual information such as; the content of existing CA policy, Rotterdam's experience and posture towards PPC, and current responsibility divide towards CA, focussed on Rotterdam's context. This primary data is collected specificly for this research and adds to the information from the interviews, as this joint information establishes triangulation and gives a more balanced perspective on the cases.

Primary data;

Data supporting the cases:

1. Hofbogen
   - Conceptual development plan; The green promenade (The Natural City, 2017)
   - Conceptual development plan; Aquaduct010 (The Urbanisten, 2017)
   - Document of Physical requirements for the Rooftop park (department of City Development, Municipality of Rotterdam, 2017)
   - Two meeting reports on the subject "vision and requirements of the roofpark". (Municipality of Rotterdam, 8 februari 2017 and 1 march 2017)

2. Oude Westen
   - Masterplan Oude Westen (Municipality of Rotterdam, 2011)
   - Publication Klimaten (Wolbert van Dijk, 2016)
   - Stichting de Tussentuin website; www.tussentuin.nl

3. Robert Fruinstraat
   - Droomworkshop I (municpality of Rotterdam, May 2016)
   - Droomworkshop I (municpality of Rotterdam, May 2016)
   - Innovation Workshop (municpality of Rotterdam, June 2016)
   - Publication StraaDkrant (Bosch Slabber in association with Buro Bergh, 2017)

Contextual data;

a. Regulation relevant for CA; Water Act, Water assay (Watertoets), Rotterdam's Land use plans, Rotterdam's building act and Housing law (Bouwvoorschriften, Bouwbesluit, Woningwet), Land exploitation plans (grondexploitatie), Rotterdam's land policy, Performance Agreement housing associations

b. Local policy and programs relevant for CA; Rotterdam's Adaptation Strategy (RAS), Herijking Waterplan Rotterdam 2, Rotterdam Resilience Strategy, Water Sensitive Rotterdam inspirational document
c. Rotterdam's PPC instruments; Kendoe, Citizens Jury, Meaxchange, Right to Challenge, Citylab010, Opzoomeren, Residents initiatives

3.4 Data Analysis Methods

The qualitative data within this study will be further analysed. Secondary data will be analysed manually while data from interviews will be structurally analysed through principles of Atlas-Ti. First the questions within the operational table are transferred to an interview manual, and translated in Dutch as this will be the interviewees native language. The voice recordings of interview are transcribed one by one, distilling the relevant information. Important indicators are coded according to research questions, sub research questions and concepts. The codes are arranged and reassembled within the framework. The output of the coding process and the manually processed secondary data allowed systematic analysis and description of the indicators and concepts per case and comparisons between cases. This analysis based on empirics together with insights derived from the literature review, allowed to draw conclusions and answer the initial research question.

3.5 Validity and reliability

Reliability of study is the accuracy and precision of a measurement procedure. The reliability is determined by, accuracy and consistency in defining the variable to be measured. Reliability in this empirical case study was transparent and includes:

- Research action plan
- Case study protocol as a plan with a set of procedures to allow data collection
- Research logbook in which every step of the research is documented.
- Database of all the collected data before processing
- Description on how the data is analysed

Reliability does not guarantee the validity of a measurement, but is a condition. Validity is the extent to which the measured information can genuinely give an answer to what we really want to know. Validity can be broadly categorised in internal and external validity. Internal validity is determined by an adequate operationalization of the theory or concept and the actual existence of causal relationship between dependent and independent variables. Question is if you are measuring what is intended and if you interpret your findings in the right way? Peer debriefing with other researchers increased validity of this study. In this research, internal validity is safeguarded by;

1. Use of different sources of data of which results point into the same direction (Observation, literature review, informative documents on the cases and research context and interviews)
2. Search for alternative interpretations based on different theories
3. Check of the results and interpretations with the key informants

External validity is related to the ability to generalize data to other situations. Related to external validity within a case study, it is difficult to generalize findings of one case study to other situations due to the lack of statistical underpin of the findings. The multiple case studies, which this research is based on allowed induction of trends. It is valid to use these trends and conclusions to give direction to the debate and next steps in the approach of CA in Rotterdam, but for further generalisation of these conclusions more extended research is needed. Besides triangulation through inclusion of diverse cases, triangulation has been established through different interviewees within and in between the cases, and the combination of different research strategies (case study and desk research) and methods (interviews and content analysis).

Before building a follow-up approach on the findings of this research, reflection on the research findings through the Delphi method is recommendable. The Delphi method is a tool to include independent experts within the research topic. A group of experts in CA policy measures, water governance and urban development in Rotterdam, can respond on the research conclusions through a group discussion as a starting point for a follow up approach on the implementation of CA in PPC.

Chapter 4: Research Findings

4.1 Introduction

This chapter explains the main findings and analysis of the multiple case study for PPC in climate adaption which includes the cases Hofbogen High line, Oude Westen and Robert Fruinstraat. The qualitative information collected during the fieldwork is elaborated on, with guidance of the components within the conceptual framework and subsequently, the relations in between. Whereas the components exists of:

1. Factors that influence the implementation
2. Mainstreaming climate adaptation
3. Public Private Collaboration
4. Success of implementation climate adaptation

Prior to the findings and analysis there is an overall description of the cases. And an illustration off the research context of Rotterdam, which includes the responsibility divide between different parties towards climate adaptation, relevant regulation and policies and Rotterdam's approach towards PPP, is given for a better understanding of the context.

4.2 Research context of Rotterdam

4.2.1 Responsibilities regarding climate adaptation

Van Buuren et al. (2013) emphasize, the first guidance in the implementation of CA is through basic legal principles that are socially accepted, while often, CA governance tends to seek flexibility and informal strategies of policy making. Result is often that in the end of the process, turn out to be relevant and yet need to be applied (Fleurke and Koeman, 2005). Therefor it is important to take legal principles and responsibility divides in account in climate adaptive governance. Literature on common pool resources, which relates to a CA environment, emphasizes on the importance of rules, which can include basic principles in constitution, national law, agreed procedures in decision-making and urban physical and environmental regulation (Ostrom 1990; Bingham 2009; Emerson et al., 2011).

4.2.1.1 Responsibilities for property owners

A basic condition for property owners to take action is clarity towards the responsibility divide (Driessen et al., 2011). In heat stress individuals are responsible for protection and water safety in which the central government takes the initiative. Drainage of rainwater, to prevent flooding, has traditionally been the responsibility of the municipality. The initiative for adopting public facilities lies with the municipality. The costs for this infrastructure are transferred to all inhabitants of the municipality through sewage tax.

In addition, a sharing of responsibility between the municipality and property owners recently re-established in the Water Act (Art 3.5 and 3.6). The rainwater Duty of Care clarifies responsibilities of the municipality and the property owners. The municipality should ensure efficient collection and treatment of rainwater, if the plot owner cannot reasonably process this itself. What is reasonable to demand plot owners is still interpretable, and gives room for tightening the possibilities plot owners have. For example, partly unpaved their gardens to increase infiltration options or increase water storage capacity in build or unbuilt forms. Bergsma et al. (2009) describe in their report on individual responsibility in adaptive capacity in the Dutch case, that in practise municipalities tends to feel all responsibility and plans adaptation measures after flooding occurred. The writers conclude that in the future the municipality needs to reconsider this responsibility.

In Belgium and Germany for example the responsibilities for private property owners are more demanding. Since 2010 Germany applies tariff differentiation in which property owners are obliged to offer rainwater and dirty water separately, and within most regions they pay for the amount of rainwater they offer to the sewerage system. Since 2014 Belgium requires new buildings, rebuilding or extensions to retain rainwater onto the own property and minimalize the amount that is offered to the sewerage system (Hooimeijer and Smit, 2015).

Local translation of the water act, towards increased responsibility for private property owners varies per municipality in the Netherlands. More and more municipalities set rules to require residents to catch rainwater in their garden. E.g. municipalities like Aalburg, Woudrichem and Werkendam are in progress

to link the drainage with the amount of hardened surface in gardens. In Rotterdam, this is not yet the case.

Figure 4: Responsibilities for CA in neighbouring countries

GROTE VERSCHILLEN IN REGELGEVING

NEDERLAND

Voor nieuwbouw regelt het Bouwbesluit 2012 dat afvoerleidingen voor huishoudelijk afvalwater en hemelwater op het perceel gescheiden moeten blijven. Als een gemeente bij nieuwbouw infiltratie op eigen terrein verplicht wil stellen, kan zij dat doen met een verordening of maatwerkvoorschrift op basis van de lozingsbesluiten (Het Activiteitenbesluit, het Besluit lozing afvalwater huishoudens (Blah) en het Besluit lozen buiten inrichtingen (Bibi), voor respectievelijk lozing door bedrijven, particulieren en vanuit de openbare ruimte).
Voor bestaande bouw kunnen gemeenten via een gemeentelijke verordening, op grond van de Wet milieubeheer (Wm), eigenaren in een bepaald gebied voorschrijven hemelwater op eigen terrein te bergen.
Bij individuele lozers kunnen gemeenten ook maatwerkvoorschriften opleggen.
Gemeenten hebben de mogelijkheid te differentiëren in de rioolheffing. Ze mogen zelf de grondslag bepalen waarop ze heffen, dus dit kan bijvoorbeeld ook het 'afvoerende oppervlak' als heffingsmaatstaf zijn. Als een perceeleigenaar voor (een deel van) zijn oppervlak afkoppelmaatregelen treft, kan dat vertaald worden in een lagere heffing.
Informatie: www.riool.net, 'Module A2100 Aansluiten en lozen' (voor leden van Rioned)

DUITSLAND

Vanaf maart 2010 is in Duitsland iedere eigenaar van een nieuw bebouwd perceel verplicht het regenwater gescheiden van het afvalwater te verzamelen, te infiltreren of aan een regenwaterriool aan te bieden. Dit is geregeld in de (landelijke) *Wassergesetze* en in enkele verordeningen per deelstaat.
De meeste Duitse gemeenten streven bij nieuwbouwgebieden of bij herstructureringen een *'naturnahe'* (dicht bij de natuur staande) waterhuishouding na. De richtlijn van Hamburg bijvoorbeeld is erop gericht zo veel mogelijk regenwater lokaal vast te houden: decentraal infiltreren, doorlatende verhardingsmaterialen en regenwater voor toiletspoeling. Bovendien gelden in veel gemeenten aparte heffingen voor afvalwater en regenwater. Eigenaren betalen alleen voor dat deel van het regenwater dat van hun erf in het regenwaterriool terechtkomt en niet voor het deel dat wordt vastgehouden of geïnfiltreerd. Dit biedt ook voor bestaande bouw een prikkel tot afkoppelen.
Meer informatie: www.ateliergroenblauw.nl (zoeken onder architectuur)

BELGIË

Het uitgangspunt van de Vlaamse verordening voor hemelwater (aangescherpt per 2014) is dat bij bouw, herbouw of uitbreiding de overloop naar het riool wordt geminimaliseerd en vertraagd, om zo wateroverlast bij extreme regenval te voorkomen.
De verordening bepaalt dat perceeleigenaren regenwater in eerste instantie zo veel mogelijk zelf moeten gebruiken, bijvoorbeeld voor toilet en wasmachine, en het resterende deel moeten infiltreren en bufferen. Een nieuwe eengezinswoning groter dan 40 vierkante meter moet een regenwaterput hebben van minstens 5.000 liter. Infiltratievoorzieningen, zoals waterabsorberende infiltratieblokken, moeten een capaciteit hebben van 25 liter per vierkante meter afwaterend oppervlak.
Meer informatie: www.vlario.be/dossiers/hemelwater

Source: Hooimeijer and Smit, 2015

4.2.1.2 Responsibilities for municipalities and water boards

The water boards are responsible for the main water system within the city, while the municipality is responsible for the transport towards this water system. According to the Water Act, article 3.5: The municipalities are obliged to take care of rainwater, the Zorgplicht, as part of the municipal sewage plan (GRP). When rainwater is received by the municipality, it is then for the community to weigh how the collected rainwater is being processed.

Through the instrument of the Watertoets, water boards, municipalities and real estate developers need to agree in an early stage on layout and optimal choice of development location. Evaluation shows that there are certain bottlenecks and the Watertoets process seldom influences the choice of development location and at most influences the layout (Driessen et al., 2011).

In restructuring existing urban areas, it is often difficult to position and finance the water related goals as a consequence of limited exploitation budgets, divided landownerships and limited space. Formally the water boards have the Water Act as an instrument to force implementation of water measurements, but in practise they are reserved to pressure their relationship with the municipalities.

When water boards implement their own water measures, they often have, as Franssen and Roeleveld (2009) point out, the tendency to implement 'technical engineering water' with limited added value for the physical urban appearance. The Union of water boards published a guide for water managers to integrate water interests more effective within the planning process (DHV, 2009).

Despite the different instruments that regulate a responsibility divide between the municipality and water boards, there is a grey area towards the responsibility for insufficient capacity within the main water system due to climate change. If one doesn't implement enough water measurements, the municipality needs to make more transportation infrastructure. Although Waterplan 2 describes a joint approach in Rotterdam, in the implementation there are major differences in the responsibility that the various water boards in Rotterdam take in relation to the municipality.

4.2.2 Policy and regulation regarding climate adaptation

4.2.2.1 Regulation and land policy

Inclusion of climate adaptation is still limited in general laws and regulation. Several regulations and policies which already include climate adaptation can be distinguished and show extended opportunities:

Water Act (Water wet)

Within the Water Act, which is national regulation, there is the Duty of Care (Zorgplicht) for rainwater, groundwater and waste water. The public Duty of Care within the perspective of climate adaptation includes: control of flooding, urban public health, protection of economic activity, and care for essential infrastructure such as roads, airlines, airports, hospitals and harbours. The municipality has a Duty of Care (Zorgplicht) for urban water management which is part of the Environmental Management Act and Article 3.5 and 3.6 of the Water Act (Ministry of I&M, 2008).

The responsibility a stepwise preferred model;

I. property owner must first collect rainwater on their own terrain,
II. store rainwater locally,
III. drain to open surface water
IV. or if there is no better alternative drain to the sewerage system

This principle is also included in the Municipal Sewage plan (Municipality of Rotterdam, 2016). Rainwater must be disconnected from the wastewater system as much as possible. The new control option in water management is; retaining, storing and draining of water. Rather than consider rainwater as wastewater, discharge into surface waters or soil is preferred. The Water Act, Duty of Care and the order of preference for the treatment of rainwater can legally ensure an adaptive way of dealing with water in the urban area (Driessen et al., 2011).

Water assay (Watertoets)

The purpose of the Watertoets is to ensure water management objectives are considered in all water management relevant spatial plans and decisions of government, provinces and municipalities. Spatial plans include a water paragraph. The water board checks if consequences towards water management are taken into account. The Watertoets is focused onto the negative consequences of new developments and eventual compensation. It does not treat the extra capacity needed for future climate scenario's.

Land use plan (Bestemmingsplan)

The land use plan regulates permitted types of land use and the restrictive rules under which the land use is permitted. The land use plan is a very strong legal instrument. It will be part of the future Omgevingswet. Recently the rules in zoning plans in Rotterdam are restricted to the Watertoets and do not regulate the extent to which property owners or real estate developers need to include water retainment in buildings or outdoor space for climate adaptation to current and future climate change. Land use plans concern building- and usage regulation and could very well include considerations from climate adaptive policy within both existing areas and new developments (Driessen et al., 2011). Risk zoning for areas with extra risk of flooding is an instrument to highlight a risk and define ownership.

Building act and Housing law (Bouwvoorschriften, Bouwbesluit, Woningwet)

For new buildings the Building Act requires technical regulations from the perspective of safety, health, usability, energy efficiency and climate resilience. Building regulations mean the statutory rules concerning the manner in which construction work is carried out, constructions may be upheld or should be improved. It involves technical rules which regulate not only the structural aspects in the strict sense, but also the related aspects of environment, energy efficiency, health and safety. Prescription towards climate adaptation is currently not included, but could very well be applied within building regulation (Driessen et al., 2011).

Land exploitation plan (grondexploitatie)

Land exploitation is the process of production of land and bringing it to the market. Climate adaptive measures can be included within the land exploitation plan, through a public or private law. In the Netherlands in relation to other countries, relatively little costs for climate adaptation are co-financed by real estate developers (Driessen et al., 2011). Opportunities within the land exploitation plans to include climate adaptation are;

- Requirements towards utilities, the location, build environment and public space based on land use plans and urban planning restriction plans.
- Cost recovery towards climate adaptive measurements implemented by the municipality. This can be integrated within a higher cost of land.
- Cost recovery towards climate adaptive measurements done by the real estate developer. This can be integrated in the residual cost of land, which means the costs of land is determined by the market value minus building costs minus an acceptable profit.

Land policy

The municipality has the option to increase development rights, which can be used as cost compensation for climate adaptation. These increased development rights can be arranged within zoning plans and more specific urban planning regulation. An example 'Air Rights' which allows compensation in return for extra building height (Schouwenburg, 2006).

Performance Agreements

Climate adaptation can be included within the social assignment of the housing cooperation's. Likewise, the assignment towards heath isolation, climate adaptation can be a regular part of Performance Agreements. This is a negotiated agreement in which the municipality is not authorized to force housing associations to implement joint policy, although for negotiation the municipality can use land positions, a resource of which housing cooperation's are dependent on. Besides, it is important that housing cooperation's can recover investments for adaptation. One method is to recognition of climate adaptation within the Waarborgfund from which housing cooperation's are able to lend money at a reduced rate. National government needs to play a role in this (Driessen et al., 2011).

4.2.2.2 Local policies and programs

Besides law and regulation, climate adaptation goals are disclosed in different local policies and programs. The levels of focus diversify from national, regional to the urban scale. In annex 3, an overview is given of all policies and programs. The information in this paragraph is restricted to the most relevant local policies and programs.

Rotterdam's Adaptation Strategy (RAS)

Since 2008, the sustainability program Rotterdam Climate Proof (RCP) is in progress with its main objective to get Rotterdam 100% climate proof in 2025. The vision and roadmap towards this objective is described in the Rotterdam Adaptation Strategy (RAS).

Herijking Waterplan Rotterdam 2

In Rotterdam Water Plan 2 (2007) the urban water challenges and spatial developments come together in a collaborative approach for the municipality and the water boards. The goal is to solve the various water issues while contributing to an attractive and climate-proof city. As a consequence of the economic recession and policy developments, challenges are different now than in 2007 when the Waterplan was made. In the review Herijking Waterplan 2, which has a perspective from 2013-2018, this different context is taken into account.

Rotterdam Resilience Strategy

Rotterdam was selected to participate in the 100 Resilient City program (100RC) initiated by the Rockefeller Foundation in 2013. Following that, the Rotterdam Resilience Strategy, with a perspective towards 2030, is drafted. The Resilience Strategy ensures that Rotterdam is ready for the opportunities and challenges of the future. The program is based on Climate resilience, Cyber resilience and Social resilience. For climate resilience, the principles of the RAS are leading.

Water Sensitive Rotterdam (WSR)

Definition of the concept of "a Water Sensitive City is one where water's journey through the urban landscape is managed. A philosophy of flexibility in supply and use to meet all users' needs underpins

the collection and movement of water. The technologies to facilitate the physical movement of water are designs that manifest these ideals visually for all to acknowledge and appreciate. Three principles set the foundation for this vision of a Water Sensitive City:

- Cities as Water Supply Catchments; access to water through a diversity of sources at a diversity of supply scales;
- Cities Providing Ecosystem Services; the urban environment functions to supplement and support the function of the natural environment; and
- Cities Comprising Water Sensitive Communities; socio-political capital for sustainability exists and citizens' decision-making and behaviours are water sensitive" (*Wong and Brown,* 2009).

The attributes of a Water Sensitive City, compared with our current urban water management paradigms are described in detail in Annex 2.

*Water sensitive Rotterdam (*WSR) gives concrete expression to its ambition to tackle climate resilience. WSR has the ambition to collaborate with public, private and social parties, to small-scale measures in the capillaries of the city. WSR is not framed as a classical program, but as a movement to create awareness and public support for climate adaptation. The aim is to integrate climate adaptation and increase the sponge capacity of the city and avoid rainwater to flood directly into the sewerage system in a perspective of 30-40 years. The approach is to facilitate bottom up self-organisation initiatives to incentify climate adaptation as part of the initiatives. Within a short period of a year, 40 WSR-projects on diverse scales were appointed. These were not initiated by WSR, but facilitated according to what was necessity to bring together actors, expertise or finance. Process and goals were not predetermined, but gradually formed by those involved. The core team consists of representatives of the department of water management and besides different public, private and social parties participate in WSR. Parties participating include representatives of different departments of the municipality, designers, architects and other city-makers, but also housing associations, community organizations, communications advisers. The aim is an activation role of WSR to mainstream climate adaptation until 2018, and after the different policy fields and community continue to self-employ climate adaptation.

4.2.3 PPP in Rotterdam

In Rotterdam's practice, there is a development in which the focus of PPP transforms from predominantly PPP's within the concession model to more diversity with emphasis on bottom up PPP during time of recession and very recently a diversity of collaboration between public, social and private parties.

PPP's based on the concession model

The PPP portfolio of Rotterdam mainly consists of larger real estate developments projects and restructuring existing areas until recently. Examples are Nesselande, Nieuw Crooswijk and Katendracht, and at present in longer term integrated contracts like 'Hart van Zuid' and the old harbour of Rijnhaven. A recent successful PPP was contracting out 9 public swimming pools for 10 years through a DBFMO contact, with an incentive of using less energy.

These large PPP's predominantly within the concession model are the heritage of a decade in which New Public Management principles were popular within the management of department of city development. During the recession, the opportunities for PPP in concession model became limited. Besides focus on financial and economic considerations in concession based PPP's became relative due to the eventual risk transfer from real estate developers towards the municipality for example in Nieuw Crooswijk, or the concession Hart van Zuid, which was vulnerable because the franchise partner Ballast Nedam almost went bankrupt.

Self-organization and facilitating bottom up PPP

Recent conditions in the city of Rotterdam among which the building crisis which lasted from about 2008 to 2015, incentified the urge to co-create with various actors within Rotterdam besides the classical concession based model in cooperation with market parties. During this period it became visible that besides market parties, a diversity of social and private stakeholders started collaborations, adding value to societal issues like public space, health, food security, social cohesion, and quality of life in general which is in line with Savas (2000) definition of PPP as "a joint public-private arrangement that harnesses, more fully than conventional government arrangements do, the different strengths of different sectors to provide public services and satisfy people's needs".

Aspects that played a role at the emergence of this phenomenon (CPB, 2014) were an urgent wish of societal parties to influence and increase the quality of the direct living environment and local

government that was on hold, through lack of finance opportunities and an inward glance with reorganizations. Another aspect was increased entrepreneurship to create value and income in often by self-employed-people during the recession. This

Diversity of collaboration between public, private and social parties

The city council (2014-2018) wants to give more influence to people in Rotterdam on a more structural base to decide on the future of their neighborhood and city. Rotterdam's administration therefore experiments with different ways for more direct democracy, and a more direct relationship between wishes of private and social parties and public decision making. This ambition is described in the implementation strategy of the administration program, better known as Kendoe. The Kendoe approach is shaped in different forms and tools, such as the Citizens Jury, Talk with the Town (Gesprek met de Stad), Maexchange, Right to Challenge, Citylab010, Opzoomeren amongst others. An overview has been reviewed in Annex 4.

These arrangements which stimulate PPC, are a positive conversion of the prior top down government approach and the concession-model PPP's based on a client contractor relationship. There is also the potential to evolve from facilitating bottom up initiatives to a comprehensive PPC based on equivalence, in which alliances of public, private and social urban partners for joint contribution to Rotterdam's urban development, becomes self-evident in the municipal daily work processes.

4.3 Case description

4.3.1 Case 1: Hofbogen Highline

Illustration 1: Case Hofbogen highline

The Hofbogen is an old railway highline, that operated between Rotterdam Hofplein and Scheveningen-The Hague. The viaduct, 1.9 kilometres long, runs from the Hofplein station in the city centre through different neighbourhoods in Rotterdam north. The real estate development of the Hofbogen includes a rooftop and commercial real estate underneath. In 2006, the social housing cooperation Vestia and Havensteder bought the impoverished Hofbogen highline from NS real estate for a symbolic sum. Purpose was commercially development and for Havensteder an additional interest was to positively affect their property, neighbouring the Hofbogen Highline.

A deadlock situation

Right after this purchase the real estate crises had an effect on the plans for development. The risk of investment recovery caused hesitation to invest, while on the background, the scandal with the SS Rotterdam, a high-risk commercial real estate development with similarities to the Hofbogen, caused bankruptcy of Vestia. The municipality regarded the Hofbogen Highline as a responsibility of the market and refused partnership. At the same time, a lobby to designate the highline as a national monument, prevented the option of demolition. And the bad state of the rooftop, was a reason for the housing associations not to have it handed over, although Prorail no longer wanted the responsibility. Sale of the property was no longer an option as it was unmarketable due to the bad state. While the condition of the structure degraded quickly, with a negative effect on the neighbouring property and livelihood of Rotterdam north. These circumstances caused a deadlock situation.

Collaboration agreement

In 2015 the state of the Hofplein highline became untenable, for the housing cooperation, the municipality, the national Public Service for Cultural Heritage (ministry of OCW) and Prorail. (owners of the roof). This untenable situation leads to the Collaboration Agreement in 2015. A European EFRO funding functioned as lubricant and provided a starter investment capital for the first renovation of the commercial Hofbogen real estate. Hofbogen B.V. agreed to take responsibility towards renovation of real estate railway arches with the European start capital. The municipality negotiated and agreed on

the right of residence of the roof above the real estate and therewith ensuring the public use and greening of the rooftop. Prorail agreed to remove the railroad infrastructure and with co-investment of Hofbogen B.V. and the municipality. Due to new restrictions in the Housing Law of 2015, which demands housing associations to limit themselves to their main task of providing social housing, the Cooperation Agreement included the obligation from the National state supervisor to sell the Hofplein Highline as soon as it is marketable.

Redevelopment of the Hofplein Highline

In the name of Vestia and Havensteder, the private real estate developer Hofbogen B.V. was concerned with the preparations of the Collaboration agreement and performance of the commercial real estate development. The development started with a place making strategy, which included different low investment initiatives such as art paintings, in which the Vrienden van de Hofbogen played a role, to organise a positive atmosphere related to the Hofplein Highline. From there on the Hofbogen B.V. rented the real estate, slowly branching the real estate towards functions with more public added value. Step by step, the real estate gets refurbished. All commercial Hofbogen, although not completely refurbished, are covered with rental contracts, which contributes to the market value of the property. Meanwhile Prorail is refurbishing the roof, and when this is finished, the intention of Hofbogen B.V. is to sell the property end of 2017, in a not fully redeveloped state.

Rooftop development

The municipality agreed in the Collaboration agreement on the right of residence of the roof above the real estate, which in fact results the municipality takes responsibility for the development and maintenance of the roof park. The municipality has the ambition to develop the park in the upcoming 5 years. In advance two conceptual plans are made.

The first plan, called Aquaduct 010 is initiated by the Urbanisten in 2016 and later commissioned by the Water Management Department of the municipality, in order to get climate adaptation onto the agenda of the rooftop development. The Urbanisten, an office for urban planning and social entrepreneurs, specialised in climate adaptation are already involved long-term in the adjacent Agniessebuurt. This plan is ambitious towards climate adaptation which is included in a comprehensive way, through the concept of a water storage and purification park and includes a broad spectrum of ecosystem services, including regulating and provisioning services, in the form of water retention, filtration, and provision of rainwater as resource for brewing of beverages or drinking water. The plan is based on a development strategy in alliance with different stakeholders.

The second plan, The Green Promenade (De Natuurlijke Stad, 2016) was commissioned by the recent project leader of the municipality. This conceptual plan, includes a green rooftop park, with the highline in Paris and New York as reference. Greening of the rooftop in this plan might add to climate adaptation, although not to the extend as the plan of the Urbanisten. The Green Promenade is less ambitious towards ecosystem services, and focusses on cultural services such as recreation and quality of living. This plan is used as a future perspective supporting the sale of the Hofbogen Highline.

Climate adaptive solutions

The project Hofbogen real estate, deals with the run off of rainwater in a minimal way through direct drainage onto the green space within the Agniesebuurt. In this neighbourhood, it is decided not to invest in the introduction of a separated sewerage system, but to introduce more green space to infiltrate rainwater locally based on a proposal of the Urbanisten. Hofbogen B.V. benefits from this solution, as the drainage system was in bad shape, and now doesn't need reparation. The alternative measures in the Agniesebuurt and the roof park are financed by others, in particular the municipality. The concept for the Hofbogen, proposed by the Urbanisten, goes a lot further, and includes a comprehensive climate adaptive concept, with solutions that include the whole structure as potential for climate adaptation, the roof, but also the real estate structure and the connection with the water system in the neighbourhood of Agniesebuurt.

4.3.2 Case 2: Oude Westen

Illustration 2: Case Oude Westen

The Oude Westen case is a neighbourhood renovation and restructuring process with a large part of social housing. The Oude Westen is an old pre-war centrally located urban neighbourhood. It is characterised by a percentage of 72 % of social housing and many urban facilities in streets such as the Nieuwe Binnenweg and the Kruiskade. People with many different backgrounds live in this dense neighbourhood (Source: ditisonsrotterdam.nl/oude-westen-bloeit-op, 2017).

Large-scale Urban Renewal

In the ’80 and ’90 the municipality and social housing associations implemented a large-scale restructuring program in the Oude Westen, a neighbourhood which suffered from metropolitan problems such as unsafety, drug use, bad condition of housing, and social nuisances. The approach was not typical for the Oude Westen, but this ‘Urban Renewal’ approach, with much attention for local participation, was typical in Rotterdam during that time. Old housing was renovated, in the practical, but un-charming way that characterised this era, and many houses were demolished and replaced by new ’80 building blocks. Besides, new public spaces and brake troughs for pedestrians were created. The furnishing of this public space was predominated by pavement and without much green. It was during the process of ‘Urban Renewal’, that the action group Oude Westen was initiated (source: www.aktiegroepoudewesten.nl, 2017).

Masterplan Oude Westen

Although the physical appearance had a facelift, in the ’90 and beginning of the 21th century, the Oude Westen didn’t have a good reputation, with many social nuisances and low scores on the social- and safety indexes. The housing association, Woonstad, then developed a neighbourhood vision ‘Connecting and Seducing’ together with the municipal district council, in which the main goals were, differentiation in housing with more private properties and social-economic diversity, more safety, better societal amenities, a stronger local economy and more attractive public space. These ambitions were later translated into a masterplan Oude Westen, in 2011, in collaboration with the central municipal department of housing and the housing association, who are also the main parties that implement the masterplan. The implementation of the masterplan is, besides 3 projects, considered as almost finished.

Participation

During the elaboration of the masterplan, there was an ambition to collaborate closely with local actors, which didn’t get much attention and lead to opposition when presenting the final results, in which the action group Oude Westen, had a role. This opposition gave way to private initiatives were stimulated. Although several local private initiatives, such as the Leeszaal, the Tussentuin, could have created synergy between the local level and the masterplan, these initiatives were not a structural part of the implementation of the Masterplan Oude Westen, in which the municipality and housing association collaborated.

Private initiatives

The initiatives consisted of the Leeszaal and a Copy shop, with a social purpose. And later the greening initiatives such as Geveltuinen XL, new front gardens to social housing blocks, the Tussentuin, a temporary communal garden on the location of a demolished Woonstad, building block. Amplified by flooding nuisance there was special attention for a climate adaptive solution. A Foundation, was set up for exploitation and maintainance of the gardens. After the Tussentuin, the Bajonettuin, was initiated. In the Bajonettuin. Contrary to the other projects, Woonstad actively collaborated providing land and co-finance as this was one of their defined projects of the masterplan.

The social entrepreneur searched, for co-creation and co-finance opportunities with different organisations, including Pameijer, an organisation for social reintegration, dedicated funds, Woonstad and Water Sensitive Rotterdam. A more structural collaboration between the social entrepreneur and WSR resulted in new initiatives; the Doorbraak, the first climate adaptive street with a 100% rainwater infiltration and the Raingarden of cinema Kino. Besides these physical initiatives, a booklet, named Klimaten, with a description and ambition of the integral initiatives in the Oude Westen, was launched with a mini symposium. Recently, May 16th, a network meeting was organised for initiators and residents within the neighbourhood, to talk about opportunities to upscale the greening initiatives towards the whole neighbourhood Oude Westen. This was a big success with many initiatives and ideas (watersensitiverotterdam.nl, 2017; facebook.com/tuindebajonet, 2017; tussentuin.nl, 2017).

4.3.3 Case 3; Robert Fruinstraat

Illustration 3: Case Robert Fruinstraat

The case of the Robert Fruinstraat is an experiment for integral redesign related to sewerage renewal. The Robert Fruinstraat is a regular street in the neighbourhood Middellland, Rotterdam. Early 2016 the program WSR initiated the project Robert Fruinstraat. The occasion was the necessity of sewerage renewal and replacement of the electricity infrastructure, and the ambition was to improve public space and integrate alternative CA solutions for water nuisance through PPC.

Added value through sewerage renewal

Ordinarily these urban maintenance projects were executed by replacing urban space in the exact same way, without making any changes. These projects cause nuisance for resident's due to building activities, without any noticeable improvements and added value for public space. WSR together with the department of Urban Maintenance responsible for the sewerage renewal program, initiated the pilot-project Robert Fruinstraat, to attempt inclusion of added value for CA, public space, quality of livelihood and social cohesion, within a regular maintenance project.

Participative process

In the process, there was great emphasis on participation. Not through the standard participation procedure in which local stakeholders are able to react once or twice on municipal proposals, but intensive collaboration. The participative process included all local and a few urban stakeholders, amongst others private house owners, housing association Woonstad, representatives of the church and the women's association, water company Evides, private real estate developer Rotterdamse Vastgoed Maatschappij, and the water board.

StraaDkrant

Simultaneously Bosch and Slabbers, an urban planning office, initiated a process for knowledge development on sustainable, attractive, and adaptive redesign of Dutch streets. The Robert was used as a pilot-project elaborated on through several meetings in partnership with CA interest groups including the water boards, Evides, Stowa, Rioned, VPDelta, Rebel Group and the municipalities of The Hague and Rotterdam. And meetings to develop knowledge are organised with all sorts of parties, including local stakeholders, knowledge institutes, and consultancies. Through the medium of the Straadkrant, lessons learned were shared with people, especially policy makers, who are involved in transformation towards a CA urban environment.

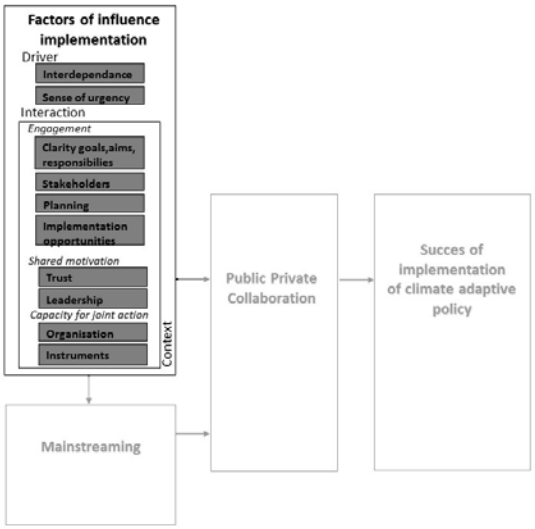
The scope of the Robert Fruinstraat was not limited to public space. Although the main focus was on the exterior, a small scaled sustainable real estate development was executed by the Rotterdamse Vastgoed Maatschappij, including a CA green roof with solar-panels. Besides redesign of the street and integrating CA measures, a solution for flooding nuisance within the adjacent building block was developed. One of the stakeholders, a private house owners, has flooding problems in his garden, due

to subsidence of land in combination with heightened neighbouring gardens and public space. The execution of sewerage renewal, would make this situation worse as it often has negative consequences on rain water nuisance in private gardens. The reason for this is that older sewerages are poriferous, with the side effect of groundwater which infiltrates directly into the sewerage pipes. When the pipes are renewed, this water finds other ways, which is most felt in the low lying private courtyard gardens, where water nuisance becomes worse.

To tackle these problems, the private garden was dealt with, within the same process in collaboration with the owners. A CA garden design was made by a consulted expert, Atelier Groenblauw. The execution of this design is still uncertain, as financial arrangements are not yet in place, although all parties are positive towards the process and feasibility.

Illustration 4: Integral sustainable concept StraaD

4.4 Analysis of the influencing Factors



This chapter describes the factors and their influence on the implementation of PPC.

4.4.1 Inclusion of two factors, exclusion of one

To start with, two extra factors came forward prominently in the interviews while less explicitly emerging from the literature review. The extra factors are;

The factor *Sense of urgency.* This is a driving factor, as Ansell and Gash (2008) appoint, it generates the energy for the initiation of a Public Private Collaboration and set its initial direction.

The factor *Explication of goals, aims and responsibilities*. This factor is relevant for 'principled engagement' in PPC as it refers to an important characteristic. Emerson et al. (2011) describe this as the stakeholders understanding of the size of the problem and the addressed challenge, as well as the scope and scale of the related activities.

On the other hand, the factor of *Management*, which was defined as "the role of management in process coordination on project level to eventually execute CA policy measures or developments which include CA", appeared less relevant in the interviews than previously assumed. A deliberate management approach, e.g. project or process management was not influencial on the succes of CA implementation in the cases, although this was the assumption based on the literature study. The influence of management rather seemed related to the management skills of individual managers and their personal position towards CA, in the narrow definition that was used. In the analysis of influencing factors *Management* will therefore not be discussed any further.

Beneath is the progressive overview of the different factors that influence public private collaboration in the implementation of climate adaptive policy measures, including the factors that came forward through the qualitative data collection.

Driving factors

I *Sense of urgency*
II *Interdependence*

Factors related to interaction

d. Principled engagement

III *Explication of goals, aims and responsibilities*
IV *Stakeholders*
V *Policy and planning*
VI *Implementation opportunities*

e. Shared motivation

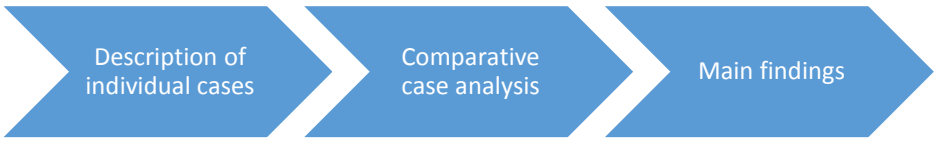
VII *Trust*
VIII *Leadership*

f. Capacity for joint action

IX *Organisation*
X *Instruments*

4.4.2 Analysis of factors

The analysis of the factors is elaborated in three steps;



Driving factors

I Factor Sense of urgency

Jeffrey and Seaton's (2003) model of receptivity is based on the idea that transition has most success if policy measures are designed from the perspective of actors involved. Therefore, it is an important condition to understand different levels and degree of 'receptivity' that current actors perceive.

Hofbogen, sense of urgency:

The case of the real estate development Hofbogen, shows no urgency for climate adaptation. The municipal project leader and the real estate developer regard climate adaptation as an urban goal on the background. Sense of urgency is lacking within the municipal departments for urban development and real estate, let alone with the real estate developer. Although there is an overall awareness of the need for climate adaptation, this is still abstract and not related to responsibilities or actions in this

project. *"As the real estate developer appoints; although people are slightly aware of climate change, it is far from a matter of course to related this to opportunities for action and efforts in your own situation."*

In contrary the social entrepreneur and of course the department of water management, have a large sense of urgency. The conceptual plan of the Urbanisten which was commissioned by WSR, is a clear attempt to put climate adaptation on the agenda, the plan of the Urbanisten, Aquaduct010 (The Urbanisten, 2017), has not been evaluated towards requirements with the same attention as the plan Green Promenade (The Natural City, 2017). *Source; Document of Spatial requirements for the Rooftop park (department of City Development, Municipality of Rotterdam, 2017); Two meeting reports on the subject "vision and requirements of the roof park". (Municipality of Rotterdam, 8 February 2017 and 1 March 2017)*

Oude Westen, sense of urgency:

There was limited sense of urgency for climate adaptation in restructuring the Oude Westen. The climate adaptive goal was not on the agenda in the masterplan Oude Westen (municipality and Woonstad, 2011) and also not during the execution of the masterplan which has almost been completed, except for a few greening projects that were performed by the social entrepreneur. *"Quoting the asset director and asset manager of the housing association Woonstad; climate adaptation was not an issue during the planning and execution phase of the masterplan process, although there is some flooding nuisance."*

Both housing association and the municipal department of housing didn't regard climate adaptation as an urban goal or opportunity on the scale of the Oude Westen, although there is awareness of the problem, due to some flooding incidents. Recently sense of urgency with the housing association increased due to structural flooding problems and costs they are facing. This shows in the concept report "Ondernemingsplan for the assets of the housing association" that mentions the necessity of integration of sustainability measures including climate adaptation. This is not an established policy yet, but it is a positive step forward. *"As the housing association mentions; the cost of damages due to unrentable real estate on the base floor or basements, unusable gardens, restauration of flood damage and the cost of ad hoc solutions such as pumps increased, which result in a search for more structural preventive solutions."*

Sense of urgency with the social entrepreneur did increase during the implementation of the different greening projects. This occurred due to concrete flooding nuisance. The social entrepreneur translated the awareness with the problem, to climate adaptive solutions on a small scale within the greening projects. *"Social entrepreneur Wolbert van Dijk; in the earlier project's it was first a coincidence that greening supported climate adaptation. Later due to water nuisance, we became aware of the urgency and it became an opportunity."*

Sense of urgency is expanding due to meetings of the program manager WSR with several housing associations. Since 2016, climate adaptation is included by two of the three larger housing associations, in the biennial Performance Agreement between housing associations and the municipality. Not yet with an extensively elaborated solution and high performance, but it has been mentioned which is a first step to put it on the agenda.

Robert Fruinstraat, sense of urgency:

Sense of urgency towards climate adaptation got high priority in the project of the Robert Fruinstraat, as it was commissioned by WSR and well communicated to other actors. *"To quote the municipal project leader for the Robert Fruinstraat; if the municipality advertises climate adaptation, it should at least show it acts according to this ambition itself in order to be credible towards other stakeholders".*

This sense of urgency initially started with the municipality, but the sense of urgency also grew with the private and societal stakeholders, especially with the private house owners with flooding problems due to rainwater, and parties that realized the potential for improvement of public space. Inconvenience due to rainwater flooding in the garden of the private housing owner, which has been aggravated due to heightened neighbouring gardens, is besides awareness a reason for the acquisitions of capacity to resolve the rainwater flooding.

Comparative analysis of sense of urgency

Annex 5 shows a comparison of sense of urgency per case and respondent group based on the concept of receptivity. Sense of urgency towards the necessity of climate adaptation, is still mainly related to the first stage of awareness, except within the case of the Robert Fruinstraat. Parties showed to be aware of the problem of increased rainfall, and the risk of flooding, due to recent attention in the media,

and flooding nuisance incidents. Although there is awareness of the need for climate adaptation, this is still abstract and not related to responsibilities or actions, the next stages of sense of urgency, namely association of the problem with the own situation, acquisition of capacity to take action and application and implementation of a new approach, which are relevant to convert sense of urgency into action. "*As the program manager of WSR mentions; Heavy rainfall became a subject of conversation recently. Within a few years time the awareness of heavy rainfall grew through news items on internet, the Dutch National News in recent years (NOS, 2016). Now it is time to translate this awareness in action."*

Regarding the type of development, sense of urgency is lowest in the case of a real estate development, a little higher in the case of neighbourhood restructuring and highest in the case of the integral sewerage renovation, although the latter can be explained as it was specifically commissioned by WSR.

Sense of urgency within the different municipal departments is still very low, besides the department of water management of which WSR is part and with several frontrunners related to public space development. More specifically; sense of urgency is lowest within the departments of Urban Development, related to real estate development. And it is relatively low with urban planners, who play a role in real estate development. Within the department of housing, sense of urgency has increased a little, as a result of the housing associations who brings forward this issue. Within the department of urban maintenance and the program of sewerage renovation, there is awareness and acquisition with the problem, but often the target of execution has more priority than inclusion of climate adaptation. Although a recent positive development is that, a budget of 10% of the total sewerage renewal program has been assigned to alternative measures for climate adaptation. Within the policy department of Water management and especially WSR sense of urgency is highly present.

It could be expected that sense of urgency for long term public problems, such as climate adaptation, would be higher within the municipality. Due to unfamiliarity of the possibilities to associate climate adaptation, other sectoral related priorities and less direct impact of issues of flooding, this is not the case. *"To quote the municipal project leader for the Robert Fruinstraat; if the municipality advertises climate adaptation, it should at least show it acts according to this ambition itself in order to be credible towards other stakeholders".*

Overall the social entrepreneurs show highest sense of urgency. They show the ability to associate with all phases of the receptivity model. And are aware, but also capable to connect the need of climate adaptation to their situation, and increase the capacity to eventually apply climate adaptive measures. *"As the social entrepreneur of the Urbanisten appoints; Climate adaptation is a very recent subject, although for specialists and people who work in related fields it is a matter of course, the subject and implementation of climate adaptation measures is still in it's infancy. Often, I'm asked to explain to policy makers of private parties to explain the basic principles and consequences of climate change, adaptation measures and opportunities to implement thse measures."*

***II* Factor Interdependency**

Definition; Stakeholders may not have all the resources they need to make decisions, and therefore depend on others who do have those resources which can include land, finance, knowledge, time, regulation and permits (Koppenjan and Klijn, 2004).

Hofbogen Interdependence:

Interdependence of climate adaptation

The Hofbogen B.V's main objective is to sell the property for a reasonable price as soon as the object is marketable. The real estate developer is only related to the first development phase and therefore exempted from costs of maintenance, which other parties such as the municipality and indirectly society will turn up for the extra costs on the longer term.

The project was not directly dependent on climate adaptation. Even more, climate adaptation was initially experienced as a risk. Due to problems with drainage of rainwater which lead to flooding nuisances, the real estate developer was not open to climate adaptive solutions. A second reason appointed was that cost recovery for climate adaptive measures would not be feasible and therefore would negatively influence the cost benefit ratio, which real estate developers strive to optimise. *"As the real estate developer quoted; initially our focus to deal with climate change, was draining rainwater away from the Hofbogen real estate as quick as possible. Our initial stand towards climate adaptive measures was negative due to risk of water nuisance and second through cost-benefit considerations".*

Interdependence of regulation, permits and land policy

There is no interdependence of climate adaptation through building regulations that make it compulsory to include climate adaptive measures to obtain a building permit or via land policy incentives. The head of urban planning indicates that regulation is necessary to be able to compel climate adaptation in the design process of real estate development. And also, the real estate developer appoints that besides incentives to integrate climate adaptation, such as land policy and pricing, clear building regulation in the building act, is an effective way to compel. The project leader of the Hofbogen appoints the absence of clear obligations to integrate climate adaptation, as a reason to give priority to other requirements.

Oude Westen Interdependence:

Interdependence of climate adaptation

There was no direct interdependence of climate adaptation during the implementation of the total masterplan which was executed by the municipal department of housing and urban development and the housing association. *"The policy advisor and housing association mentioned; The subject of climate adaptation lacked during the come out and implementation of the Masterplan Oude Westen".*

Resource interdependence

Table 10: Resource interdependencies related to climate adaptation

	Market parties	Societal parties	Public parties		
Resources	Social Housing associations	Social entrepreneurs	Municipality	WSR	Water boards
Regulation, permits, land policy					x
Co-finance	x		x	x	x
Land (public or private)	x		x	x	
Process capacity		x	x	x	
Knowledge and information		x	x	x	x

Source: author

Due to their longer-term involvement in the overall life cycle in neighbourhoods, the housing association has recently indicated to feel increased interdependence on climate adaptive measures, due to flooding nuisance, cost of flooding, unrentable assets and unusable gardens. In the near future, the housing association seeks for a combination of municipality and housing association resources, to collaborate together on mutually agreed climate adaptive measures in both public space and private property. *"The asset managers of the housing association appoint that; resource interdependence is an important incentive for PPC. If one party has sufficient resources, there is a tendency to act solo, while when depending on each other's resources, cooperation is obvious".*

This resource interdependence implies that the housing association provides resources and implements measures within their real estate, while the municipality provides resources for climate adaptive measures integrated within public space and the sewerage renewal program

Within the bottom-up greening projects, extensive resource interdependence towards land, finance, process capacity and knowledge, is already present. The social entrepreneur had an important brokerage role, and connected different interdependent resources in order to obtain capacity to implement these greening projects.

Robert Fruinstraat Interdependence:

Interdependence of climate adaptation

The project was directly interdependent of climate adaptation as it is commissioned by WSR, as an experiment to test possibilities to integrate sewerage renovation with alternative climate adaptive measures, and other urban goals, such as increased quality of public space and social cohesion.

Interdependence within the water system

In the case Robert Fruinstraat there is interdependence within the water system was decisive. The execution of sewerage renewal, often has negative consequences on rain water nuisance in private gardens. The reason for this is that older sewerages are poriferous, with the side effect of groundwater

which infiltrates directly into the sewerage pipes. When the pipes are renewed, this water finds other ways, which is most felt in the low lying private courtyard gardens, where water nuisance becomes worse.

Comparative analysis of interdependency

Interdependence of climate adaptation

Interdependence is an important driver in PPC. Direct interdependence with climate adaptation shows to be weak in most cases, except for the Robert Fruinstraat, as this is a pilot project with the assignment to integrate climate adaptation, directly consulted by WSR. Mainstreaming CA within other policy domains and developments increased interdependence. The most decisive interdependence varies per case and type of development.

Decisive interdependence

Table 11: Different types of interdependence

	Regulation, land policy and permit interdependence	Resource interdependence	Interdependence within the water system
Hofbogen Highline	x		
Oude Westen		x	
Robert Fruinstraat			x

Source: author

Real estate developments are only present in a small part of the total life cycle of projects and focus on the short-term profitability of projects, while the consequences and costs of (non)integration of climate adaptation are mostly experienced by other parties related to phases of maintenance and operation in the longer term. Understandably, this results in considerations of real estate developers regarding costs and benefits for the short term. Within real estate developments, interdependence of building permits, through clear climate adaptive policy integrated in building regulation seems the main possibility to increase interdependence of climate adaptation. Unless a real estate developer wants to profile itself with a sustainability showcase, there are little market incentives to integrate climate adaptive measures. *"As explained by the real estate developer of the Hofbogen; short term recovery of costs through marketing sustainable real estate products is generally not feasible yet."* Both project leader, head of urban planning and even the real estate developer appoint that clear requirements towards sustainability in all developments in Rotterdam and effectuation of these requirements through land policy or permits, is necessary to switch on a transition of climate adaptive building.

Within existing neighbourhood restructuring and renovation, interdependence of resources is most relevant. The approach of water nuisance and climate adaptation, is dependent on a combination of municipal and water board resources to implement measures within public space, and housing associations resources to implement integral sustainability measures within the housing association's private property, both buildings and gardens. *"As the asset managers of the housing association appoint; the best approach for climate adaptation is searching for win-win situations in which both municipality and housing association invest and collaborate towards climate adaptive solutions."* The main resources of the social entrepreneur; process capacity and knowledge of climate adaptive greening projects in both public and private space, can provide local public support and better integrated solutions. Besides social entrepreneurs can have an important brokerage role in bringing together resources.

Within the Robert Fruinstraat, interdependence within the water system is most relevant. Measures towards the sewerage system have an effect on the water systems which can increase water nuisance in low-lying private courtyard gardens. Therefore, an integral approach towards the water system as a whole is needed to be able to execute sewerage renewal that has public support and has positive effects towards the overall water system. This approach includes sewerage renewal, alternative climate adaptive measures in public space and climate adaptive measures within the adjacent building blocks and courtyards.

a. Principled engagement

III Factor Explication of goals, aims and responsibilities

Hofbogen

	Real estate developer	Municipal department of City development	Social entrepreneur
Explication of climate adaptive goals and aims	*No*	*No*	*No*
Explication of the responsibility of property owners	*No*	*No*	*No*

Explication of climate adaptive goals and aims

Although it was clear there is an ambition towards climate adaptation in general sense, climate adaptive goals and aims were not explicit and clear to the real estate developer, project leader of the municipality and social entrepreneur at the time of the real estate development. *"The social entrepreneur mentioned; there were no climate adaptive goals or aims, as requirements for the real estate developer. As the real estate developer was not clearly demanded to integrate climate adaptive measures at forehand and therefore not obligatory to any climate adaptive aims."*

Although explication of goals and aims is necessary information, the formulation and interpretation of these goals and aims preferably give room for some negotiation and creativity and customized solutions. *"The municipal project leader states that; within the explication of goals and aims, preferably there is room for negotiation within the process and the opportunity to give an interpretation to possible solutions later in the process."*

It is preferable to explicate and provide urban goals at the beginning of a PPC process, in the phase of a project outline or the program of requirements. *"As a project leader I would prefer clarity, but at the beginning of the process. If a wish list become hard objectives in a later phase of the process, it is not possible to demand, or needs to be negotiated with a negative effect towards other goals. It is also not good for levels of trust."*

Explication of the responsibility of property owners

The municipal project leader and real estate developer were not aware that private property owners have own responsibility regarding the management of rainwater on their property, instead of direct drainage to the sewerage system. The real estate developer regards climate adaptation as a responsibility for the municipality, through a sewerage system or integration within the green roof park. The opportunity to contribute to climate adaptation within the commercial real estate, is not regarded as a responsibility.

Oude Westen

	Housing association	Municipal department of Housing	Social entrepreneur
Explication of climate adaptive goals and aims	*No*	*No*	*Yes, but very recently*
Explication of the responsibility of property owners	*No*	*No*	*No*

Explication of climate adaptive goals and aims

The goals and aims related to climate adaptation were not clear to the department of housing or the housing association at time of the formulation and implementation of the masterplan. The information towards locations with priority as a consequence of risk of flooding was not available with the housing association, neither the capacity or amount of measurements that were needed. The private and social actors regard that the municipality is the designated party to provide this information and requirements. *"The housing association regards technical information on locations with heightened risk of flooding and requirements of climate adaptive capacity needed, is typically a role for the municipality."*

The social entrepreneur mentions, that within the first projects, the Tussentuin, Geveltuin XL and the Bajonettuin, there were no climate adaptive goals and aims. Only recently WSR communicated a desired climate adaptive aim for 50 mm/ m3 of water storage capacity, which gives clarity to the process.

Explication of the responsibility of property owners

The responsibility of the housing association towards climate adaptation is not generally known and often employees regard management of rainwater on both public and private property as a responsibility of the municipality. The municipality allows the housing association to take short term solutions, such as pumps and drainage in private gardens, which are not sustainable climate adaptive solutions and shift problems from the private property to the sewerage system, without specifically referring to the own responsibility. Recently due to the absence of solutions that the municipality has for water nuisance on private properties, responsibility of private and social parties towards climate adaptation does become more obvious, and there are in some cases conversations about collaborative solutions.

Robert Fruinstraat

	Private house owner	Municipality, Water Sensitive Rotterdam
Explication of climate adaptive goals and aims	*Yes*	*Yes*
Explication of the responsibility of property owners	*No, but became clear during the process*	*Yes*

Explication of climate adaptive goals and aims

Goals and aims were formulated broadly. This broad formulation offered sufficient grip, as the project included advisors with sufficient water technical knowledge. The broad formulation allowed flexibility to search for the most optimal climate adaptive solutions in balance with the opportunities of private and social actors and other urban goals. This was possible due to intensive collaboration with WSR, and process-, water technical and design capacity that was available for this process. *"As the project leader of WSR appoints; I am not a fan of very strict goals and aims as this comes along with the possibility of fixation on these goals, which often results in loss of sight on the big picture and the integral added value."*

Explication of the responsibility of property owners

The responsibility of property owners towards climate adaptation was not clear prior to the process of the Robert Fruinstraat, although quite some private house owners pragmatically heightened their gardens. Clarity came along the way of the process, due to intensive communication within the project.

Comparative analysis

Explication of climate adaptive goals and aims

Goals and aims in WSR are now formulated very broadly as;

a. The city as a sponge, with local retention of water.
b. Recently this goal has been specified towards the ambition to prevent any rainwater to drain into the sewerage system in the timeframe of 30-40 years.
c. Integrated with climate adaptive solutions within urban goals such as quality of living, greening, sustainability and social inclusion.

In experiments of WSR it becomes clear that private and social parties need some kind of objective towards water retainment. Two reasons for the limited explication of climate adaptive requirements and responsibility divide become visible. A practical reason is that the consequences of climate change and heavy rain, is still a relatively young policy field. The information to formulate these goals is therefore still in progress. In the policy document Waterplan 2 (2011), the goals were formulated very broad, as the need of 600.000 m3 of water storage in the whole city, while recently a computer model, 3DI is under construction, which maps detailed flooding scenario's depending on an adjustable downfall. Another reason for the restraint WSR has towards explication, is that one does not want to expire in the old school pitfall of a municipal department that forces it's policy to private and societal parties. WSR has the approach to enthuse and 'conduct without power' (Municipality, 2016). The assumption might be that 'conducting without power' apposes explication of goals, aims and addressing responsibilities, although this doesn't have to be in conflict with each other.

As is shown in annex 6, private, social parties are unanimous about the necessity of more specified explication of goals and aims towards climate adaptation in order to be able to act. "*To quote the municipal project leader of the Hofbogen; it is hard to demand private and social stakeholders to act, if it is not clear what, where and how much capacity is needed."* Actors within the municipality also appoint that in order to be able to mainstream climate adaptation within other policies and projects more specific information on goals and aims is needed. Preferably in the early program of requirement stage. *"As project leader of the Hofbogen, but also in other projects I would prefer clarity at the beginning of the process. If a wish list become hard objectives in a later phase of the process, it has a negative effect towards other goals or harms levels of trust."* Although explication of goals and aims is necessary information, the formulation and interpretation of these goals and aims preferably leave room for negotiation and interpretation of the possible solutions.

A translation of the 3DI model into information towards prioritized locations at risk, the amount of climate adaptive capacity needed and what measures are most appropriate is an opportunity for explication of climate adaptive goals and aims. Not as a blueprint for solutions but to set the ambition as a starting point for the best possible integrated solution.

Illustration 5: 3DI visualisation of flooding locations

Source: Municipality, 2017(rain incident of 50mm in 1 hr)

An exception to this necessity of more clear goals and aims and responsibility divide prior to the implementation process, as the case of the Robert Fruinstraat shows, when there is extensive process-, water technical- and design capacity for far-reaching participation and an optimal balance between water technical goals and aims and other urban goals and interests.

Clarity on the responsibility of property owners

The municipality and water boards have taken a lot of responsibility in managing rainwater since long, which makes it a common law. Many private, societal and even municipal parties are not aware of the responsibility property owners have for managing rainwater and assume that the water boards and municipality are responsible. Inclusion of climate adaptation is still limited in local laws and regulation, as reviewed in paragraph 4.2.2.1.

Property owners, either public or private, are responsible for processing and managing rainwater that falls onto their property. This clear description of the responsibility of property owners, is part of the Water act, although not extensively communicated and applied. Clear communication and translation of the responsibility described in the Water act in local policy, is the first step to change this status quo.

IV Factor Stakeholder

Collaborative governance requires getting 'the right people to the table' and direct inclusion of stakeholders in the decision-making process (Ansell and Gash, 2007).

Hofbogen Stakeholders

Existing though underused stakeholders

Real estate developers and real estate investment companies are important stakeholders towards climate adaptation. The amount of real estate development is substantial, and has a long-term impact. Real estate developers can have an extensive contribution to climate adaptation at an early stage.

Phase 1; Stakeholders basic development of the Hofbogen High line			
	Market parties	Societal parties	Public parties
Lead role	Hofbogen BV, Social housing associations Vestia and Havensteder as board		Municipality of Rotterdam, City Development Prorail *(with the ministry of I&M as supervisor)*
Supporting role	Tenants of Hofbogen	The Urbanisten, Friends of the Hofplein Highline	Water board
Phase 2; Stakeholders roof park development – current approach			
	Market parties	Societal parties	Public parties
Lead role	New owner (*real estate investment company)*		Municipality of Rotterdam, City Development
Supporting role	Havensteder	The Urbanisten, Friends of the Hofplein Highline	Water board

In the Hofbogen case, separation of responsibilities within the Collaboration Agreement lead to separation of collaborative stakeholders for the basic development of the Hofbogen High line and the roof park development. Although the real estate developer had an interest in the roof park and responsibility towards climate adaptation, this stakeholder withdraw itself from the roof park development and climate adaptation. A combination of stakeholders for both profitable and non-profitable components (e.g. Such as greening and climate adaptation) could balance out the responsibilities.

Promising uninvolved stakeholders

The social entrepreneur of the Urbanisten formulated an alternative desired broad stakeholder alliance, as shown in annex 7. This alliance integrates all stakeholders based on equivalence, with an interest in the roof park, and seeks for sharing investment capacity, knowledge, and integration of different interests. Finding extra third-party funds, which the Urbanisten intend to do, could be a lever to increase their position and attract alliance partners. *"As the real estate developer appoints; Social entrepreneurs like the Urbanisten, are an interesting party to link market thinking to societal challenges".*

Nevertheless, the contribution that this party may have is not utilized and the social entrepreneur is not involved in the decision-making process, but left on the side-line.

Oude Westen

Existing though underused stakeholders

The housing associations are an interesting party for collaboration towards climate adaptation. They own an extensive amount of land and roof space, which is a potential resource to implement climate adaptation on a large scale. More than 45% of all real estate in Rotterdam is owned by the housing associations, with percentages up to 80% in old city neighbourhoods, which are areas with heightened flooding risk and limited public space to implement CA. Although housing associations increasingly emphasize on their core objective of delivering social housing, this former public party still contributes to broader urban goals, through collaborative efforts in partnership with the municipality, agreed on in biannually Performance Agreements. Due to flooding problem, several housing associations now acknowledge the urgency to act towards climate adaptation.

Promising uninvolved stakeholders

In restructuring the Oude Westen, two stakeholder networks operated in parallel. The more traditional network of municipality and social housing association, that executed the Masterplan and the organic network towards greening projects and climate adaptation, initiated by social entrepreneur Wolbert van Dijk and the action group Oude Westen.

a. Stakeholder implementation masterplan Oude Westen			
	Market parties	Societal parties	Public parties
Lead role	Social housing associations Woonstad		Municipality of Rotterdam, City Development-Housing
Supporting role		Sociaal entrepreneur	
b. Organic network towards greening projects			
	Market parties	Societal parties	Public parties
Lead role	Kino, entrepreneur	Social entrepreneur/ Actiegroep Oude Westen	Municipality/ Gebiedsnetwerker Oude Westen
Supporting role	Social housing associations Woonstad	Pamijer	Municipality Water Sensitive Rotterdam/ Water board

The parties with a lead role, the department of housing and the housing association, regarded the initiatives of the social entrepreneur as small-scale greening projects, with relatively small impact. This showed to be an underestimation as these initiatives in collaboration with a broad palette of local stakeholders, and inclusion of social parties, lead to large public support and user appreciation, which was exactly missing in the process of the masterplan. *"Wolbert van Dijk stated; sometimes there was a positive collaboration with Woonstad. This occurs when initiatives precisely fit in their programs. If not, collaboration is very harsh".*

If the municipality and housing association would have valued the social entrepreneurs' activities to their potential, the greening activities and climate adaptation could have been integrated simultaneously on the scale of the Oude Westen. Nevertheless, supported by WSR, the greening projects will be scaled up, although in a much slower pace. *"The policy officer for housing states that; it would have been an opportunity to integrate the efforts of Wolbert van Dijk on a more structural basis in the masterplan implementation."*

Robert Fruinstraat

Existing though underused stakeholders

Stakeholders in development Robert Fruinstraat			
	Market parties	Societal parties	Public parties
Lead role	-Cable infrastructure companies -Real Estate Developer Rotterdamse Vastgoed Maatschappij	-Private house owners -Housing tenants	-Municipality of Rotterdam, program WSR -Water board
Supporting role	-Housing associations Woonstad -Evides	-Atelier Goenblauw got an assignment for a climate adaptive garden design. -Binder Groenprojecten, organised a workshop -The women's organisation, Arosa	-Municipal departments of Social Affairs (MO) and City Development

There was great emphasis of the process leader of the municipality to involve all relevant stakeholders in the Robert Fruinstraat. *"As the municipal project leader point out; there was great emphasis on a flexible and enthusiastic approach to incentify collaboration".*

Nevertheless, in general the sewerage renewal program executed by the municipal department of Urban Maintenance has strict targets, which often leads to very limited collaboration opportunities. *"The housing associations, the municipal department of public space, social entrepreneurs, and residents*

indicated in other cases that; it turned out to be harsh to integrate public or collective space improvement measures when the sewerage system is renewed."

The pilot of the Robert Fruinstraat is a good example of added value, user appreciation and legitimacy, due to collaboration in sewerage renewal processes. Although the program already leaves room for some collaboration provided that stakeholders adapt to the programs targets, and 10% of the programs budget is allocated for alternative climate adaptive measures, there is a lot more potential to actively involve stakeholders related to public space and private garden owners that intend climate adaptive improvements.

Promising actors towards climate adaptation on an urban scale such as Evides, mortgage banks, insurance companies, or the urban heating company were underused as this was too excessive for this small project.

Promising uninvolved stakeholders

The municipality initiated and facilitated the process. Contact was made through literally ringing all doorbells, which took an extensive amount of time to get all local parties involved. Although this kind of participation is commendable, it is unfeasible to standardize this approach due to the limitations the municipality faces in relation to personal capacity. Empowerment of local engaged parties and social entrepreneurs, such as Mooi Mooi Middelland, that could organise local representation on the scale of the whole neighbourhood, could be an alternative approach.

Comparative analysis

Existing though underused stakeholders

Promising stakeholders for implementation of climate adaptation			
	Market parties	Societal parties	Public parties
Lead role	-Housing associations -Real Estate developers and Investment companies -Water company Evides -Insurance companies -Parties that have a long-term interest in real estate, such as mortgage banks, pension funds, larger local companies	-Social entrepreneur, that are organised on a neighbourhood level -Private housing owners and VVE's, Vereniging eigen huis -Local societal parties	-Municipality (development, maintenance, social) -Water boards -National Delta program Climate Adaptation

Real estate developers, housing associations and private house owners in courtyards with flooding problems adjacent to sewerage renewal are existing though underused stakeholders with large potential for collaboration.

a) Collaboration with real estate developers and real estate investment companies is still premature. Consensus with the departments of real estate and spatial economic development (REO) is required to make collaboration a success.
b) Collaboration with housing associations in existing neighbourhoods has great potential as they have extensive amounts of real estate and land and acknowledge the urgency for climate adaptive measures due to flooding.
c) Collaboration with house owners of adjacent private garden courtyards, related to the sewerage renewal program, can be intensified.

There is often a distinction between stakeholders with a lead and supporting role. Inclusion of stakeholders on a more equal basis, representing both short and long-term interest, (estate investment companies, pension funds, mortgage bankers, insurance companies), profitable and non-profitable components of a development, with local and urban interest, could provide an enhanced representation of CA.

Stakeholders with a direct interest towards CA on the urban scale, such as water boards, Water Company Evides, or WSR, often have a small influence in individual projects. Organisations with these stakeholders, on an urban scale, could result in representation of these stakeholders, without the need to extensively participate in each individual project.

In none of the cases the National Delta program was included. Nevertheless, in the near future the National Delta program will put more emphasis on climate adaptation (besides water safety) which is an opportunity to inject more specific knowledge in national policy and at the same time formulate policy which allows a more generic local approach, e.g. in relation to local compliance of CA, or deliberation of a set of instruments for PPC arrangements.

Promising uninvolved stakeholders

Social parties are often uninvolved in collaborations. Social entrepreneurs are a relatively new stakeholder that play a vital role within urban development. A general assumption is that this group only initiates small self-organisation projects, but recently it has shown that there are several social entrepreneurs that are able to scale up their approach and effect whole neighbourhoods. Examples are; the Urbanisten and Stipo in the Agniesebuurt, Wolbert van Dijk and the Stichting Tussentuin in the Oude Westen, Delfshaven Cooperation in Delfshaven, Mooi Mooi Middelland, Stichting Plezierrivier along the river Rotte.

The social entrepreneurs feature both operational and tactical capacity and they are likely to function as 'brokers', combining process and design capacity with financing and creation of a market for their social services. The social entrepreneur has knowledge of the local context as well as acquaintance with municipal policies. They build bridges between market, public and social stakeholders on the local and urban scale. Empowerment of these social entrepreneurs could benefit repeatedly in different projects. *"As the real estate developer of the Hofbogen appoints; social entrepreneurs speak the language of commercial market parties, but they also have the urge to connect this to social goals with a public interest."*

V Factor Policy and planning

The climate adaptive policy cycle can be described as an overall framework for decision making which includes goals, principles and approaches for action, plan-making together with mechanisms for implementation and governing (Davidson, 2014).

Hofbogen

Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Real estate developer			x
Social entrepreneur	x		x
Municipal project leader	x		x

The different actors within the Hofbogen Highline-case appoint that the municipality has its main focus on the execution of projects. These projects are, as two out of three respondents mention, often embedded in broad visions, such as the Stadsvisie, Rotterdam Adaptation Strategy and Waterplan 2.

The tactical level of policies and programs, as all respondents appoint, gets little attention. Especially policies are underrepresented. There is a tendency to formulate general goals and visions which then are implemented straight into projects, with a void in the tactical level of programs and policies. The consequence is that implementation of these urban goals falters. *"Social entrepreneur the Urbanisten undescribed this idea; the vision of the Water plan was great, but translation and specification of this vision in more concrete frameworks and strategies for finance and implementation is missing."*

Oude Westen

Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Housing association	x		x
Social entrepreneur	x		x
Municipal policy advisors of housing	x		x

The different actors within the Oude Westen case all agree that within the municipal policy cycle, there is lack of concretization on a tactical level in policy or programs, which results in little framework for implementation projects. Translation of urban goals to an operational level is done repeatedly in each individual project which is inefficient and causes incoherence. *"Social entrepreneur Wolbert van Dijk typifies this; an example is the Resilience Strategy which is quite an abstract vision and thereby a list of execution projects. The Resilience Strategy incorporated a list of projects, often not even self-initiated, without much coherence ".*

Robert Fruinstraat

Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Private house owner			x
Municipal project leader WSR	x		x
Program manager WSR	x		x

All actors within the Robert Fruinstraat appoint the emphasis on the execution of projects. And two out of three actors describe the combination of visions and straight implementation in projects with a hiatus in the tactical level.

The municipal project leader of WSR appointed importunately that there is an aversion for policy formulation within the municipality of Rotterdam, and throughout many policy fields, a lack of policy. This is a result of a hands-on tradition which is one of the characteristics of Rotterdam, enforced by a political emphasis on short term results.

Comparative analysis of urban policy and planning

The city of Rotterdam has a hands-on tradition which manifests itself in the policy cycle. The strategic level and operational level are well represented, but there is a hiatus on a tactical level of policy and programs, as shown in annex 8. All respondents mention a main emphasis within the city of Rotterdam on executing projects and the majority of 7 out of 9 respondents point out a void in the program and policy phase. *"The project leader of the Robert Fruinstraat emphasizes that; in Rotterdam, there is a structural hiatus towards policies. Execution of plans is often based on abstract visions or strategies, with a lack of more specific guiding frameworks."*

This lack of framework on tactical level, in policy and program, seems to give flexibility and ability to customize, however the operation and implementation of the visions and goals become diffuse and incoherent, and elaborated on repeatedly. This has consequences for the effectiveness and efficiency of the implementation. *"The asset manager of Woonstad, mentions that within programs and policy, the relation with other urban goals and programs can be elaborated on. This coherency is often lacking within municipal ambitions. As a housing association, we are often confronted with many different ambitions and aims, which were not mutually synchronised".*

This general hiatus in Rotterdam's urban policy cycle also exists in the policy domain of CA. Respondents mention the following subjects that require to be elaborated on a tactical level; specification of more concrete aims, strategies for PPC, finance and implementation, organisational pre-requisites, elaboration on instruments, concrete deliverables on the short and mid-term. Elaboration of the urban policy cycle is an iterative process which allows to learn from projects and induct the lessons learned in policy formulation. *"The program manager of WSR affirm this; in climate adaptation, there was a focus on visions such as Water plan 2 and the Rotterdam Adaptation Strategy, and from there on straight implementation in projects. In Water Sensitive Rotterdam, we try to iterate and learn from projects and induct this towards formulation of more general principles."*

VI Factor Implementation opportunities

Definition: connecting different performance processes to increase opportunities for implementation and eventually execute climate adaptation in integral projects.

Hofbogen

As climate adaptation is not a dedicated program and has limited execution budgets, execution is dependent on process links to other projects, which is elaborated on in annex 9. In the Hofbogen High line project, the main motivation for the project was the real estate development.

Respondents emphasize that linking to projects opens opportunities that can contribute to decisions on strategic, tactical and operational level. In the Hofbogen-case, the process for linking opportunities, such as CA to sewerage renewal and infrastructure, did not take place on a strategic or tactical level, but might be attempted during operationalisation, one of the last project phases. *"The municipal project leader appointed; besides process links between real estate and the roof park early in the process, linkings such as the sewerage program, and infrastructure programs or other projects adjacent to the Hofbogen were not analysed yet ".*

The STOR (Stedelijk Team Openbare Ruimte) GIS map could be used for analysing process coupling opportunities, as it includes information of planned projects in public space. Currently it is only used on an operational level by the departments of public space and maintenance, but is not yet widely used throughout the organisation on a tactical or strategic level.

Oude Westen

In the Oude Westen, the main coupling opportunity for CA was renovation and sustaining real estate in the broad sense including energy efficiency. The most important other coupling opportunity is public space and sewerage renewal, but also private and communal garden redevelopments and social programs for social cohesion, labour reintegration. Coupling opportunities were not made on the scale of the Oude Westen masterplan, but they were extensively made within the greening projects. *"The social entrepreneur Wolbert van Dijk states that in his experience in Rotterdam, the municipal project leaders often leave very little room for extension of scope and process links. In the greening projects we succeeded, but this demanded flexibility of the private initiators to follow the strict processes of the municipality and housing association and not vice versa".*

Although all respondents acknowledge the potential of imaging coupling opportunities on a strategic and tactical level, the process coupling opportunities in the Oude Westen were made only on an operational project level. Integration of process links with larger programs and processes of social housing association, real estate development, greening and sewerage renewal could further extend the effect. For anticipation on different time frames, especially when different organisations are involved, alignment of processes should take place in an early stage, at strategic and/or tactical level.

The STOR GIS map, does include public space related projects, but is not yet complete regarding renovation and restructuring programs of housing associations. It neither includes bottom up initiatives. Inclusion of this information would be a great opportunity for process links between public, social and private parties in PPC.

Robert Fruinstraat

In the Robert Fruinstraat, defining process links was one of the main strategies. The sewerage renewal program was the main implementation opportunity, but many other opportunities were linked, creating a solid base for the project. This included all sort of links within both public space and real estate; links on the local scale, with programs and processes on the urban scale; maintenance and development activities; of both public and private parties.

These links were established in the initiation phase, but room was left for links within the planning phase. *"To quote the private house owner; the municipality didn't just send a message, but explicitly looked-for opportunities to solve issues related to the stakeholders of the Robert Fruinstraat and connect these with interests for the city as a whole."* Actively analysing process links for the sewerage renewal program, would be an opportunity to anticipate on other public space programs or private courtyard improvements, without jeopardizing the strict targets of the program.

The analysis of these links was done manually. The STOR GIS map could be a helpful instrument, although to adjust the process for linking opportunities, human interference is needed.

Comparative analysis

As climate adaptation is not a dedicated program and has limited budgets, execution is dependent on process links with other projects. Besides the opportunity for climate adaptation, there are more benefits such as added value due to inclusion of a broad set of urban goals, more efficient use of process capacity and more public support. Overall it applies that the more process links, the more likely there is

a solid implementation base. *"As the municipal project leader of the Robert Fruinstraat endorses; insight in process links is an opportunity for the implementation of CA".*

In WSR the main emphasis was on process links with bottom-up self-organisation greening initiatives. Links with climate adaptation in general is currently focussed on public space. All respondents acknowledge the opportunities to enhance the process links of CA with real estate, integrating both mitigation and adaptation measures. The Robert Fruinstraat is a good example in which CA is linked with a sustainable real estate development.

Although many respondents emphasize that analysing process linking opportunities, can contribute to decisions on strategic, tactical and operational level, this is not a standard approach within the municipality yet, and is still often postponed to the operational and execution phase. Linking processes can have positive effects, but can also lead to less effectiveness, as compromises are inevitable. This pullback is an extra reason to get a picture of all linking opportunities in order to make well-considered tactical and strategic decisions of which links are desired and which are not. *"As Woonstad points out; within the municipality there is a lack of insight in the links of programs and its consequences on the urban scale and strategic and tactical level."*

The STOR GIS map is a promising instrument which can evolve from focus on links within public space to a vehicle in which all process links can be analysed for strategic, tactical and operational decision-making. A condition is that the map elaborates with a distinction between short, medium and long-term ambitions, while providing information on housing association's renovation programs, new planned real estate developments, above and underground infrastructure, social programs, and bottom-up initiatives. To actually adjust the process for linking opportunities, besides this map, human interference is needed. Managing information of private and social parties can be a challenge but also a great opportunity for process links between public, social and private parties in PPC. *"As the project leader of the Robert Fruinstraat emphasizes; linking opportunities can be established by tuning and negotiation. A map can be a good basis, but processes need to be adjusted through human actors"*

Illustration 6: STOR GIS map, a vehicle for analysing process links

Source: Municipality, 2017

b. Shared motivation

VII Factor Trust

Definition: confidence in the reliability of a persons or organisations, in which actors keep in mind the intentions of the other parties and reject opportunistic behaviour (Edelenbos et al., 2015).

Hofbogen

Building of long-term relations

Long-term relations are a necessity to build trust. In the Hofbogen High line development, long-term relations were a basis for trust within the core team of the Hofbogen B.V., the municipality, and Prorail. In the governing level above, the steering team and the supervising parties of the ministries, changes of personnel were more often present, which resulted in emphasis on the contract of the Collaboration Agreement by the steering team, instead of emphasis on trust.

Changes of personnel within the municipality, which is often a deliberate management approach, resulted in the absence of long-term relations towards the social entrepreneur. The long-term effort invested by the social entrepreneur is often not recognised when personnel is switched which violates basis of trust. As the social entrepreneur appoints; "*Often we invest in an area, through place making, planning and building networks. At the time opportunities becomes obvious, the municipality takes over the process, with a fresh team and we are put aside as if we are only a consultancy office like all other consultants, involved for acquisition reasons."*

Mandated people

In PPC, a mandated team is a term for trust and good performance. Mandate of the municipal project leader depends on the sectoral departments behind people who perform in plan teams. Within the municipal organisation the project leaders have limited mandate, in relation to the sectoral departments involved. As the project leader appoints; *"it is always difficult to get mandated people in your plan team, as often the hierarchy within the sectoral departments result in representatives that later appear to be given little mandate. This result in little room to perform or undesirable surprises in later decision-making phases".*

Mandate of the core team was restricted by the Performance Agreement contract, but nevertheless boundary spanning activities to influence own and collaborative organisations provided a basis of trust and room for performance.

Oude Westen

Building of long-term relations

In collaboration with the municipality there are often many different departments and interchanging representatives involved. Although through account management this has improved towards larger stakeholders and in larger projects, especially in smaller initiatives or projects, there is no dedicated team, but ad hoc contact persons. Policies and regulation are often not tuned in advance, which can lead to higher levels of distrust with private or social parties. Attention for long-term relations and contact persons within the municipality, to support the collaborative network contributes to the ability to build trust.

Mandated people

Both housing association and municipality had their own representative in the Oude Westen. The mandate of the municipal process leader was to facilitate the renovation and restructuring activities. Connecting other municipal programs such as the sewerage renewal, public space and greening programs and green roof subsidy program, to the development of the masterplan Oude Westen or to the greening projects of the social entrepreneur, was managed to a very limited extend. Emphasis on outstanding boundary spanning capacity and competences to coordinate the involvement of the municipal organisation, is needed to increase mandate of representatives within the municipality. *"As the asset manager of the housing association describes; Mandate is important for both the home organisation as the collaborative network to be able to perform. If mandate is limited, performance of the collaborative network remains limited."*

Robert Fruinstraat

Building of long-term relations

The project leader and trainees were continuously involved in the process which lead to long-term relations and a basis of trust with the other actors*. "As the private house owner appoints; we could always rely on the project leaders of the municipality."*

Mandated people

The sectoral representative for public space of the department of urban development had an important and appreciated role in the participative process. At the end of the participation process in which all participants were given the opportunity to co-produce and co-decide, a superior of the sectoral department of public space, disapproved the design as it was not the outcome, which was preferred by

this department. This undermined the mandate of both the project leader and the department's representative and did harm the basis of trust. *"As the project leader of the Robert Fruinstraat explains; it is unacceptable in a process of collaboration with private actors, in which the department of public space was represented, that if optimal integral solutions are established, afterwards in a late phase in the process, these collaborative decisions get overruled."*

Comparative analysis

As Kleijn and Talisman (2008) describe; "public organisations have the tendency to put emphasis on limitation of risks and control". Emphasis on trust and relinquish control is therefore not self-evident for these organisations, although it becomes more and more important due to greater emphasis on PPC.

The respondence on trust in each case is referred to in annex 10. Trust is essential for the performance of collaboration. As Kleijn and Talisman (2008) describe; "public organisations have the tendency to put emphasis on limitation of risks and control". Emphasis on trust and relinquish control is therefore not self-evident for these organisations, although it becomes more and more important due to greater emphasis on PPC. This is endorsed by the program manager WSR, who experiences trust as one of the most important factors for PPC in the early stage of implementation of climate adaptation. *"Especially in the experimental stage of the implementation, people collaborate based on their own motivation. We deliberately choose for a strategy of community building, to establish a basis of trust."*

Building of long-term relations

Long-term relations are a necessary condition to build trust. It needs time to build a basis of trust, and become familiar with other parties' expectations and establish unwritten collaborative rules. A complaint which is frequently heard, is that the municipality has a tendency to make personal switches without paying attention to relations based on trust, especially in smaller initiatives or projects, in which there is no dedicated team, but ad hoc contact persons. In particular the group of social entrepreneurs experienced to be disadvantaged by personal switches as long-term efforts of this stakeholder are often not recognised when personal is switched. *"The social entrepreneur of the Urbanisten appoints his frustration with the discontinuity within the municipality, which negatively effects and undermines the efforts and investments that he puts in the processes. As these efforts are cashed by the municipality, but not returned due to discontinuity of personal."*

Long-term representatives of the municipality within PPC is an important prerequisite to build trust. This shows to be even more relevant in the new reality of processes that often include PPC, then in collaboration between public institutions which used to be the course of affairs. *"As the program manager WSR appoints; Collaboration between institutions is based on established trust, while in PPC trust basis is often not established yet and depends more on long-term representatives."*

Mandated people

Especially in PPC it is important that representatives have substantial mandate to be able to perform. People in the front desk who coordinate municipal representation often have limited mandate in relation to the sectoral departments involved. The municipality although one organisation, often has different interests within sectoral departments, and often gets the complaint to 'not speak with one mouth'. Substantial and clear mandates from sectoral departments towards municipal representatives is necessary and can be enhanced by boundary spanning performance of these representatives. Mandated people within the municipality, can coordinate the involvement of the municipal organisation, increase performance and contribute to the ability to build trust. *"As the social entrepreneur in the Oude Westen appoints; in prestige projects, the municipality has attention for long-term relations, but within smaller private initiatives, finding a good contact person, who is capable to coordinate the involvement of the municipal organisation is a challenge."*

VIII Factor Leadership

Leadership can be defined as bringing parties to the table and steering them through the collaborative process (Ansell and Gash, 2007).

Hofbogen

Public leadership

All respondents in the Hofbogen High line case emphasize that the municipality should take a leadership role towards the implementation of climate adaptation. One reason mentioned is that climate adaptation has a long-term perspective, but with the necessity for decisions and action now. Therefore public parties should take action and ensure the long-term interest. *"As the real estate developer appoints;*

most private stakeholders and citizens are not as idealistic, to make choices on the short term that are necessary to tackle long term issues, such as climate adaptation." Another reason, the respondents give for the municipality as a public leader is that the implementation of climate adaptation is characterised by complexity and uncertainty of climate change itself and the long term perspective and uncertainty of the right solutions. The integral approach of alternative measures, demands leadership, coordination and monitoring. *"As the real estate developer points out; The alternative approach for the problems with rainwater, raises the question if all different measures will in the end lead to a robust system. Public leadership and recurrent evaluation of the long term problem and the effects of the measurements is needed."*

The social entrepreneur of the Urbanisten specifies that the program WSR could evolve as a leader for up-scaling climate adaptation, if a certain distance from the municipality is organised, to give room to an alliance with other stakeholders. *"As the social entrepreneur of the Urbanisten appoints; it would be preferable to create some distance towards the municipal organisation, as within the municipality there are besides WSR, many interests that can frustrate the process or priorities that could overrule climate adaptation."*

WSR had a facilitative leadership role in the Hofbogen High line by attempting to influence the process through commissioning the Urbanisten for the innovative conceptual CA plan. All stakeholders agree the desired public leadership role towards mainstreaming climate adaptation is connective leadership with coordination strategies. Respondence on the factor leadership is elaborated on in annex 11.

Oude Westen

All respondents in the Oude Westen case emphasize that the municipality should take a leadership role towards the implementation of climate adaptation. The main reasons the respondents declare for the municipality as a public leader is that the municipality is the only party who has overview and knowledge on an urban level of stakeholders, processes and urban goals. This overview is needed in order to be able to implement alternative measures for climate adaptation in the integral approach.

The social entrepreneur of the greening projects in the Oude Westen points out that social entrepreneurs can fulfil a leadership role towards bottom up initiatives as an intermediate between local parties and the municipality. *"Wolbert van Dijk appoints that; As soon as the municipality takes a leadership role in bottom up initiatives, the risk is high that direction is taken away from the initiators".*

WSR has a facilitative leadership role towards climate adaptation in the Oude Westen through facilitating the social entrepreneur to perform greening projects that contribute to climate adaptation. All stakeholders agree the desired public leadership role towards mainstreaming climate adaptation is connective leadership. The latest efforts of WSR, organising network meetings in the Oude Westen and connecting different parties with initiatives throughout the whole neighbourhood, is an interpretation of this connective leadership role.

Robert Fruinstraat

Both respondents of the Robert Fruinstraat case emphasize that the municipality should take a leadership role towards the implementation of climate adaptation. *"As the project leader appoints: although many actors contribute to the development of the Robert Fruinstraat, the municipality had a leadership role due to a combination of governance skills and water management expertise."*

The main reason given is that a systematic approach for water management is needed. Effects on public and private land are interdependent and need coordination of the municipal, the water boards and private responsibilities. The municipality is best equipped with a combination of governance skills. and an overview of the city's total water system. Although the water boards have extensive technical knowledge and responsibility, all three water boards give another meaning to this role. The water board of Schieland and the Krimpenerwaard performs as a proactive partner, Delfland is also actively involved, although a little more on the background, while the water board Hollandse Delta shows very limited involvement in CA in the urban context.

Both respondents agree the desired translation of this public leadership role is connective leadership, which was performed in the Robert Fruinstraat case.

Comparative analysis

Public connective leadership

All respondents in the different cases emphasize that the municipality should take a leadership role towards the implementation of climate adaptation which elaborated on in annex 11. In comparison with

the water boards, the municipality is best equipped to perform this public leadership role. The main reasons given are;

1. The implementation of CA is characterised by complexity and uncertainty of the evolution of climate change the related solutions. The municipality can collaborate with knowledge institutes and adjust policy to anticipate on this uncertainty.
2. Climate adaptation has a long-term perspective, with the necessity for decisions and action now. Private and social parties often have a shorter-term perspective and limited receptivity, while public parties have the responsibility to ensure long-term interest.
3. The municipality has best overview and knowledge of stakeholders, processes and urban goals in the city as a whole. This overview is needed for an integral approach and implementation with inclusion of public, private and social capacity.
4. Water management and climate adaptation need a systematic approach. Different interrelated components like the sewerage systems (municipal responsibility), the boezemsystem (Water board responsibility) and the alternative measures, demand coordination and monitoring.

The operation of this public leadership should have a certain distance to the municipal organisation, to give room to balance influence of the municipality with the influence of other actors. Another specification appointed is that a public leadership role is desired for the main line and overall coordination. Each actor should be allowed and stimulated to perform sub tasks, in order to make optimal use of the capacity, resources and skills off all collaborative partners.

In most cases WSR already performs as a leader towards climate adaptation, although predominantly in a facilitative role. The desired public leadership role towards mainstreaming climate adaptation is unanimous, connective leadership. In this connective leadership role, 9 out of 9 respondents appoint the strategy of coordination as the most important. WSR is mentioned to have the potential to evolve and fill in this role, by developing a fully-fledged program in alliance with the main urban stakeholders. *"The program manager WSR emphasises the new KNMI climate scenario's show the problem of climate change and intense rainfall became even a greater, which demands priority and performance of all leadership strategies at the same time."*

c. Capacity for joint action

IX Factor Organisation

Definition; Certain formalization in an institutional embedding, to achieve and establish interaction and collaborate to reach goals (Hodge and Greve, 2005; Edelenbos et al., 2013).

Hofbogen

Organisation of policy integration and collaboration

Respondance on organisation is elaborated on per case in annex 12. Organisation of policy integration and connections between the municipal organisation and the collaborative network and the integration, influence the success of climate adaptation through PPC.

In the case Hofbogen, the department of account management and project management connected the municipality to the collaborative network. The emphasis of this organisation was on institutional design, through a contract, steering groups and committees. Boundary spanning activities were also performed, but limited and mainly on an operational level. *"The real estate developer mentions that a reason for institutional design is the collaborative network exists of more traditional bureaucratic parties, including Prorail, the municipality and the housing associations."*

An exception to the limited boundary spanning activities, was the social entrepreneur of the Urbanisten. He performs extensive boundary spanning activities, which is an opportunity for a high degree of integration of a broad stakeholder network and inclusion of policy goals. Due to their limited mandate, this is not adopted by the lead organisation of the Hofbogen.

Integration of different policy goals within the collaborative network was limited. The account manager and project leader, responsible for this policy integration, were focussed on a good cooperative relationship and boundary of scope and less on integration of different policy goals.

Oude Westen

Organisation of policy integration and collaboration

In the case Oude Westen there is a difference in organisation of the masterplan, related mainly to the private housing association and public municipal organisation. And the greening projects in which extensive integration was organised of both different social, private and public parties including the water board.

Main emphasis in the organisation of the masterplan implementation was on institutional design. Like in the Hofbogen case, the main actors are related to large bureaucratic organisations which might have a tendency to tune their organisations to the collaborative network through institutional design. The project organisation, which only included the municipality and the housing association, was shaped through the Masterplan agreement and steering groups. The departments within the municipality that connected the municipality with the collaborative network were account management, project management, and the gebiedsnetworker of the District commissions. Mainly the gebiedsnetworker made connection between the masterplan and the greening initiatives. He organised policy integration, but as the gebiedsnetworker's mandate is very much confined, the influence remained small.

The organisation of the greening projects on the other hand was informal, without any institutional design and performed extensive boundary spanning management activities. Recently in collaboration with WSR, which also performs through boundary spanning activities, climate adaptation is integrated in the greening activities.

Robert Fruinstraat

Organisation of policy integration and collaboration

In the case of the Robert Fruinstraat, there was an extensive amount of interaction between private, social parties and public parties such as the water board and many departments within the municipality.

The organisation of the project showed much attention for the collaborative network organisation, but also sufficient organisational links to the municipal organisation. Main emphasis was on boundary spanning activities and informal network meetings. Institutional design was inferior and deliberately flexible. *"As the project leader WSR appoints; a dominant institutional design is not helpful to flexible inclusion of stakeholders."*

The project leader made a well- considerate choice to tune her approach towards the collaborative network through boundary spanning activities while the municipal organisation was linked, utilizing existing bodies for integration, such as the STOR platform, the District commission and the gebiedsdirector of the department of Urban Maintenance. *"Project leader municipality explains; as people often contribute in their own time, as a return, you shouldn't demand unpleasant formal meetings, but make strive for a social pleasant meeting. And at the same time, it is important to connect to the formal structure within the municipal organisation in order to keep municipal support. "*

This combination of boundary spanning activities and utilizing existing bodies for the integration within the municipality, contributed to the integration of an extensive network and integration of a diversity of policy goals in the Robert Fruinstraat.

Comparative analysis

Organisation of policy integration and collaboration

Measures for climate adaption are very divers in nature and interrelated with a wide palette of policy domains and involved actors and departments. The organisational challenge is policy integration of different policy domains and integration of the municipal organisation with collaborative networks of public, private and social actors.

The municipality has reorganised its organisation from a sectoral, towards a matrix organisation to better accommodate this organisational challenge of integration. Several bodies for integration have been established, such as directory teams, account management, a STOR platform for public space, gebiedsnetworker and a project management office. Nevertheless, hiatus in integration continues to exist, as each of these bodies inevitably has its short comings, as is shown in Annex 12. *"The municipal project leader and program manager WSR put forward one example of the department of account management which has its main focus on facilitating private actors with limited representation and integration of municipal policy, such as CA to these collaborative processes."*

As the example of the Robert Fruinstraat shows, a combination of strong emphasis on boundary spanning activities besides connecting to existing bodies for integration within the bureaucratic municipal organisation, is a strong organisational approach for policy and network integration.

The cases show that boundary spanning activities can respond to policy and network integration opportunities in a more flexible manner, as an alternative for the attempt of integration through organisational form. As 9 out of 9 respondants emphasis mainstreaming climate adaptation in other policies solely cannot lead to up-scaling. Enforcement of mainstreaming and PPC through boundary spanning is essential for success. *"As the program manager WSR describes it; success of implementation of CA is largely dependent on competent skilled people able to make all sort of connections".*

Boundary spanning has an effect on mainstreaming CA and on interconnections and relationships between collaborative partners in PPC. The alliance model of PPC is eminently, the collaborative model which can thrive through boundary spanning.

Boundary spanning capacity shows to be present within WSR, the majority of all respondents appoint that although existing, boundary spanning capacity within the municipal organisation is still scarce. This boundary spanning capacity is needed both throughout the municipal organisation and within the collaborative network. Boundary spanning capacity is not reserved to the municipal organisation. Besides the program manager and team of WSR, the social entrepreneurs showed extensive boundary spanning qualities.

X Factor Instruments

Hofbogen

Response on used and preferred instruments and the stand towards incentification or compliance is elaborated on in annex 13. The instrument used to integrate climate adaptation in the project was a process intervention of WSR injecting information and knowledge capacity, through consulting the Urbanisten.

Instruments related to stakeholder's interest

The main interest in integration of climate adaptation within real estate development is, as the real estate developer appoints, a positive effect on the cost benefit ratio through direct reduction of cost, increased profit and direct return on investment. Market incentives, such as increase of property value in Rotterdam and land policy instruments associate with real estate developer's interest. In some more exceptional situations showcasing sustainable developments can be an incentive, as it can be beneficiary for acquisition. *"As the real estate developer appoints; for real estate developers, there is always a search for optimisation of the cost benefit ratio; through increased real estate value, increased development opportunities, reduction of the residual land value, reduction of marketing costs as a result of showcasing, reduction of flooding damage costs, or for example through generation of extra investment capital by third parties."*

Incentify and compel

Within the short-term scope of a real estate development it is often not possible yet to capture the increased value for sustainability measures as the effect is not direct but on the mid- long term. Therefore, a mechanism for compliance of climate adaptation is needed to support incentification instruments. The municipal project leader and head of urban planning within the municipality and even the real estate developer appoint that besides incentives, climate adaptive policy and regulations is needed to compel up-scaling of climate adaptation in real estate development. The real estate developer notes that regulation should be implemented gradually, in order to be able to test the workability, and enable stakeholders to adjust. *"As the real estate developer appoints; instruments that effect the cost benefit ratio are most interesting, but for compliance to avoid that public is bearing all costs, regulation is needed to give market parties a framework and perspective which is equally employed".*

Oude Westen

Instrument used to integrate climate adaptation in the Oude Westen were related to capacity building by supporting the social entrepreneur. Instruments for public private arrangements towards the housing association were not practised.

Instruments related to stakeholders' interest

The main interest for the housing association is to avoid cost related to flooding, sustain their real estate towards energy efficiency and climate adaptation for the long term, and satisfaction and social cohesion of tenants. Preferred instruments for the housing association is co-financing in a jointly approach to implement CA. *"As the asset managers of the housing association explain; a co-finance construction in which the housing association can bear the cost towards their own real estate if at the same time, the municipality finances measurements in public space is a good incentive".* This instrument can support an alliance arrangement between the municipality, housing association, Water boards, the greening program and sewerage program to co-invest in the execution of measures in both real estate, public space and collective greening projects.

Another instrument is capacity building, through supporting social entrepreneurs to implement climate adaptive measurements on the scale of the neighbourhood, at the interface between public space and private real estate of the housing association. This generates climate adaptive solutions and public support for climate adaptation, but also for the restructuring project as a whole.

Incentify and compel

The Performance Agreement is a biannual agreement between municipality and housing associations, which can compel the arrangements towards climate adaptation. Land policy, with a discount price for social housing, has long been a successful lever towards housing associations for compliance of the 'gentlemen's' Performance Agreement and the joint tasks described therein. *"As both asset managers and policy advisors within the municipality appoint; the Performance Agreement, although a gentlemen's agreement, can describe a collaborative approach of municipality and housing associations to jointly implement climate adaptation."*

Robert Fruinstraat

In the Robert Fruinstraat climate adaptive measures in both public and the private courtyard gardens subject to flooding nuisance, were integrated within the program for sewerage renovation. The process capacity instruments integrated solutions for private gardens, as often private house owners lack water technical knowledge and process and design capacity needed for climate adaptive solutions.

A financial instrument to help owners of private gardens to execute climate adaptive measures was not in place yet, although highly desirable for the gardens most prone to flooding as a result of adjacent heightened gardens and public space. It was legally not allowed for WSR to support climate adaptive measures on private land, even though it would support public interest.

Instruments related to stakeholders' interest

The main interest for private house owners is avoidance of flooding costs, increased quality of livelihood and return on investment within the real estate value. *"As the private house owner appoints; the most important incentive is an increased quality of livelihood, through an attractive usable garden. Coordination towards other garden owners within the courtyard and advice on CA garden design can help to incentify action."*

Capacity, for process coordination and design of climate adaptive measures at the interface between public space and private gardens, can be a lever for collaborative arrangements. Besides, financial instruments need to be put in place. Residents can finance smaller measures such as a water ton, but for more far-reaching measures, financial instruments such as co-finance, grants (with or without benefit sharing), government loan system or bank guaranties, climate services, social impact bonds, local revolving funds, need to be put in place.

Incentify and compel

Both the private house owners and the project leader emphasize that it is important to apply the responsibility for property owners to manage rainwater on their own property as described in the Water act, into clear local rules of play. Taxation, which rewards positive climate adaptive behaviour is preferred, as this increases awareness and responsibility is distributed equally. *"As the municipal project leader appoints; at the moment, in Rotterdam, it is equally taxed if you either pave your whole front and backyard or if you take all sorts of climate adaptive measures. Our neighbouring EU countries, Germany and Belgium, already have regulation and taxation in place to incentify positive climate adaptive behaviour."*

Comparative analysis

The palette of instruments used to incentify inclusion of climate adaptive measures within the different cases is limited. From the variety of instrumental opportunities for CA distilled from literature, the only and most important instruments used is focussed on capacity building, co-finance and communication.

Instruments related to stakeholders' interest

It is favourable to connect the instrument to added value for the stakeholders and their operational perspective and evolve the more obvious instruments of subsidising, capacity building and communication into a more comprehensive diversified palette which allows a wide use and customisation. *"As several respondents including program manager WSR, housing association, real estate developer and social entrepreneurs appoint; different stakeholders and types of projects demand different instruments."*

The preferred instruments in relation to stakeholder interest and project context that emerged from the case study are elaborated on in the table below. Besides these instruments, market incentive such as increased quality of livelihood and higher real estate value, are very influential in all cases with most effect on the real estate developer.

Table 12: Preferred instruments

Real estate developments		
Stakeholders interest	Incentification instruments	Compliance
Real estate developers; Optimal cost benefit balance and opportunities for added value and marketability	Market incentives, such as increase of property value in Rotterdam Land policy instruments; exploitation plan, residual land pricing, air rights, development concessions, air rights, land value capture Communication	Compelled through legal instruments and permits; omgevingsvisie, building act, zoning plan, urban planning conditions
Restructuring and renovation old neighbourhoods		
Housing associations; Avoidance of cost related to flooding, sustain real estate for the long term, and satisfaction and social cohesion of tenants	Financial instruments; co-finance for measures in public space (municipality) and private real estate and courtyard gardens (housing associations) Capacity building; social entrepreneurs who implement climate adaptive measurements at the interface between public space, housing association property and community Market incentives and communication	Compelled through Collaboration Agreement and legal instruments and permits; building act, urban planning conditions, zoning plan, omgevingsvisie
Reconstruction sewerage system and adjacent private courtyards		
Private real estate owners; Increased quality of livelihood and return on investment within the real estate value	Capacity building; social entrepreneurs who implement climate adaptive measurements at the interface between public space, private real estate and community Financial instruments; co-finance, grants, government loan system or bank guaranties, climate services, social impact bonds, local revolving funds Market incentives and communication	Taxation, rewarding positive climate adaptive behaviour

Communication is an important preferred instrument relevant in all cases. Generic communication, shows less effect as it is not specified to certain stakeholders or situations and will therefore only contribute to the first step of receptivity, awareness (Jeffrey and Seaton, 2003). In order to connect this

awareness to an action perspective, communication should be coupled to specific situations, projects and related stakeholders. *"The private house owner appoints that many private house owners were aware of the problems of climate adaptation, but through project communication in the project Robert Fruinstraat, people realized, that they themselves could contribute to solutions for climate adaptation."*

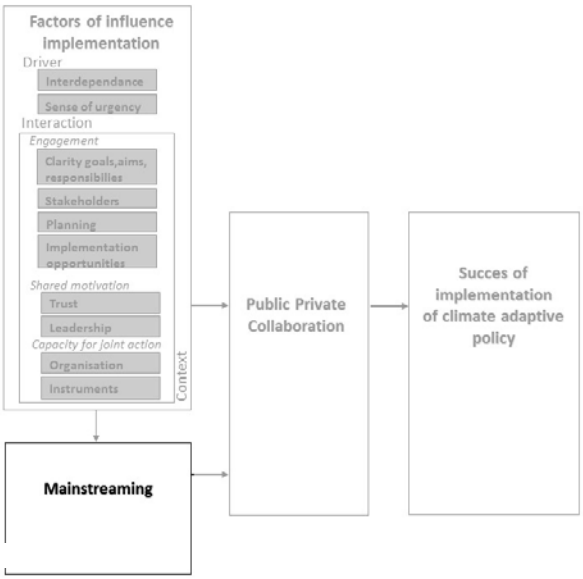
Incentify and compliance

The current instruments Rotterdam developed are focussed on incentification and not on compliance. While in our neighbouring EU countries Belgium and Germany and also in the Netherlands as Rioned declared, already over 40 municipalities, implemented rules on the responsibility of property owners for rainwater management (Binnenlands Bestuur, 2017). Although the basis for action is incentification, several respondents, even the private real estate developer and housing association emphasize that, support of robust compliance in the form of legal instruments, Performance agreements and a positive rewarding taxation is necessary to upscale climate adaptation. And translation of the responsibilities for property owners towards climate adaptation which is described in global terms in the Water wet, to local game rules, is necessary to realize these ambitions.

Especially towards real estate development, compliance needs extra attention as there are very limited incentives to include CA. Climate adaptation can be included in the omgevingsvisie, building acts, zoning plans, a water label and in land policy instruments for compliance in real estate development. Besides in restructuring existing neighbourhoods, the Performance agreement supported by the above planning instruments can support compliance. A tax system which rewards positive climate adaptive behaviour is an instrument to address climate adaptation and pass on costs on an equal basis to all property owners. More transparency in tax system with a link between water board tax and sewage tax is then desirable. Noted is that gradual implementation, enables to test the workability, and allows stakeholders to adjust.

To make sure urban competitiveness endures stricter accomplishment of the responsibilities towards climate adaptation, translation of the Water wet in local regulation and instruments is preferably elaborated in collaboration with the National Delta program and other comparable cities.

4.5 Analysis of mainstreaming climate adaptation



Mainstreaming climate adaptation is referred to as, the integration of CA policies and measures into sectoral policy, planning and urban development processes through indirect political commitment (Uittenbroek, 2014).

Hofbogen

Integration of climate adaptation

Although all respondents emphasize that mainstreaming is the right approach, CA was mainstreamed in the Hofbogen case to a very little extend, as is shown in annex 14. CA was not integrated in the plan for the commercial real estate, neither in the roof park, although this might happen in a later operational

phase. In the Hofbogen case, there was an attempt to integrate climate adaptation through a plan of the Urbanisten. *"As the Hofbogen B.V mentions; the relation with climate adaptation went as far as avoiding new flooding nuisance".*

Mainstreaming efforts mainly focussed on the planning phase. CA was not mainstreamed in other parts of the policy cycle related to real estate, for example the Omgevingsvision, land policy, building act or urban planning requirement plans. For integration of CA in real estate it is inevitable to put effort not only in the operational level, although this is inevitable to explore opportunities, but on different levels including the tactical or strategic levels within the full policy cycle. *"The real estate developer appoints; the approach for energy efficiency (climate mitigation) can become an example for climate adaptation. In energy efficiency there is also a combination of mainstreaming and program steering."*

Indirect political commitment

The department of Real Estate, Spatial Economic Development and Urban Planning are most important for indirect political commitment for CA mainstreamed in real estate. A first lobby of WSR to find indirect political commitment for CA at a strategic level within the department the Spatial Economic Development, didn't have a follow-up. Conflicting municipal interests, in terms of municipal revenues from land, which is an interest that is not in line with extra restrictions and obligations for climate adaptation, cause accomplishment of indirect political commitment for real estate development is harsh. For indirect political commitment, extensive boundary spanning capacity is necessary for example through detours of inclusion of climate adaptive policy within the process of the omgevingsvision or showcases with real estate developers specialised in sustainable developments.

Oude Westen

Integration of climate adaptation

All respondents emphasize that mainstreaming is the right approach for CA. In the Oude Westen case CA was not integrated in the masterplan, but it was mainstreamed in specific greening projects initiated by the social entrepreneur. Integration between the two processes was limited. *"Both municipality and housing association mention: there was no consciousness of the opportunities for CA to integrate the greening initiatives of the social entrepreneur on the scale of the masterplan."*

Mainstreaming efforts mainly focussed on execution plans for greening. Climate adaptation was not integrated in programs for renovation and restructuring, sewerage renewal or public space, which could be an opportunity. Reason might be that specific programs with dedicated budgets have a tendency to focus on own goals, and reject mainstreaming of other goals as this might be distractive. *"As Woonstad mentions; If you have a dedicated task and large budgets as an organisation, there is the tendency to focus on own goals, and the incentive to integrate other policy goals and parties is small."*

Besides the recent conversations on the opportunity to integrate CA in the Performance Agreements, which is a great step, CA could be mainstreamed to a much further extent in other parts of the policy cycle, for example in the Woonvisie, National program South, or public space programs.

Indirect political commitment

For indirect commitment, it is inevitable to reach consensus with the department Housing, Public Space and Sewage- and Water management. The municipal department of housing, responsible for the Performance Agreements, balances all performances together with the housing associations. They therefore are an essential party for indirect political commitment.

The housing association Woonstad has recently elaborated a business vision with the ambition for climate adaptation in their assets. This strategic document could be a basis for inclusion of CA, if the municipality tunes programs for public space and sewage renewal with the restructuring programs on a tactical level. Which could be the preparation for specific deals in the Performance agreement. Indirect political commitment, as mentioned above can only succeed through boundary spanning performance alternating between strategic, tactical and operational levels.

Robert Fruinstraat

Integration of climate adaptation

All respondents emphasize that mainstreaming is the right approach for CA. Climate adaptation was integrated in the plan of the Robert Fruinstraat case in public space, private courtyard and in a sustainable real estate development. And besides integration in an execution plan, CA was mainstreamed on a tactical level within the sewerage renewal program as an experiment. "*To quote the*

program manager of Water Sensitive Rotterdam; The upcoming 5 years, 10% of the budget on sewerage renewal will be allocated to alternative ways of climate adaptation."

It would be an opportunity to mainstream climate adaptation and the approach to include the adjacent courtyards, in all sewerage renewal projects and expand the climate adaptive program of the water board Schieland to the other water boards Delfland and Hollandse Delta, through influencing on a strategic level.

CA could be mainstreamed to a much further extent in all parts of the policy cycle, for example in the Rotterdam's policy on public space, MIP public space, or an urban strategy on courtyards prone to flooding.

Indirect political commitment

For indirect commitment for CA in sewage and public space renewal it is inevitable to reach consensus with the departments of Sewage- and Water management and Public Space. Departments that are not essential, but can certainly be supportive for indirect political commitment are the departments of social affairs and health and the resilience program. Indirect political commitment for alternative climate adaptive measures was also present through the Water board Schieland and Krimpenerwaard, who takes a front runner role towards collaborating in alternative water management solutions, besides the classical responsibility for open water drainage systems within the city

It is inevitable to reach consensus with these departments and organisations, by alternating on different levels including operational, tactical and strategic. In the Robert Fruinstraat case, indirect political commitment was organised on an operational through the plan of the Robert Fruinstraat, but also on a tactical level through the sewerage renewal program in which 10% budget was labelled for alternative climate adaptive measures. The Straadkrant (2016) is an initiative to influence this tactical level and inspire policymakers by showing opportunities for broad integration of climate adaptation with other policy goals.

Comparative analysis

Integration of climate adaptation

Climate adaptive measures, that serve only a one-dimensional goal namely water management can be very effective, although added value for the city as a whole is limited and collaboration is restricted to commissioned concessions. Mainstreaming, on the other hand is an appreciated approach by all private and social respondents, due to the added value CA can have for other goals and interests. In the cases climate adaptation was integrated to a more or less extend through mainstreaming. Although several policy domains were integrated in these cases, the reverse of assuring climate adaptation in a wide range of related sectoral policy domains is in its early days and is still limited to the sewerage program, public space program of requirements and an attempt for integration in the Performance Agreements.

In addition to the findings from the cases study, a review of the integration of climate adaptation in Rotterdam's policy provides the following insights; climate adaptation is often mentioned in an abstract way in integral strategic plans, such as the Stadsvisie or the Kaart van de Stad, but these climate adaptive ambitions are rarely translated into more specific sectoral policies, that are the basis for execution. Besides it shows that policies dedicated to climate adaptation such as the RAS and herijking Waterplan 2, (elaborated on in paragraph 4.2.2.2.), are visionary, but lack concrete and specific strategies for mainstreaming climate adaptation. Overall conclusion is that, mainstreaming activities are in a relatively early stage with emphasis on mainstreaming in execution plans.

An opportunity for mainstreaming climate adaptation, forthcoming the respondents and the policy review, would be elaboration of a strategy for mainstreaming climate adaptation. This strategy can illustrate the most relevant policy domains, that can actually contribute to the implementation. Besides development and maintenance of public space, there are promising mainstreaming opportunities for the policy domains related to new and existing real estate. *"As the policy advisor for housing appoints; there are very little examples of integrated climate adaptation within buildings or private gardens, while it is certainly an opportunity in relation to new developments and renovation and restructuring of social housing".* The policy domains of health and social development, although these might not contribute financially, can underline the need for climate adaptation and contribute through social maintenance programs.

The integration opportunities within these domains reach much further than integration in the execution plan phase onto which emphasis is now. This is further expanded through presentations of the program manager on a strategic level within the municipality, social housing associations and water boards,

which are well received, but need further effectuation. Overall conclusion is that comprehensive mainstreaming can be generated through anchoring of climate adaptation on a strategic, tactical and operational level. Therefore the full spectrum of integration opportunities within the policy cycle needs deployment, from regulation, integral and sectoral policies, programs, procedures, and plans. In the mainstreaming strategy, this spectrum of integration opportunities can be specified for each policy domain, as exemplified in the table underneath. The mainstreaming approach becomes robust in that way and can actually lead to up-scaling climate adaptation. *"To quote the project leader Robert Fruinstraat; in order to make sure that mainstreaming actually leads to up-scaling of implementation, anchoring CA in the minds of people is not enough. Mainstreaming CA needs a robust approach and integration in different policy domains, and specifically in the full spectrum of the policy cycle including policy, regulation, plans, procedures."*

Table 13: Example of the spectrum of mainstreaming opportunities

Example of the spectrum of mainstreaming opportunities per policy domain		
Real estate development;	Renovation and restructuring old neighbourhoods;	Sewerage renewal, including private courtyards and public space
Strategy; o Omgevingsvisie o Kaart van de stad o Woonvisie o Resilience strategy	Strategy; o Omgevingsvisie o Kaart van de stad o Woonvisie o Social strategy	Strategy; o Rotterdams community participation strategy; eg Gesprek met de Stad, Citylab 010, Right to challenge
Regulation; o Omgevingswet o Building act o Zoning plan	Agreements; o Performance agreements	Regulation; o GRP
Policy; o Land policy (exploitation plans, residual land value, air rights)	Policy; o Housing associations policy such as business vision assets housing association o Outdoor space policy (Rotterdamse Stijl)	Policy; o Outdoor space policy (Rotterdamse Stijl)
Programs; o Housing program	Programs; o Renovation and restructuring programs e.g. National program op Zuid o Outdoor space program o Sewerage renovation program o Social programs	Programs; o MIP outdoor space o Sewerage renovation program o Outdoor space program o Social programs
Procedure; o Project start-ups o Planning permits o Welstands commission	Procedure; o Project start-ups o Planning permits o Welstands commission o Public space program of requirements o STOR	Procedure; o Project start-ups o Public space program of requirements o STOR
Plans; o Urban planning requirement plan o Urban design o Architectural design	Plans; o Restructuring masterplan o Renovation plans o Outdoor space design o Outdoor space maintenance plan	Plans; o Outdoor space design o Outdoor space maintenance plan

Source: author, 2017

Indirect political commitment

In the mainstreaming approach, CA is dependent on indirect political commitment. This indirect political commitment is necessary for the integration of CA within the different policy domains and policy cycle instruments as describes above.

Indirect political commitment depends on consensus within different department representing these policy domains. From the cases, it shows that indirect political commitment is present to a different

degree. In the sewage program, political commitment is present for the 10% of the program budget. In restructuring, existing neighbourhoods with the housing associations, there is commitment for a collaborative approach, but an acceptable responsibility divide needs to be negotiated. In real estate development, indirect political commitment still has to be accomplished, which will be difficult due to conflicts in interest. Political commitment for CA within dedicated programs with dedicated budgets is also a challenge due to a tendency to focus on own goals, and reject mainstreaming of other goals as this might distract from the initial goals.

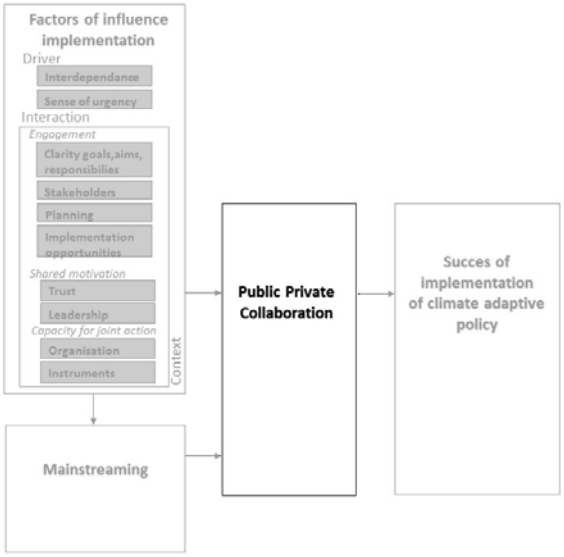
The departments relevant for indirect commitment to integrate CA differ per policy domain, as shows underneath;

- In real estate, it is inevitable to reach consensus with the departments; Real Estate, Spatial Economic Development and Urban Planning.
- In renovation and restructuring existing neighbourhoods, with the departments; Housing, Public Space and Urban Maintenance
- In sewerage and public space renewal with the departments; Urban Maintenance and Public Space

And besides political commitment is essential within the different water boards. Departments that are not essential, but supportive for indirect political commitment are the departments of social affairs and health and the resilience program.

It takes boundary spanning competences to integrate CA through indirect political commitment, to bring forward the urgency of consensus for common resilient future, strive for win-win situations and navigate around conflicting situations as they will often result in favour of the policy domains with political backup. In some situations, it is effective to first reach consensus with the external party as in the situation with the housing associations, in some cases positive showcases with mutual satisfaction can be the lever for example in the situation of real estate and in some cases alternating between operational, tactical and strategic levels is the best approach as in the case of the sewage renewal.

4.6 Analysis of Public Private Collaboration



Definition; PPC consists of sustainable collaboration with continuous exchange, between public, private, societal actors and community, which operate at the basis of equivalence, and from their own interests and perspectives, make decisions in public and societal policy issues and decisions in public and societal policy issues and develop mutual policy measures, products or services, and share risks, costs, and benefits.

In each case, the characteristics and related models of the PPC are analysed. In addition, the PPC model best suited to scaling up climate adaptation within the different types of development was evaluated. The tables in annex 15 show the characteristics and related models of the PPC, which are analysed for each case.

Hofbogen

PPC of the Hofbogen High line real estate development, consists of two stages. The real estate development has characteristics of both the alliance model and the concession model. The characteristics that tend more to the concession model are; the emphasis on the Collaboration contract, the tendency to look for clear distinction and boundaries of scope and the emphasis on principles of project management in the execution of the collaboration agreement.

The main characteristics of the subsequent PPC of the roof park are related to the concession model. The municipal project leader is awaiting the future buyer of the Hofbogen high line, before elaborating a design, but this form of participation does not go as far as the alliance model as suggested by the Urbanisten. The municipality takes all responsibility for the roof park development although in this case public space is highly interconnected with the real estate. This government-led public space approach is, although there are good exceptions, such as the PPC of the Koopgoot and increased opportunities for participation, still the traditional approach for public space developments in the Netherlands. In this concession model, the municipality tends to direct the process and contracts out some parts of the design, building, finance, maintenance and operation, without utilizing the opportunities for collaboration on a more equal basis with private and social stakeholders.

For up-scaling the implementation, the respondents emphasize on the potential of the alliance model, in which an alliance is organised by types of development, on an urban scale. Besides the alliance model, respondents appoint that the concession- and bottom up model are also relevant in some specific cases.

Oude Westen

Within the Oude Westen there are two parallel processes. The implementation of the masterplan can be characterised as a PPC alliance model, although partners were limited to the housing association and the municipality that were focussed on each other.

The greening initiatives started as incidental bottom up initiatives and recently evolved to a broad alliance on the scale of the whole neighbourhood, with social entrepreneur Wolbert van Dijk, Action group Oude Westen, program WSR of the municipality, Water board Schieland and the Krimpenerwaard, Woonstad with their last implementation projects, and several local entrepreneurs such as Kino, de Leeszaal, and a hotel entrepreneur amongst others.

For up-scaling the implementation, the respondents emphasize on the potential of the alliance model, for restructuring existing neighbourhoods. With strategic alliances on the urban scale and collaboration agreements on the scale of the neighbourhoods with the housing associations, the water boards, the municipality and social entrepreneurs. In addition, the housing association appoints that facilitating bottom up initiatives remains relevant for public support, even though the effect towards climate adaptive capacity may be small.

Robert Fruinstraat

The Robert Fruinstraat has been initiated by the program WSR, but with an ambition to seek as much integration and collaboration opportunities as possible. Although the municipality has a leadership role, the process has many characteristics of the alliance model, as is shown in the table above. The level of participation was high and includes co-producing and co-deciding, the two highest steps on the 'participation ladder' (Arnstein, 1969; Edelenbos, 2000).

The alliance parties that invest resources were extensive and included WSR (knowledge, process capacity), the municipal sewerage program (finance), the water board (knowledge, finance), the private house owner (land), the Rotterdamse Vastgoed Maatschappij (development of sustainable real estate), social organisations (land, local knowledge and information), and a group of climate adaptation experts.

For up-scaling implementation, the respondents emphasize on the potential of the alliance model.

Comparative analysis

Table 14: ***PPC model within the cases***

Case	PPC model
Hofbogen High line	
Real estate development	Combination of concession model and alliance model
Roof park	Concession model
Oude Westen	

Masterplan Oude Westen	Alliance model, with limited partners
Greening initiatives	From bottom up self-organisation evolving towards an alliance model
Robert Fruinstraat	
Total project	Alliance model, although initiated by WSR
WSR	
Overall program	Main emphasis om facilitating bottom up self-organisation

In the cases, a large variety of PPC models can be distinguished, and even within the cases different PPC models evolved. The real estate development Hofbogen High line has characteristics of both the alliance model and the concession model. Despite the opportunities for an alliance in the PPC of the roof park most the characteristics of are related to a concession model, a traditional model for public space developments in the Netherlands. The implementation of the masterplan in the Oude Westen can be characterised as a PPC alliance model, although very limited partners were integrated. The greening initiatives evolved from bottom up self-organisation initiatives towards an alliance model, with recurring partnerships in different initiatives. In the Robert Fruinstraat, despite the municipal leadership role, the process has many characteristics of the alliance model. Besides the cases of study, the majority of the projects in WSR are based on facilitating bottom up self-organisation initiatives.

This variation seems to be the result of a pragmatic approach to PPC with considerations on the level of projects.

Alliance model for up-scaling

A deliberate urban strategy towards PPC for climate adaptation and selection of models that are most effective, need elaboration in the endeavour to upscale climate adaptation. The alliance model has most potential for mainstreaming and up-scaling CA. This is validated in several manners. First the socio-political and economic context for PPC in Rotterdam. Second through response of the interviewees onto the question, “which PPC model would be most appropriate for up-scaling CA?”. Third a comparison of the characteristics of the different PPC models (Edelenbos and Teisman, 2008; Klijn and Teisman, 2003) with the characteristics defined for PPC in up-scaling and mainstreaming CA (page 12), shows the alliance model has most commonalities. And the alliance model can give an appropriate response to the outcome of several factors such as interdependence, explication of responsibility, stakeholders, implementation opportunities, trust, leadership, and organisation. Finally, the alliance model has most potential for up-scaling due to the opportunity of strategic alliances for repeated performance of networks.

Choice of an appropriate PPC model is not only based on the assignment and interdependent stakeholders, but it’s also influenced by the socio-political and economic context. In Rotterdam's practice, an evolution in PPC is observable, which has been elaborated on in chapter 4.2.3. Emphasis in PPC evolves from predominantly PPC’s based on the concession model under influence of New Public Management influences and prevailing financial and economic considerations. Later, during times of economic recession and real estate crises, Bottom-up initiatives emerged influenced by a more awaiting stand and limited finance of municipality and market parties. While recently, a diversity of arrangements for collaboration between public, social and private parties are stimulated by the current administration, as reviewed in annex 4. There is also the potential to evolve this approach of facilitating bottom up initiatives to a comprehensive PPC based on equivalence, in which alliances of public, private and social urban partners for joint contribution to Rotterdam’s urban development, becomes self-evident in the municipal daily work processes. Current social-political context and flourishing economic climate in Rotterdam provides a good base for the alteration of these arrangements to an alliance model of PPC in which local bottom up initiatives and social parties become a full-fledged part and are at the same time connected to broader urban policy goals with more influence besides the operational level, on a tactical and strategic level.

In response to the question, “which PPC model would be most appropriate for up-scaling CA?”, all respondents emphasize on the potential of the alliance model for up-scaling CA, as is referred to in annex 15. In several cases PPC had characteristics of the alliance model, although alliances were restricted to the project level and a more deliberate choice for the alliance model would have resulted in better outcomes for example through less emphasis on contracts and connecting different components within the project in the Hofbogen case, inclusion of a broad palette of alliance partners in the masterplan Oude Westen and equal distribution of responsibilities between public, private and social alliance partners in the Robert Fruinstraat. Respondents appoint that the other PPC models have less

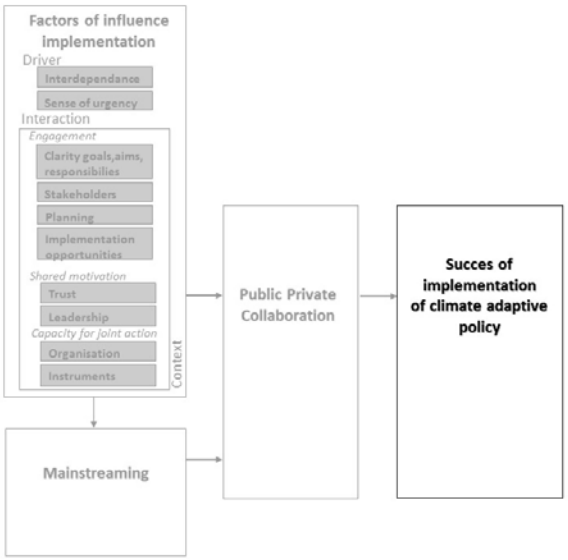
potential for up-scaling. Facilitating bottom-up initiatives, although in the experimental phase this approach increased public support and sense of urgency, the effect in terms of capacity for CA is very limited and therefore in itself, not appropriate for up-scaling. While in the concession model effect for CA is potentially large, CA cannot be solved with a limited amount of major water storage projects which would best suit the concession model, as solutions need spreading and implementation within the cities veins. *"Social entrepreneur Wolbert van Dijk appoints that; WSR is largely related to bottom up initiatives. Although this model is successful towards public support, the effect towards CA capacity is limited and therefore up-scaling opportunities are limited. In that respect, the alliance model for PPC has most potential.*

For up-scaling implementation of CA, alliances on project level need reinforcement by building strategic alliances with parties that are promising in relation to the implementation of climate adaptation. Strategic alliances are thought to have most effect if they are organised on an urban scale specified by types of development; real estate developments, restructuring existing neighbourhoods and for sewerage and public and private space renewal. In addition, local alliances build around a specific project are indispensable, integrating local parties, local information, and increase legitimacy and effectivity of solutions.

Other models in specific cases

Besides the alliance model, respondents appoint that the concession- and bottom up model are also relevant in some specific cases. The concession model might be the best option in highly desired locations such as the city centre, with potential for value creation and the need for innovative solutions due to high pressure on space and the need for large climate adaptive capacity. The bottom up initiatives remain an opportunity and no-regret in urban areas with an active community. These initiatives can be facilitated while at the same time inclusion of climate adaptation can be requested.

4.7 Analysis of success of implementation



Success in PPC can be determined by both content outcomes and process outcomes (Klijn et al., 2010). In each case the success factors and opportunities for improvement for content and process outcomes have been evaluated in relation to scalability. The question is therefore; which factors were most influencing effectiveness in terms of scalability in relation to the content outcomes, and which factors were most influencing repeated performance of networks in relation to process outcomes.

Hofbogen

Content outcomes

[+] Success factors in the real estate development of the Hofbogen:

Implementation opportunities for CA through *mainstreaming* within real estate development is an opportunity to enhance the overall resource capacity and implementation opportunities for CA. Provided

that *implementation opportunities* are analysed on both strategic, tactical and operational level, these process links of CA within real estate developments are scalable, for the reason that;

- There is a substantial amount of implementation opportunities for climate adaptation within real estate due to an estimated demand of approximately 51.000 houses between 2016-2040.
- This in combination with good market conditions and profit margins for real estate developers and investors allows the opportunities for recovery of costs for integrated climate adaptive solutions, which allows integration on a large scale.
- Addressing climate adaptation in Rotterdam's areas with higher risk of flooding, the city centre and old city neighbourhoods, is possible due to the current urban densification strategy in Next City (2017).

The factor organisation for policy and network integration, could be completed through adding boundary spanning capacity to the already existing integrative municipal bodies, account management and project management, which were well in place within this case. Boundary spanning capacity could result in optimisation of policy integration of CA and collaboration between the municipal organisation and a more extended collaborative network.

[-] Improvement points in the Hofbogen

For mainstreaming CA, increased *sense of urgency* within and *indirect political commitment* from real estate related departments is inevitable for up-scaling and repeated performance of networks related to integration of CA within real estate.

Absence of *explicit climate adaptive goals and responsibility*, allowed an open end with respect to integration of CA. Although all respondents emphasized that it is legitimate that property owners and real estate developers share responsibility towards the implementation of CA, this is not complied within the Hofbogen. Reinforcement with *explication of goals, aims and responsibilities* and magnification of *interdepence* with CA in real estate developments through translation of CA goals and responsibility in instruments to comply CA such as land policy instruments, building codes, zoning plans, and urban planning requirements.

Instruments for integration of CA through public private arrangements need elaboration. Instruments to incentify and comply CA such as land policy instruments, building codes, zoning plans, and urban planning requirements are not in place yet.

In order to scale integration of climate adaptation within real estate developments, besides the focus in *policy and planning* on the operational level, e.g. commissioning the Urbanisten for a plan, the main effort must be focussed on the tactical within the policy cycle e.g. elaborating climate adaptive policy and programs, to mainstream CA integration and building PPC alliances. This focus will allow up-scaling of the implementation.

Process outcomes

[+] Success factors in the Hofbogen:

The alliance model approach in the real estate development of the Hofbogen High line is an opportunity for inclusion of public space within the real estate develoment. Extension of collaborative *stakeholders* within this alliance, as proposed by the Urbanisten would represent both profitable and non-profitable components, short and long-term interests and stakeholders with an urban interest towards CA.

[-] Improvement points in the Hofbogen:

WSR performed a *public leadership role* in this case. As elaborated on in the factor *leadership*, the interpretation of this public leadership role need evolvement from the modest facilitative leadership as shows in the Hofbogen, towards in evident connective leadership, coordinating implementation with real estate related departments which has most opportunities for scalability.

In addition to the participant governed organisation in the operational stage of the Hofbogen High line case, all respondent emphasizes that a *lead organisation governed network* for CA in combination with partial performance of activities by network participants would increase the performance of the alliance network when up-scaling climate adaptation.

Oude Westen

Content outcomes

[+] Success factors in the Oude Westen:

In imitation of increased *Sense of urgency* for CA within the greening projects*, Sense of urgency* within the housing associations increased due to recurrent cost of flooding for the housing association. Besides this driving factor, extensive *resource interdependence* towards land, finance, process capacity and knowledge, was present within the bottom-up greening projects. Extension of *resource interdependence* through aligning municipal public space and sewage program, with the renovation programs of housing associations assets, will allow up-scaling CA implementation including both public space and build environment. R*esource interdependence* together with increased *sense of urgency* are important driver for collaboration and allow up-scaling CA in restructuring existing neighbourhoods.

Following the example of up-scaling the greening initiatives in the Oude Westen, increasing *implementation opportunities* through *mainstreaming* of CA within restructuring and renovation of existing neighbourhoods, has extensive opportunities for up-scaling CA in both public space and buildings, for the reason that;

- The assets of housing associations in Rotterdam cover 45% of all houses. And in the old city neighbourhoods, their assets are even higher, often 60-80%.
- The frequency of renovation and restructuring is 15-30 years. This means that within 30 years all social housing real estate and neighbourhoods can be climate adaptive.
- Addressing climate adaptation in Rotterdam's areas with higher risk of flooding, is possible due to large quantities of social housing in these areas.
- Governance agreements between the municipality and the housing association are relatively easy.

*Imaging implementation opportunities and p*rocess links on a strategic and tactical level, beyond the currently employed level of projects, will allows realigning the municipal sewerage and public space program, with the housing associations renovation and restructuring program. This would benefit effectivity and resource efficiency and resource distribution and allow up-scaling.

The integrative aspect of solutions through *mainstreaming* CA within the greening initiatives on the interface of public and private space, exemplifies how representation of different policy goals, can result in larger added value for collaborative actors and increase legitimacy. Elaboration of a strategy for mainstreaming CA could explicate mainstreaming opportunities within the policy domains beyond greening including existing real estate and the social domains. Anchoring CA on a strategic, tactical and operational level can deploy the full spectrum of integration opportunities within the policy cycle, from regulation, integral and sectoral policies, programs, procedures, and plans.

[-] Improvement opportunities in the Oude Westen:

CA goals and responsibilities for property owners such as the housing association were not explicated. To allow mainstreaming CA and collaboration between public, private and social actors. *Explication of goals, aims and responsibilities* needs explicit attention and will allow compliance and up-scaling of CA.

Instruments mainly focussed on capacity building, co-finance and communication. Extension of this the instrumentation with the biannual Performance Agreements, an instrument which can support compliance, could integrate two sided efforts towards CA. These agreements are currently often to abstract, limited to the short-term operation level or mainly demand unbalanced efforts of the municipality. Clear formulation of two-sided effort on a tactical level beyond incidental projects in the performance agreements would be a supportive instrument.

Process outcomes

[+] Success factors in Oude Westen:

WSR evolved its *public leadership role* from facilitating greening initiatives towards coordinating up-scaling of these initiatives and at the same time establishing collaboration on a strategic level with the housing association which might be complied within the instrument of the Performance agreement. This performed leadership role and its interpretation performed on the *tactical level of the policy and planning*

cycle beyond focus on the operational level of facilitating individual projects. This will allow effectivity and contributes to scaling opportunities and repeated performance of collaborative networks.

Following the example of the private greening initiatives, better representation of social *stakeholders*, can enhance balance between social, market and public interest and public support. The social entrepreneur, can perform an important 'brokers role', building bridges between market, public and social stakeholders and local community on the local and urban scale. Deploying process and design capacity. The social entrepreneur has knowledge of the local context as well as acquaintance with municipal policies. Empowerment of these social entrepreneurs could benefit repeatedly in different projects and increase legitimacy.

The evolution of the bottom up initiatives to an *alliance model* PPC with an extensive amount of local parties and initiatives on the scale of the Oude Westen was a success achieved through effort of the social entrepreneur and WSR, which allows up-scaling and repeated performance of the network.

[-] Improvement opportunities in Oude Westen:

In contrary to the implementation process of the masterplan, in which the established actors, social housing association and municipality, focussed on their own goals, and integrative bodies within the municipality didn't cover the integration and collaboration opportunities, resulted in little public support for the masterplan. The social entrepreneur and program manager WSR managed the governance network through extensive *boundary spanning* and joined a broad spectrum of urban goals and linked these to local needs, including quality of livelihood, social cohesion and climate adaptation. *Boundary spanning*, merging the masterplan process restructuring the existing neighbourhood and the established actors, with the local network of the social entrepreneur would have increased the level of satisfaction of the latter party resulting in repeated performance of these collaborative networks.

In the Oude Westen the participants governed networks, result in different small networks with division of tasks. All respondents emphasize that a *lead governed organisation* with focus on a strategic and tactical levels in combination with partial performance of activities by network participants would benefit the performance of the alliance network when up-scaling climate adaptation.

Robert Fruinstraat

Content outcomes

[+] Success factors in Robert Fruinstraat;

Interdependence within the water system and *sense of urgency* relating all stages of receptivity were important drivers for collaboration and an integral approach of public space, sewerage renewal and adjacent private courtyards. This benefits effectivity towards flooding problem in both public and private space, and efficient due to integrated processes, which allows up-scaling this approach.

Mainstreaming CA in the sewerage program, public space program and alternative climate adaptive measures in private gardens most prone to flooding is scalable, for the reason that;

- The amount of sewerage renewal is extensive and includes a length of 40 km yearly, with an investment budget of approximately €40 million.
- The life cycle of the sewerage system is 40 years, from which can be deduced that alternative climate adaptation in streets and adjacent courtyard gardens can be implemented within 40 years.
- The sewerage renewal already labelled a 10% budget for alternative climate adaptive measures which could be extended.

*Imaging implementation opportunities and p*rocess links on a strategic and tactical level, will allows realigning the municipal sewerage with the public space program and private courtyards prone to flooding.

The integrative aspect of the solution is optimalised due to maximal emphasis on integration of different goals and *mainstreaming* CA within renovation of the sewage system, public space and social goals. This result in more effectivity, as added value increased, more efficiency deployment of resources and increased legitimacy for sewage renewal and CA, which will allow up-scaling the implementation of CA.

Iterating from the operational level, in the Robert Fruinstraat, WSR needs to put its main effort on *a tactical programmatic* approach in the ambition to upscale the implementation. The Straadkrant contributes to evolve from an operational level to a tactical policy and program level which benefits the potential to scale up the approach of the Robert Fruinstraat. One of the desired activities within this program approach, is analysis of process links on the level of the city as a whole, and well ahead, to be able to make preparations, such as co-finance, process capacity, to avoid frustration of the sewage program targets. Another activity is elaboration of *instruments* to enable finance for climate adaptive adjustments in private courtyard gardens.

[-] Improvement opportunities in Robert Fruinstraat;

Efficiency towards process capacity; Through inclusion of local social entrepreneurs, as intermediate to include local conditions and networks, process capacity which is scarce due to multiple reorganisations, might become more feasible when scaling up.

Process outcomes

[+] Success factors in Robert Fruinstraat:

Building long term relations based on equivalence resulted in large levels of *trust* which benefits repeated performance of this network. The projectleaders boundary spanning capacity prevented that receded mandate from the sectoral department of public space didn't harm the basis of trust within the collaborative network. As elaborated on in the factor *trust*, substantial and clear mandates from sectoral departments towards municipal representatives is necessary and can be enhanced by boundary spanning performance of these representatives. Mandated people within the municipality, can coordinate the involvement of the municipal organisation, increase performance and contribute to the ability to build trust.

As the *organisation* of the Robert Fruinstraat shows, a combination of strong emphasis on boundary spanning activities besides connecting to existing bodies for integration within the bureaucratic municipal organisation, is a strong organisational approach for policy and network integration.

[-] Improvement opportunities in Robert Fruinstraat:

WSR performed a *public leadership role* in this case, which is desired as elaborated on in the factor leadership. Nevertheless, this case showed feasibility of repeated performance was vulnerable due to the extensive amount of process time which is invested. As elaborated on in the factor *leadership*, the interpretation of this public leadership role need evolvement from performing extensively in individual projects, towards in evident connective leadership, coordinating implementation. Empowerment of local engaged parties and social entrepreneurs, such as Mooi Mooi Middelland, that could organise local representation on the scale of the whole neighbourhood, is an example of this desired leadership role, which would allow up-scaling and repeated performance of networks.

The process was governed through a lead organisation on a local scale. For up-scaling, the respondents prefer a *brokered form of network organisation*, either a lead organisation for internal legitimacy reasons or NOA which has more autonomy in relation to the municipality. In both cases municipal leadership is preferred.

Comparative analysis

In general, the degree of success in this research context is determined by the opportunities to scale up the implementation, which is currently the main objective in the implementation of CA in Rotterdam. Success of implementation of CA in PPC is determined by both content outcomes and process outcomes (Klijn et al., 2010). Content outcomes are determined by effectivity, efficiency and legitimacy related to up-scaling opportunities and process outcomes, at least as important for success, are related to the opportunity for repeated performance of networks.

Content outcomes

Reinforce driving factors

Sense of urgency and interdependence showed important drivers for collaboration in the implementation of CA. Sense of urgency for climate adaptation, the first driver, is in mainly related to the first stage of awareness. The necessity of CA is recognised in an abstract way, but association with the problem and the role every party needs to play, acquisition of resources and actual implementation needs further specification to increase sense of urgency. Instead of aiming on creating awareness, focus on concretion of an implementation strategy in collaboration, can respond to all steps in receptivity

(awareness, association, acquisition and application) and increase sense of urgency. Interdependence, is a second important driving factor for collaboration. Direct interdependence of CA is still weak unless there are direct consequences such as nuisance and costs of flooding or marketability of CA. Mainstreaming CA within other policy domains and developments increases interdependence. Explication of stakeholder's interdependence and exploiting of these interdependencies is adhesive for collaboration which allows up-scaling.

Effectivity through scalability in different types of development processes

Focus on an implementation strategy which includes *implementation opportunities* for CA through *mainstreaming* in a) real estate development, b) restructuring existing neighbourhoods and c) program links of sewerage and public space programs, has potential to scale up implementation on an urban level and increase effect and efficiency.

a) Real estate development; Good market condition for real estate and a substantial demand of approximately 51.000 houses between 2016-2040 as described in a recent elaboration on the 'The Kaart van de Stad' (Municipality, 2016) is a major opportunity to integrate CA in sustainable real estate developments. A significant part of this new real estate is planned within areas with heightened flooding risk such as densification of the city centre, with very limited public space and therefore an urge for CA integration.
b) Restructuring existing neighbourhoods; There is great potential for implementation of CA in restructuring and renovation of social housing as this covers approximately 45% of all housing in Rotterdam (CBS, 2016) and 60-80 % in the old city neighbourhoods which are prone to flooding, in a renovation cycle of approximately 30 years. A specific opportunity in the near future is integration of CA in the major program National Program Rotterdam South, as the housing associations prioritized to deploy their resources in this area.
c) Sewerage renewal program; often has negative effects on flooding nuisance in the adjacent courtyards which are vulnerable for flooding. An integral water system approach which includes coutyards prone to flooding, integration of public space programs and the GRP (municipal sewerage plan) with a capacity of approximately €40 million per year, has the opportunity to implement CA in a large part of the cities streets and adjacent courtyards, within the 40 years' life cycle of the sewerage system (municipality, 2015).

Focus on tactical level to allow up-scaling

Alteration from focus on performance in individual project on an operational level, to main effort on a tactical level will attend up-scaling the implementation of CA. This tactical level within the policy cycle, in the form of CA program and policy, can strengthen sense of urgency, explication of goals and responsibilities, an implementation strategy, elaboration of instruments, strategic PPC alliances and an organisation model with enhancement of boundary spanning capacity. This will allow scalability of content outcomes.

Attention for compliance

Inclusion of CA on a wide scale is not evident yet, and still has a voluntary character. CA goals and aims are formulated very broadly and responsibilities for property owners are not complied with. Besides several frontrunners, sense of urgency for mainstreaming CA in urban policy domains within the municipality is non-committal. Main focus was on incentification in the cases. Although this is an effective approach in the early experimental stage of CA implementation, for up-scaling CA more attention for compliance is desired. For PPC, private, social and public respondents are unanimous about the necessity of explication of CA goals and aims in order to upscale CA. Besides, actors within the municipality appoint that more specific information on goals and aims can enable and comply mainstreaming CA within other policy domains.

Responsibility of property owners, for processing and managing rainwater that falls onto their property, as described in the Wateract, is not emphatically communicated and complied with. Clear communication and translation of the responsibility described in the Water act in local policy and supporting instruments is the first step for compliance.
Several respondents emphasize that mainstreaming will not automatically result in up-scaling CA. A prerequisite is attention for compliance through public leadership, concretised in program and policy including explication of goals and responsibilities, and instruments that support compliance besides incentification.

The integrative aspect of solution

The degree of success is determined by the extend of integration, which is the way in which the project represents different policy goals, such as quality of life, economic competitiveness, social cohesion, health, and sustainability. The mainstreaming approach can establish this integration, which results in enhancement of effectiveness as in greatest possible added value, efficiency as in shared resource capacity and more legitimacy for execution as actors can influence the solutions according to their needs.

Process outcomes
Public leadership

The reasons described in the factor leadership (par. 4.4.2.8), and conditions for success, up-scaling CA and repeated performance of networks, require public leadership. In most cases WSR performs as a leader towards CA, although predominantly through a facilitative role. The municipality has best comparative advantages regarding stakeholders, processes, urban goals and the water system, for taking a leadership role. The execution of this role needs to focus on connective leadership, coordinating up-scaling CA and repeated performance of networks. Respondents appoint a certain distance to the municipal organisation is desired so that each actor is allowed and stimulated to perform sub tasks, and make optimal use of the capacity, resources and skills off all collaborative partners. According to several respondents, WSR has the potential to evolve and fill in this role, by developing a fully-fledged program in alliance with the main urban stakeholders.

The alliance approach in PPC

The alliance model has most potential for scalability and repeated performance of networks. This alliance model, is best equipped for repeated performance of networks. In this model, there is the opportunity to collaborate in an alliance on local level in execution of plans, while at the same time induct operational lessons learned to more strategic and tactical decisions in a strategic alliance, and vice versa. The alliance model has the possibility to engage a broad stakeholder network who can represent long and short-term interests, local and urban actors, establishment institutions and novel actors. Special attention is required for better and more equivalent representation of social stakeholders, to enhance public interest and public support and increase legitimacy. The social entrepreneur, can deploy a leading role in the representation of social stakeholders. Social stakeholders can insert process and design capacity and perform an important 'brokers role'. They build bridges between market, public and social stakeholders and local community, with their knowledge of the local context as well as acquaintance with municipal policies. Empowerment of these social entrepreneurs could benefit repeatedly in different projects.

Table 15: Lead organisation governed networks

PPC governance form		
	Cases	Preference for up-scaling
Hofbogen	- *Participant governed networks*	- *Lead organisation in combination with partial performance of activities by network participants*
Oude Westen	- *Participant governed networks*	- *Lead organisation in combination with partial performance of activities by network participants*
Robert Fruinstraat	- *Lead organisation, on a local level* with partial performance of activities by network participants	- *Lead organisation (for the reason of internal legitimacy)* *Or;* - *Network Administrative Organizations (NAO) (for the reason of efficiency)*
WSR	- *Participant governed networks*	*Combination of* *-Lead organisation towards alliances on a strategic level* *And;* - *Participant governed networks on local project level,*

Many of the cases within WSR, including the Hofbogen High line and the Oude Westen were Participant Governed Networks. The Robert Fruinstraat was an exception in the sense that tasks were delegated to one party, which in this case was WSR.

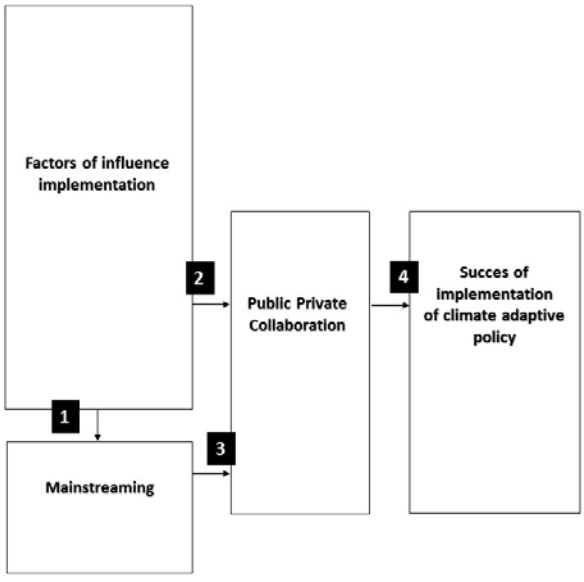
When up-scaling CA, the respondents emphasize that a brokered governance organisation, in which certain overall tasks are delegated to one lead party, is most effective towards the implementation of CA. A lead organisation with focus on the strategic and tactical level in combination with partial performance of activities by network participants is most preferred. This will allow utilization of the municipal capacity and internal legitimacy, but also utilization of the capacity of other alliance partners.

Respondents indicate attention is needed for a certain distance to the municipal organisation for reasons of external legitimacy and decisiveness. Although these requirements might match with characteristics of a NOA (Network Administrative Organizations), respondents reject this form as the work processes might become too separated from the daily processes and existing organisational capacity, which deviates from the desired mainstreaming approach. Another disadvantage that the municipal respondents appointed is lack of internal legitimacy for a NOA. Several examples of NOA's such as Rotterdam's program for Sustainability, Hof van Delfland and Stadshavens lately showed that lack of legitimacy resulted in degradation. For the above reasons in combination with the inability of 'scaling back', from a NOA to a Lead organisation, the Lead organisation is preferred. Respondents mentioned in this context, mechanisms to increase external legitimacy and empower PPC partners are desired.

Boundary spanning capacity

As the *organisation* of the Robert Fruinstraat shows, a combination of strong emphasis on boundary spanning activities besides connecting to existing bodies for integration within the bureaucratic municipal organisation, is a strong organisational approach for policy and network integration. Up-scaling implementation needs extensive boundary spanning capacity to interconnect; stakeholders and associated organisations, funding sources, policy domains, strategic, tactical and operational levels, and managing satisfaction of the outcomes and establishing a basis of trust, amongst other things. Cultivation of boundary spanning capacity is an important process outcome.

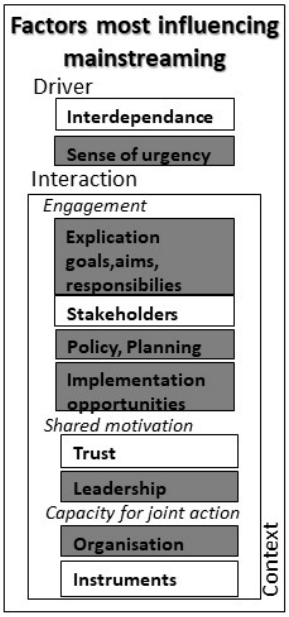
4.8 Relations between variables



4.8.1 Relation 1; factors → mainstreaming

The mainstreaming approach depends on indirect political commitment and is therefore largely dependent on willingness of other policy departments within the municipality to integrate CA. Hence, a crucial driving factor for mainstreaming is how these departments sense urgency for CA (Uittenbroek, 2014). The factors that are most important in relation to mainstreaming, mentioned by the respondents

were; Sense of Urgency, Explication of goals, aims and responsibility divide, Policy and planning, Implementation opportunities and Organisation.



Sense of urgency;

Mainstreaming is an approach that is based on indirect political commitment. Integration of climate adaptation within different policies and processes, will to a large extend take place within the different municipal departments. Most policy domains have no legal obligation to mainstream climate adaptation. This makes mainstreaming largely dependent on whether or not the policy departments of a municipality are willing to act upon climate adaptation (Uittenbroek, 2014). Hence, a crucial condition and driving factor for mainstreaming is how these policy departments sense the urgency of climate adaptation. Amplifying an emphatic sense of urgency, within policy domains and departments with potential for mainstreaming, intervening in the advanced levels of receptivity, will benefit the willingness to mainstream climate adaptation.

Explication of goals, aims and responsibility divide;
Integration of CA in other policy domains, plans and processes is the essence of a mainstreaming approach. Actors operating in these policy domains, which are expected to mainstream CA, need to be facilitated with well explicated information, to be able to mainstream CA. If no clear policy is provided, goals and aims are open ended and it is uncleared who these goals should be addressed to, the threshold for mainstreaming is too high and it is impossible to demand actors in other policy domains that mainstreaming depends on, to integrate CA. Explication of goals, aims and stakeholders' responsibilities for CA therefore has major importance for the mainstreaming approach. *"The municipal project leader of department of City development underpins; in working with private stakeholders, but also in prioritizing and integration of different municipal policies and goals, it is most preferable to have clear goals and aims. As a municipality of Rotterdam, we often have a wish list, but a lack of concrete and clear aims ".*

Policy and planning;
Climate adaptation can be mainstreamed by actively integrating climate adaptive goals into other policies, processes and plans. The whole policy- and planning cycle on strategic, tactical and operational levels is an important appliance to support mainstreaming of CA.

Implementation opportunities;
In the execution of CA through mainstreaming it is important to join climate adaptation to different other ongoing implementation processes. Connecting different processes ensures a more solid implementation base and combination of the necessary resources. As CA is not a dedicated program with extensive resources, but an approach which depends on links with other projects with small contributions an active approach to combine CA within these processes is essential.

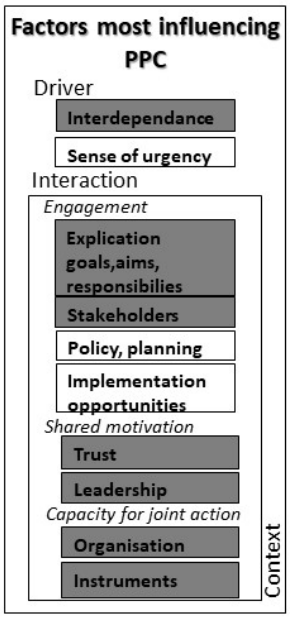
Leadership;

For mainstreaming CA within other policy domains, leadership is a requisite. Although the mainstreaming approach strives for multiple ownership, a specific leader is required to initiate different mainstreaming opportunities and ensure effectuation of mainstreaming CA. *"To quote the project leader Robert Fruinstraat; in mainstreaming anchoring CA in the minds of people is not enough. Mainstreaming CA needs a robust approach and integration in different policy domains."*

Organisation;
It is a complex operation to connect policy synergies and implementation opportunities which is embedded in the large complex municipal organization, which is again interconnected with other public, private or social organizations. In a mainstreaming approach, there is great need for policy intergration. This depends on interconnections between different sectoral columns within the municipal organization and interconnection with other public, private or social organizations. Extensive insight is needed to make use of this existing organisation and its integrative bodies and at the same time develop an appropriate flexible organizational approach through boundary spanning capacity for policy and network integration focussed on CA implementation.

4.8.2 Relation 2; factors → Public Private Collaboration

PPC, as defined in this context is characterized by sustainable collaboration with continuous exchange, between public, private, societal actors and community. From their own interests and perspectives, the different stakeholders make decisions in public and societal policy issues and develop mutual policy measures, products or services, and share risks, costs, and benefits. In this PPC approach, the most important factors, mentioned by the respondents were; Interdependence, Explication of goals, aims and responsibility divide, Stakeholders, Trust, Leadership, Organisation and Instruments.



Interdependence;
Collaboration between public, private, societal actors and/or community is not a must on itself, but is largely fueled by the fact that parties can't reach the desired goal or quality standard by themselves. Parties are interdependent on each other's input. Interdependence between different parties and the required input they can deliver is therefore one of the most important driving factors for PPC.

Clarity towards goals, aims and responsibility divide;
This factor has major importance for both the mainstreaming approach and climate adaptation in PPC's. In collaboration, transparency towards the input and desired outcome for each party is required in order to find the best possible solutions. Therefore, clarity towards the climate adaptive goals, aims and divide in responsibilities, is needed in an early stage of the collaborative process. The municipal department of water together with the water boards, are the exclusive parties that can inject this information in the PPC process while at the same time allowing flexibility to find solutions that can meet everyone's goals. *"As the asset manager of the housing association Woonstad mentions; although the municipality is not the only partly responsible for the execution of climate adaptation, the*

municipality is indeed the most appropriate party to direct the public task of climate adaptation, which includes a clear but flexible formulation of the assignment towards climate adaptation.".

Stakeholders;
Getting 'the right people to the table' is essential for the success of implementation of CA in PPC's. A balance between broad urban added value, inclusion and legitimacy on one hand and focus on the projects scope, effectiveness and efficiency on the other, has great implications. The criteria, e.g. level (strategic, tactical or operational), scale (local, district, urban), long or short-term interest and domain (economic, social, environmental), onto which stakeholders are selected is of great influence on the collaboration process and outcome. Careful mapping and choice of stakeholders in relation to CA is therefore important for successful PPC.

Trust
A basis of trust is an important factor for sustainable collaboration in PPC. Trust can contribute to long-term collaboration and more far-reaching outcomes. By reciprocally awarding each other's needs and establishing compromises, the energy present is utilized to seek win-win situations. Trust is consequently responded to as one of the most important factors for PPC.

Leadership
Public leadership is, in this stage of the implementation, considered essential in the integration of climate adaptation in PPC's. Without public leadership, this longer-term goal, which is difficult in relation to cost recovery, is likely to be off the agenda due to ignorance, short term priorities and profit objectives. Besides incitement to CA, the coordination of the diversity of solutions and their impact on the problem on an urban scale is found to be important for the success of climate adaptation implemented through PPC's.

Organisation;
In PPC, there is great need for network integration, between the municipal organisation with it's different sectoral departments and other public, private and social actors, within a collaborative network. This depends on the organisation of interconnections between the municipality and other public, private or social organizations. Enhancement of boundary spanning capacity not restricted to integrative bodies, but throughout the municipal organisation, can establish network integration, between different municipal departments and the collaborative network.

Instruments
Instruments are the cement to either incentify or compel implementation of climate adaptation within PPC's. A broad palette of instruments, that are in line with stakeholder's interests, are an indispensable part of public private arrangements.

4.8.3 Relation 3; mainstreaming → Public Private Collaboration

With an integral approach of CA, mainstreamed in other urban goals, there is often a much greater chance of gaining value for potential PPC partners. Climate adaptation in PPC projects if treated in isolation, often receives little priority and added value for public, market or social partners. Through mainstreaming CA in other urban policy domains, that relate to the interests of urban actors, CA 'piggybacks' on existing energy and contributes at the same time to the overall project. Mainstreaming therefore increases the chances of PPC in the implementation of CA.

4.8.4 Relation 4; Public Private Collaboration → Success of implementation

PPC alliances can contribute to up-scaling CA from a limited number of individual projects to a more self- evident and comprehensive implementation on an urban scale. The measures established can contribute not only to direct effect for CA on the ground, but can also have the form of intermediate measures that contribute to the the operationalisation of individual projects. This increases effectiveness and efficiency of the implementation. The alliance model also allows repeated performance of the collaborative stakeholder networks, so that the effort invested in collaboration has repeated effect, which also contributes to effectiveness and efficiency.

Chapter 5: Conclusions and recommendations

In this conclusive chapter, answers to the research questions will be formulated, based on the outcome of the qualitative research elaborated on in chapter 4 supplemented with insights from academic literature, reviewed in chapter 2.

The research questions are; "Why and which different factors determine successful implementation of climate adaptation through public-private collaboration?''.

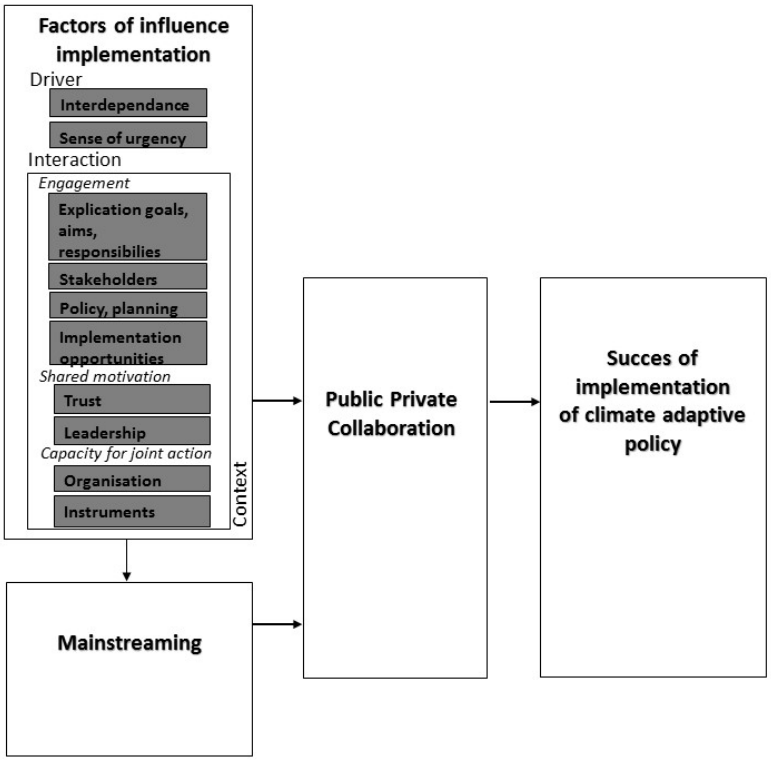
The sub-research questions are;

1. Which factors influence implementation of CA through mainstreaming and PPC in Rotterdam's experimental projects?
2. Which public private collaboration approaches and models influence successful implementation of CA in Rotterdam?
3. How do the factors, approaches and models in PPC influence the success of up-scaling implementation of CA?

5.1 Alteration of the conceptual framework

First of all, before entering elaboration on the research questions, the outcome of the qualitative research provides insights, that needs alteration of the conceptual model, initially based on literature.

The altered conceptual framework appears as follows;



In this new model, two extra factors, *Sense of urgency* and *Explication of goals, aims and responsibilities*, came forward prominently in the interviews, while less explicitly emerging in the literature review. These subjects are indeed designated in academic literature, however initially seemed less relevant in the selected literature. Therefore, *Sense of urgency* and *Explication of goals, aims and responsibilities* are included in the conceptual model.

On the other hand, *Management*, is excluded from the conceptual model. In the literature review, management was defined in the narrow sense of "Process coordination on project level to eventually execute CA policy measures or developments which include CA through the perspective of either project- or process management". In the interviews and individual cases, the choice of project- or process management, appeared not influential on success, in contrary to previous expectations. Therefore, *Management* as such is excluded as a separated factor in the conceptual framework.

The last alteration of the conceptual model is that mainstreaming and up-scaling were assumed as one concept. The qualitative research reveals that mainstreaming does not automatically lead to up-scaling. Therefore, these concepts must be considered separately. Up-scaling is an element of the ultimate *Success*. In the alternated framework, up-scaling is therefore elaborated on within the concept of *Success of implementation*.

5.2 Factors which influence the implementation

This paragraph elaborates on the findings and analysis of the first sub-research question; Which factors influence implementation of CA through mainstreaming and PPC? The individual factors of influence and the points of attention within, that came forth from the empirical findings in combination with academic literature will be discussed.

Interdependence;

Interdependence can be an important driver for PPC, as stakeholders are dependent on each other in pursuit of their goals. Within the case study, the decisive interdependence showed to vary per case and type of development. In case of real estate development, the short-term engagement of real estate developers exempts this party from costs of maintenance and CA, which other parties such as the municipality and indirectly society will turn up for on the longer term. Adding to that, empirical findings show that real estate development can often not yet recover costs for CA as marketability of sustainable real estate concepts is limited. Real estate developers, are therefore inclined to reject CA within their project scope. CA integrated in regulation, and dependence of building permits, therefore seems the main possibility to increase interdependence of CA within real estate developments. Literature supports the importance of securing life cycle interdependence, As Plenty et al. (1999) notify if future decision-making is confronted with heavy financial consequences from earlier lack of attention during the stage of development, this is a undesirable situation that must be avoided. Teisman et al. (2013) points out the network related to this life cycle has become the organizing principle in PPC.

In case of existing neighbourhood restructuring and renovation, interdependence of resources is most relevant. Housing associations and municipality are interdependent on each other's resources to deal with flooding nuisance and implement CA integrally in housing associations property and in adjacent municipal public space. As Koppenjan and Klijn (2004) appoint "stakeholders may not have all the resources they need independently, and therefore depend on others who do have those resources which can include money, knowledge, time, permissions, or licences". In this context Uittenbroek (2014) accentuates, the scarce resource of land for CA, owned by the government regarding public space, but also to a great extend by private and social parties. This is an important driver for the involvement of private and social actors such as housing associations and house owners in the governance of CA in cities.

In sewage renewal, the water system's components showed interdependent. The execution of sewage renewal, often has negative consequences on rain water nuisance in private gardens and at the same time sewage renewal offers opportunities to integrate alternative CA measures within public space.

Through indication of interdependence between stakeholders in specific types of urban developments, this can drive PPC and portray possible alliances. Academic research on PPC subscribes collaboration between public, private, societal actors is largely energized by the fact that parties can't reach the desired goal or quality standard independently, which makes interdependence one of the most important driving factors for PPC (Huxham 2003; Koppenjan and Klijn, 2004)

Sense of urgency;

The mainstreaming approach depends on indirect political commitment and is therefore largely dependent on willingness of other policy departments within the municipality to integrate CA (Uittenbroek, 2014). Hence, a crucial driving factor for mainstreaming is how these departments sense urgency for climate adaptation. In this research, sense of urgency is measured according to the different levels in receptivity. Sense of urgency within the different municipal departments is still low, besides the department of water management, WSR and several frontrunners related to public space development. The case study shows that real estate development and the related departments show lowest sense of urgency to implement CA, as often the wrong assumption is made that CA can be 'solved' in the public space domain. The multiple case study also shows that sense of urgency is still mainly related to the first stage of receptivity, namely awareness. Although there is awareness of the need for CA, this is still abstract and not related to responsibilities or actions. Increased sense of urgency that relates to advanced stages of receptivity, namely association with the own situation, acquisition of capacity to

take action and application and implementation of a new approach, are relevant to convert present awareness into action. Mainstreaming is there for best accomplished through elaborating a program which concretizes these stages, together with departments which CA depends on for indirect political commitment to influence all stages of receptivity. Edelenbos et al. (2015) stress that common sense of urgency among stakeholders is considered important for vitality of collaborative networks, which underlines this finding.

Explication of goals and responsibilities;

This factor has major importance for both the mainstreaming approach and climate adaptation in PPC's. A policy review in paragraph 4.2.2.2. shows that goals and aims towards CA are formulated very broadly. And in the case study, the majority of all respondents underscore the necessity of more specified policy, explicating CA goals and aims, in order to be able to act. This is important for enabling integration of CA within PPC, but also for mainstreaming CA. More specific, if no clear policy is provided, goals and aims are open ended and it is not clear who and where these goals should be addressed to, this counteracts collaboration. Besides this barrier for collaboration, the threshold for mainstreaming becomes high as it is impossible to demand actors in other policy domains to integrate CA, if it is not clear what CA goals actually need to be integrated.

Clarity of CA goals, aims and divide in responsibilities, is needed in an early stage of the collaborative process. The municipal department of water together with the water boards, are the exclusive parties that can inject this information in the PPC process. A translation of the 3DI model into information towards prioritized locations at risk, the amount of climate adaptive capacity needed and what measures are most appropriate, is an opportunity for explication of climate adaptive goals and aims.

This research also showed, many private, societal and even municipal parties are unknown of the responsibility property owners have for managing rainwater and assume that the water boards and municipality are responsible. This ignorance exists, although the Water act clearly describes that "Property owners, either public or private, are responsible for processing and managing rainwater that falls onto their property". This clear description of the responsibility of property owners, is not translated to the local situation, although there are many opportunities, as reviewed in paragraph 4.2.2. Expression of the responsibility that societal stakeholders have towards CA, is the first step to change status quo.

This finding is coherent with research of van Buuren et al. (2013) who appoint that government should formulate robust goals and aims and the level of protection promised to its citizens, because this leads to legal clarity to guarantee the sustainability of economic investments.and certainty for stakeholders regarding the level of protection safeguarded by the government and the point onwards private and social stakeholders need to take responsibility.

Stakeholders;

Finding show that real estate developers, housing associations and private house owners in courtyards with flooding problems adjacent to sewerage renewal are existing though underused stakeholders with large potential for collaboration in up-scaling CA. Stakeholders with a direct interest towards CA on the urban scale, such as water boards, insurance companies (Dekker et al., 2016), Water Company Evides, or WSR, often have a small influence in individual projects. Alliances with these stakeholders, on an urban scale, could result in representation of these stakeholders, without the need to extensively participate in each individual project.

Except for the case of the Robert Fruinstraat, social parties often showed to be excluded from the main processes or involved on the side-line, in PPC's. A reason could be the assumption that these parties obstruct the process, with small resource contribution, and many wishes and demands. Nevertheless, social parties are important to implement local knowledge and wishes, and contribute significantly to the integrative aspect of solutions and legitimacy, which is the reason why, in exception to many PPC's WSR puts emphasize on inclusion of social parties. Balance between market, social and public parties in PPC based on equality showed relevant for success.

Social entrepreneurs are a relatively new stakeholder that play a vital role within urban development. A general assumption is that this group only initiates small self-organisation projects, but recently it has shown that there are several social entrepreneurs that are able to scale up their approach and effect whole neighbourhoods. Examples are; the Urbanisten and Stipo in the Agniesebuurt, Wolbert van Dijk and the Stichting Tussentuin in the Oude Westen, Delfshaven Cooperation in Delfshaven, Mooi Mooi Middelland, Stichting Plezierrivier along the river Rotte.

The social entrepreneur has knowledge of the local context as well as acquaintance with municipal policies. They are likely to function as 'brokers', combining process and design capacity with financing and creation of a market for their social services. They unite local social stakeholders and build bridges with market and public stakeholders. Empowerment of these social entrepreneurs could benefit repeatedly in different projects.

These research findings emphasize that criteria onto which stakeholders are selected, e.g. level (strategic, tactical or operational), scale (local, district, urban), long or short-term interest and domain (market, social, public), is of great influence on the collaboration process and outcome. This research shows the potential of joining the following stakeholders in the collaborative process based on equality;

Table 16: Promising stakeholders for implementation of climate adaptation

Promising stakeholders for implementation of climate adaptation			
	Market parties	Societal parties	Public parties
Main role	-Housing associations -Real Estate developers and Investment companies -Water company Evides -Insurance companies -Parties that have a long-term interest in real estate, such as mortgage banks, pension funds, larger local companies	-Social entrepreneur, that are organised on a neighbourhood level -Local societal parties -Private housing owners and VVE's, Vereniging eigen huis	-Municipality (development, maintenance, social) -Water boards -National Delta program Climate Adaptation

Source: writer (2017)

The cases often a distinction between stakeholders with a lead and supporting role, while PPC on the basis of equality is most effective, which is in imitation of Ansell and Gash (2007) that emphasize collaborative governance requires stakeholders are directly included in the decision-making process. Inclusion of stakeholders on a more equal basis, and careful mapping of stakeholders in relation to CA is important for effectiveness, efficiency but also legitimacy of the implementation of CA through PPC. The alliance model of PPC best supports collaboration between public, private and social stakeholders based on equality.

As Ansell and Gash (2008) and Emerson et al. (2009) appoint in the frameworks on collaborative governance, getting 'the right people to the table' including market, social and public parties, is essential for PPC. As Emerson et al., (2011) identify numerous benefits from successful collaboration such as improved clarity on key issues and concerns; effective management of differences and conflicts; enhanced trust and mutual respect built among the parties; increased social, operational, and decision-making capacity; better integration of relevant knowledge into deliberations and decisions; and greater perceived legitimacy within and outside of the collaboration. These positive effects are best established through integration of private, social and public stakeholders on an equal basis, full-fledged integration of social stakeholders in the process and integration of stakeholders with a specific CA interest.

Finally, the vertical dimension of Multi-level governance (Hooghe and Marks, 2001) didn't get much attention in this qualitative research and the cases didn't show inclusion of national government. Nevertheless, literature suggests the opportunities of Multi-level governance as policy competences and budgetary resources are distributed across these levels of government. As announced at Prinsjesdag 2017, the National Delta program will put more emphasis on climate adaptation, besides the main current emphasis on water safety through the Deltaplan Spatial Adaptation 2018 (Ministery of infrastructure and environment and Ministry of Economic affairs, 2017). Inclusion of a national government in the strategic alliance can be an opportunity to distribute national resources and inject more specific knowledge in national policy while at the same time formulate policy which allows a more generic local approach, e.g. in relation to local translation of the Water act, or as later described for deliberation of a set of instruments for PPC arrangements.

Policy and planning

Climate adaptive policy can be described as an overall framework for decision making which includes goals, principles and approaches for action, plan-making together with mechanisms for implementation and governing (Davidson, 2014), which includes strategic, tactical and operational levels. The city of Rotterdam has a hands-on tradition which manifests itself in the policy cycle. As the majority of the

respondents in this research appointed, the strategic level of often progressive visions together with the operational level of executing projects are well represented, but there is a hiatus on a tactical level, which includes policy and programs. This general hiatus in Rotterdam's urban policy cycle, also exists in the policy domain of CA. The lack of framework on tactical level, in policy and program, seems to give flexibility and ability to customize, however direct implementation of visions into projects also results in inefficient implementation due to diffuse and incoherent outcomes and repeated elaboration of the same subjects in the operational stage.

Respondents in the case study mention the following subjects that require to be elaboration are; specification of more concrete goals, strategy for compliance of private property owner's responsibilities, implementation strategies based on process integration opportunities and collaboration, PPC alliances, explication of organisational form for CA and deployment of boundary spanning capacity, elaboration of instruments for incentification and compliance, concrete aims and deliverables on the short and mid-term. These issues are best tackled on a tactical level.

These subjects, come across with the CA policy and program guidance for execution projects that Emerson et al. (2011) describe which may include, securing mainstreaming, increase receptivity, establishing laws or regulations, aggregate public and private resources, deploying human capital, monitoring, managing the process and enforcing compliance (Emerson et al., 2011). These intermediate climate adaptive policy and program measures are the basis onto which many projects can be implemented. Ansell and Gash (2007) underscribe the need of a tactical level and emphasize that successful implementation is not only limited to the physical result on the ground, but it includes intermediate physical, environmental, social, economic, or political measures to be ensured in policy and programs.

Implementation opportunities

As CA is not a dedicated program with extensive resources, but depends on links with other projects, an active approach to combine CA within these processes is essential to eventually execute integral projects. This research shows that, overall it applies that the more process links are made, the more likely there is a solid implementation base. This corresponds with Heurkens (2012) who appoints, "It is efficient to take adaptation measures at a time when other changes in the planning or patial design is discussed. This offers the possibility to implement climate adaptive measures in an urban area, integrated within existing processes". Another benefit as Driessen et al. (2011) appoint is that within an integrated project costs and benefits of various measures can easily be balanced with each other and cover CA.

In WSR the main emphasis was on process links with bottom-up self-organisation in the domain of public space with social stakeholders. All respondents acknowledge the opportunities for up-scaling to enhance the process links of CA within real estate development (integrating both mitigation and adaptation measures), restructuring existing neighbourhoods and program couplings of sewage and public space which includes solutions for flooding problems in private courtyards.

Although many respondents emphasize that analysing process linking opportunities, can contribute to decisions on strategic, tactical and operational level, this is not a standard approach within the municipality yet, and is still often postponed to the operational and execution phase. This observation is confirmed in research on the limited integration of ecosystem services such as CA in Rotterdam by Frantzeskaki and Tillie's (2014) which concludes that despite the existing capacity, challenges exist to steer process links. Adger et al. (2014) appoint that, understanding adaptation opportunities requires consideration on appropriate scales, to further connect implementation opportunities.

Respondents emphasized the existing STOR GIS map is a promising instrument which can evolve from focus on links within public space to a vehicle in which all process links can be analysed for strategic, tactical and operational decision-making. A condition is that the map provides information on housing association's renovation programs, new planned real estate developments, above and underground infrastructure, social programs, and bottom-up initiatives and distinct short, medium and long-term ambitions. To actually adjust the process for linking opportunities, besides this map, human interference and boundary spanning is needed for managing information of private and social parties which can be a challenge but also a great opportunity for process links between public, social and private parties in PPC.

Trust

In line with academic literature in which trust is a recurrent aspect in CA governance (Adger, et al., 2005; Folke et al., 2005), in this empiric research, a basis of trust is consequently responded to as one

of the most important factors for PPC, although especially public actors regularly searched for security through contracts.

Long-term relations and collaboration with mandated people were two specific conditions to build trust that came forth in the qualitative research, which relates to the definition of Sako's (1998) definition of trust as confidence in the reliability of a person or organisation. A complaint which was frequently heard in this research, is that the municipality has a tendency to make personal switches without paying attention to relations based on trust, especially in projects without a dedicated team. In particular, the group of social entrepreneurs experienced disadvantages from personal switches as long-term efforts of this stakeholder are often not recognised when personal is switched. Long-term representatives of the municipality within PPC is an important prerequisite to build trust and shows to be even more relevant in the new reality of processes that often include PPC, then in collaboration between public institutions which used to be the course of affairs. Ansell and Gash (2007) describe that in a survey of American and Australian collaborative groups, ''member commitment'', which relates to long term durable engagement of collaborative partners, was the most important factor facilitating collaboration.

Mandated people is the second condition to build trust coming forth this research. Especially in PPC it is important that representatives have substantial mandate to be able to perform. People in the front desk who coordinate municipal representation often have limited mandate in relation to the sectoral departments involved, which results in an often heard compliant that the municipality is not able 'to speak with one mouth' which results in low levels of trust in the municipality and as Ansell and Gash (2007) appoint, participants enter into the collaborative process in a sceptical frame of mind. As Teisman (2016) states according with André Dorée: "If project managers are confronted with more rules, fewer resources, smaller mandates, what can they solve?" Mandated people within the municipality, can better coordinate the involvement of the municipal organisation, increase performance and contribute to the ability to build trust. Enhancement of mandate is a mutual responsibility of giving mandate by sectoral departments, while representatives on the other hand can also actively demand mandate through boundary spanning performance as Williams (2002) describes.

The existence of trust in the context of public private collaboration, reduces uncertainties, the necessity of complex and inflexible contracts and at the same time it stimulates that actors share information and achieve innovative solutions (Edelenbos, 2015). Trust can contribute to long-term collaboration and more far-reaching outcomes. As Kleijn and Talisman (2008) describe; "public organisations have the tendency to put emphasis on limitation of risks and control". Emphasis on trust and relinquish control instead of tightening contracts is therefore not self-evident for these organisations, although it becomes more and more important to put emphasis on trust, instead of control through contracts, due to greater emphasis on PPC.

Leadership

Leadership is broadly recognised as an important factor to engage stakeholders and support the process of PPC (Ansel and Gash, 2007; Uittenbroek, 2014; Edelenbos et al.,2013). Leadership is a broad concept in literature, which includes different perspectives such as transformational leadership, transactional leadership, facilitating leadership, and connective leadership amongst others. In the endeavour of CA, connective leadership shows exclusively important. Connective leadership is understood as "the capability to establish direction, alignment and commitment across boundaries in service of a higher vision or goal" (Ernst and Yip, 2009).

Edelenbos et al. (2013) emphasize that the practise of CA implementation shows fragmented whereupon the capacity to make connections is precisely important. Edelenbos et al. (2013) further explicate the need for connective leadership as "water management shows a lack of cooperation, joint responsibility and integration, while the capacity to connect to other domains, levels, scales, organizations and actors is of utmost importance". Therefore, leadership is understood as connective leadership within this research context.

Connective leadership might be confused in this research context, with managing connectivity within specific CA projects or assignments, which meets the perspective of process management. However, focus is not on managing the implementation process and self-perform the execution of all projects and policy measures, but explicitly to engage different public, private and social actors to perform activities towards CA measures and in that way, employ the potential capacity within society, which relates to connective leadership.

What role or task does the municipality have in adaptation to climate change, and how far does this responsibility reach? The municipality has best comparative advantages to perform this connective leadership as it has overview and knowledge of stakeholders, processes, urban goals and the existing

urban fabric in the city as a whole. This overview is needed for an integral approach and implementation with inclusion of public, private and social capacity.

Respondents emphasized that the municipality is the appropriate party to perform public connective leadership regarding CA implementation. Reasons respondents appointed for a municipal public leadership role were; the comparative advantages of the municipality regarding overview and knowledge of stakeholders, processes and urban goals necessary for implementation and overview towards the water system in combination with an important public responsibility to coordinate the complex and uncertain character of climate change, the long-term perspective of CA.

Respondents emphasized that in up-scaling implementation of CA through mainstreaming and PPC, public leadership is considered a requisite. Reasons respondents appointed for a municipal public leadership role were;

1. The implementation of CA is characterised by complexity and uncertainty of the evolution of climate change the related solutions. Characteristics of this uncertainty are also described by van Buuren et al. (2013). The municipality can collaborate with knowledge institutes and adjust policy to anticipate on this uncertainty.
2. Climate adaptation has a long-term perspective, with the necessity for decisions and action now. Private and social parties often have a shorter-term perspective and limited receptivity, while public parties have the responsibility to ensure long-term interest.
3. The municipality has best overview and knowledge of stakeholders, processes and urban goals in the city as a whole in comparison to the waterboards. This overview is needed for an integral approach and implementation with inclusion of public, private and social capacity.
4. Water management and climate adaptation need a systematic approach. Different interrelated components like the sewerage systems (municipal responsibility), the boezemsystem (Water board responsibility) and the alternative measures, demand coordination and monitoring.

These findings are confirmed by several researchers who stress that government should fill in a coordinating role, for the reason that the enormous repercussions it can have on society, and the new opportunities for social and economic evolution, which is enough reason not to leave the responsibility of action with societal parties, but for government to adopt an active role and take collective action (van Buuren et al., 2013; Driessen et al., 2011; Montfort et al., 2012; Ter Meer, 2012; Uittenbroek, 2014).

This doens't mean a setback to the old steering meganism of government directing processes allowing little responsibility for society. The mainstreaming approach explicitly strives for multiple ownership. Respondents appointed that a public leadership role, must be interpreted as one role amongst others and is desired for the main line and overall coordination, while each actor should be allowed and stimulated to perform sub tasks, to make optimal use of the capacity, resources and skills off all collaborative partners. This is in line with Edelenbos et al., (2013) who appoint public administration has the exclusive inter-organisational to connect networks, processes and policy domains to the existing urban context, and as such increase societal adaptive capacity. As Teisman (2016) describes it, leadership is no longer about one person, but about the quality of the entire chain, the network which is the organising principle. The desired public leadership role towards mainstreaming climate adaptation is unanimous, connective leadership, which 9 out of 9 respondents appoint is required to initiate different mainstreaming opportunities and ensure effectuation of mainstreaming CA. Klijn et al. (2010) and Edelenbos (2013) underscore that connective capacity is a prerequisite for realizing water governance capacity.

The majority of the respondents in the different cases emphasize that the municipality is best equipped for this connective leadership role in order to upscale the implementation of climate adaptation and address leadership challenges, described by Meijerink and Stiller (2011), namely influence the policy process, enhance connectivity to mainstream CA throughout different parts of the policy cycle, sectors and actors, increase the capacity for CA within governance networks and enhance the capacity of society. In most cases WSR already performs as a leader towards climate adaptation, although predominantly in a facilitative role. WSR is mentioned to have the potential to evolve and fill in a connective leadership role, by developing a fully-fledged program in alliance with different municipal departments and the main urban stakeholders. Besides the municipality, social entrepreneurs were found a promising party to support this public leadership on a local level and thereby perform a local leadership role representing bottom up initiatives within the stakeholder alliance for CA.

The operation of this public leadership, as emphasized by several respondents needs a certain distance to the municipal organisation, to give room to balance municipal influence with the influence of other actors. This relates to the tension Provan and Kenis (2007) appoint between internal and external legitimacy in the performance of networks, which is further elaborated on in paragraph 5.4.

Organisation

Measures for CA are very divers in nature and interrelated with a wide palette of policy domains and involved actors. The organisational challenge is two-fold; a. policy integration of different policy domains and b. integration of the municipal organisation with collaborative networks of public, private and social actors. Especially in a mainstreaming approach, there is great dependence on understanding the municipal organization and the modes of interconnection with other public, private or social organizations. Williams (2002) describes this as the interface between the role as representative of the own organizational and that of partners in a collaborative network.

The municipality has reorganised its organisation from a sectoral, towards a matrix organisation to better accommodate this organisational challenge of integration. Several bodies for integration have been established, such as directory teams, account management, a STOR platform for public space, gebiedsnetworker and a project management office. Nevertheless, this research shows hiatus in integration continues to exist, as each of these bodies inevitably has its demarcations and short comings.

The cases show that, in addition to the municipal bodies for integration, human capital as boundary spanning capacity, is an important perquisite, for policy integration and integration of the municipal organisation with collaborative networks of public, private and social actors. This outcome is in line with academic literature on the mainstreaming approach and the related governance of complex networks. Teisman (2016) describes this as complexity leadership, in which the challenge is to reconcile two worlds and meet the different demands of these worlds. Many scholars underline connective capacity through institutional entrepreneurs or boundary spanners is considered essential to establish synergy in policies, collaboration between actors and resources coulings (Healey 2006, Meerkerk and Edelenbos, 2013; Teisman, 2016; Uittenbroek, et al., 2014).

Williams (2002), an important founder of this concept Williams (2002) defines boundary spanning as “reaching across borders, margins, or sections to build relationships, interconnections and interdependencies in order to manage complex problems. Boundary spanners develop partnerships and collaboration by building sustainable relationships, managing through influence and negotiation, and seeking to understand motives, roles and responsibilities”. The vast majority of all respondents persuasively appoint that although existing, boundary spanning capacity within the municipal organisation is still scarce and expansion of these key competences and skills as described by Williams (2002) is an important mission for human resources, head of departments and direction team to reinforce the municipal organisation. Boundary spanning is important in policy processes which stresses that, investments in reorganization, which is common practise to deal with contemporary complex governance challenges (Kort and Klijn, 2011), should, as Meerkerk and Edelenbos (2014), emphasize at least go hand in hand with connective and relational capabilities through reinforcement of boundary spanning capacity.

Instruments

Instruments are the cement to either incentify or compel implementation of climate adaptation within PPC’s. A broad palette of instruments, that are in line with stakeholder’s interests, are an indispensable part of public private arrangements. The palette of instruments used to incentify inclusion of climate adaptive measures within the different cases is limited. From the variety of instrumental opportunities for CA distilled from literature, the only and most important instruments used, focussed on capacity building, co-finance and communication.

Understanding of stakeholder’s stimulus and considerations are critical in engaging them in collaborative governance (Ansell and Gash, 2007). It is favourable to connect instruments to added value for the stakeholders and their operational perspective, as elaborated on in chapter 4, and evolve the obvious instruments into a more comprehensive diversified palette which allows a wide use and customisation. As was earlier mentioned, in the context of stakeholders, national government could make a significant contribution with specialist policy competences, to enable elaboration of this comprehensive diversified palette of instruments in the context of the Deltaplan Spatial Adaptation (2018). Translation of the Water wet in local regulation and instruments is preferably elaborated on in collaboration with the National Delta program and other comparable cities, for the reason that stricter accomplishment of CA responsibilities does not influence urban competitiveness.

The current instruments Rotterdam developed are focussed on incentification and not on compliance. While in our neighbouring EU countries Belgium and Germany (Hooijmeijer and Smit, 2015) and more than 40 municipalities in the Netherlands (Rioned, 2017) already implemented rules on responsibilities

of property owners for rainwater management (Binnenlands Bestuur, 2017), Rotterdam has been very reluctant to comply CA. Although basis for action is incentification, in the recent experimental stage WSR is in, several respondents, even the private real estate developer and housing association emphasize that, support of robust compliance in the form of legal instruments, Performance agreements, and translation of the Wateract into local game rules for property owners is necessary to upscale climate adaptation. Van Buuren et al. (2013) refer to this balance between incentification and compliance as as one of the main challenges and confirm a legal framework is necessary for robust implementation.

Especially in real estate development, a mechanism for compliance of CA is needed to support incentification instruments. Reason is that the main stakeholder, the real estate developer has a short-term involvement and understandably focus on profit optimisation, while marketability and recovery of cost for CA are still limited. Climate adaptation can be stimulated by land policy instruments such as residual land pricing and air rights. And regulation instruments such as the omgevingsvisie, building acts, zoning plans, a water label can comply CA in real estate development. As van Buuren et al (2013) appoint a legal framework will require investors with a short term scope to incorporate longer term climate adaptive ambitions. Current favourable market conditions in combination with current competitiveness of the real estate and land in Rotterdam, creates momentum for compliance of CA within new real estate.

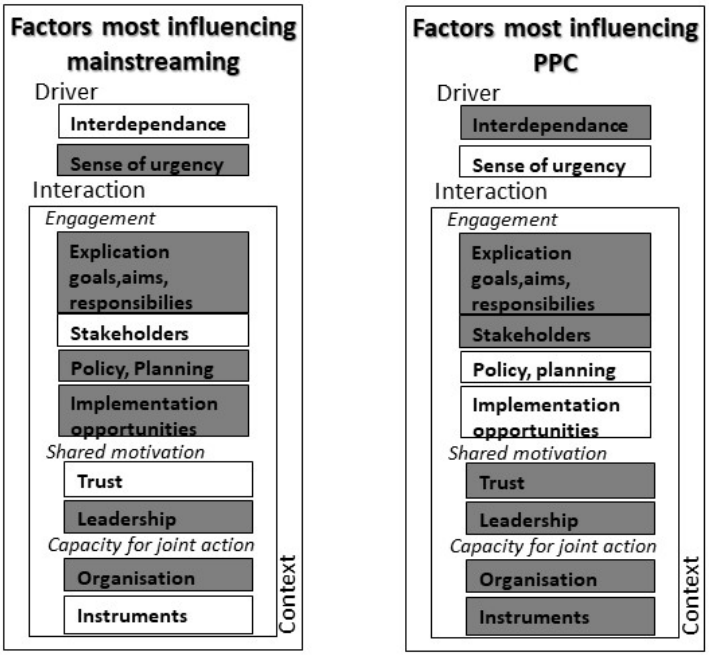
Significant factors vary for mainstreaming and PPC

Significance of factors vary for the approach of mainstreaming and PPC. The factors that are most important in relation to mainstreaming, mentioned by the respondents were; *Sense of Urgency, Explication of goals, aims and responsibility divide, Policy and planning, Implementation opportunities and Organisation*.

In this PPC approach, the most important factors, mentioned by the respondents were; *Interdependence, Explication of goals, aims and responsibility divide, Stakeholders, Trust, Leadership, Organisation and Instruments*. It follows that in the endeavor of mainstreaming or PPC focus can be put more specifically on these related factors.

Three factors; *Explication of goals, aims and responsibilities – Leadership - Organisation*, showed significant towards both mainstreaming and PPC, which makes these three factors unconditionally important to focus on.

Figure 5: Significant factors for mainstreaming and PPC



The Collaborative Governance framework (Ansell and Gash, 2007; Emerson et al., 2011) onto which the grouping of factors has loosely been based, distinct driving factors and factors related to interaction, engagement, namely shared motivation and capacity for joint action. From this study, conclusions cannot be drawn that one of the phases is more important than the other or needs to be elaborated on

first. Nevertheless, it follows that a parallel elaboration of driving factors and factors related to interaction is most obvious.

5.3 PPC approaches and models for CA

This paragraph elaborates on the findings of research question 2; Which public private collaboration approaches and models influence successful implementation of CA in Rotterdam?

In brief, PPC is most successful through a combination of mainstreaming CA and collaboration based on the alliance model.

Mainstreaming approach

Climate adaptive measures, that serve only a one-dimensional goal namely water management can be very effective and technically innovative, although added value for other urban goals is limited and collaboration is often restricted to commissioned concessions in which public parties need to invest a large part of the resources. Examples of this approach are the Museumpark parking garage and the Kruisplein square in front of the Central station which integrates invisible water storage capacity.

With an integral approach of CA, mainstreamed in other urban policy domains, there is often a much greater chance of gaining value in relation to quality of life, competitiveness and urban resilience in general and specifically for potential PPC partners. The mainstreaming approach aims to integrate CA into existing policy domains such as public space and urban planning, water management and social resilience. Climate adaptation responses are established through establishing synergy through policy coupling and combined resources with indirect political support (Uittenbroek et al., 2014). As Uittenbroek (2014) articulates in her dissertation, through mainstreaming CA in other urban goals, that relate to the interests of urban actors, CA 'piggybacks' on existing energy and contributes at the same time to the overall project. Mainstreaming therefore increases the chances of PPC as is defined in this thesis.

A variety of academic research appoint advantages of mainstreaming CA. Klein et al. (2007) and Uittenbroek et al. (2012) argue that mainstreaming can stimulate the effectiveness of policy making through combining objectives, increase efficient use of human and financial resources and ensure long-term sustainable investments. Biesbroek (2014) appoints barriers for implementation of CA such as competition of other short-term objectives, the uncertainty and long-term character of climate change, the limited carrying capacity of an agenda, and limited resources, which can be allayed through the mainstreaming approach.

The multiple case study and a policy review shows that although there is integration of different goals in projects, firm anchoring of CA in a wide range of policy domains is in its early days. Policy domains in which CA was mainstreamed are the sewerage program, a paragraph in the public space program of requirements template and a first attempt for integration in the Performance Agreements. This research shows that, besides sewage and public space, there are promising mainstreaming opportunities for the policy domains related to new and existing real estate. The policy domains of health and social development, although these might not contribute financially, can endorse and support the need for climate adaptation and contribute through social programs.

Within these domains, integration opportunities reach much further than integration in the execution project phase onto which emphasis is now. Although efforts of WSR aim to extend these integration opportunities this needs further effectuation. Overall conclusion is that comprehensive mainstreaming can be generated through anchoring of climate adaptation on a strategic, tactical and operational level. Therefore, the full spectrum of integration opportunities within the policy cycle needs deployment from regulation, integral and sectoral policies, programs, procedures, projects and plans.

In the mainstreaming approach, CA is dependent on indirect political commitment. This indirect political commitment is necessary for the integration of CA within the different policy domains and policy cycle instruments as describes above. As Uittenbroek (2014) appoints, a risk of the mainstreaming approach is that most policy domains have no legal obligation to mainstream climate adaptation. Consequence is that mainstreaming largely depends on the willingness of policy departments of a municipality to include climate adaptation (Uittenbroek, 2014). This qualitative research shows special attention is needed to establish indirect political commitment for CA mainstreamed within real estate. Conflicting municipal interests, in terms of optimisation of municipal revenues from land, an interest which doesn't correspond with extra restrictions and obligations for climate adaptation, cause accomplishment of indirect political commitment for CA within real estate development can be harsh. For indirect political

commitment, extensive boundary spanning capacity is necessary for example through detours on a strategic level, inclusion of climate adaptive policy within the process of the omgevingsvision or showcases with real estate developers specialised in sustainable developments.

Alliance model

“The term 'partnership' covers greatly differing concepts and practices” (Mc Quaid, 2000). In some scolars partnership or PPP has great emphasis on legal structures and contracts (Bregman, 1990) while others focus on less formal institutional arrangement (Steijn et al., 2011). Many definitions of PPP mainly focus on partnership between government and market oriented parties (Kouwenhoven, 1991; OECD, 2012), while others explicitly include social parties (Edelenbos and Teisman, 2008; Koppenjan, 2005; Montfort et al., 2012; Osborne, 2000). In a classical approach of PPP, financial and economic considerations predominate (Huxham and Vangen, 2005) while other scolars emphasize the added value takes shape to a lesser extent (cost) efficiency and effectiveness and has a stronger focus on sharing knowledge and capacities (Edelenbos & Teisman, 2008 and Klijn & Van Twist, 2007).

From Dutch administrative literature three main categories can be deduced, namely the concession model, the alliance model (Edelenbos and Teisman, 2008; Klijn and Teisman, 2003). This thesis added 'the third direction' also known as bottom up self-steering initiatives (Centraal Cultureel Planbureau, 2014; Montfort et al. 2012) as a third category. Table 2 in chapter 2 (page 11), gives a clear overview of these models, it’s characteristics and main differences.

The choice and variation of PPC models, as comes forward from the cases, now often seems to be the result of a pragmatic approach considered on the level of individual projects with room for optimisation as characteristics of different PPC models are unconsciously combined. A deliberate urban strategy towards PPC for climate adaptation and selection of models that are most effective, need elaboration in the endeavour to up-scale climate adaptation. This research states, based on academic literature and empiric findings that the alliance model has greatest potential for up-scaling of CA. This is validated in several manners. First the socio-political and economic context for PPC in Rotterdam. Second through response of the interviewees onto the question, “which PPC model would be most appropriate for up-scaling CA?”. Third a comparison of the characteristics of the different PPC models, on page 12 (Edelenbos and Teisman, 2008; Klijn and Teisman, 2003) with the characteristics defined for PPC in up-scaling and mainstreaming CA, shows the alliance model has most commonalities. And fourth, the alliance model can give an appropriate response to the outcome of several factors such as interdependence, explication of responsibility, stakeholders, implementation opportunities, trust, leadership, and organisation. Finally, the alliance model has most potential for up-scaling as strategic alliances have the opportunity for repeated performance of networks.

Significant factors vary for mainstreaming and PPC

Figure 6: Evolution of PPC in Rotterdam’s context

model	**Relationship Municipality-Market -Society**	**Economic context**	**Socio-political context**
Concession model	Municipality takes many responsibilities, but at the same time places out large risky assignments	Economische bloei	Neo liberal and NPM influences
Bottum up Self organisation model	Municipality has an awaiting stand and limited finance, while society takes more an more initiative towards public issues	Recession	Participation society due to lack of public impact force
Alliance model	Shared role of municipality-market- and social parties	Attractive investment and development market, increased competetiveness	Participation society as collaboration between private, social and public parties

Source: author, 2017

Choice of an appropriate PPC model is not only based on the assignment and interdependent stakeholders, but it's also influenced by the socio-political and economic context. In Rotterdam's practice, an evolution in PPC is observable, which has been elaborated on in chapter 4.2.3. Emphasis in PPC evolves from predominantly PPC's based on the concession model under influence of New Public Management influences and prevailing financial and economic considerations. Later, during times of economic recession and real estate crises, Bottom-up initiatives emerged influenced by a more awaiting stand and limited finance of municipality and market parties. While recently, new forms of public involvement are fueled by a socio-political endeavour for more direct democracy (Nabatchi, 2010; Van Reybrouck, 2013). A diversity of arrangements for collaboration between public, social and private parties are stimulated by the current administration, as reviewed in annex 4. These arrangements, are a positive conversion of the prior top down government approach and the concession-model PPP's based on a client contractor relationship.

There is potential to evolve this approach of facilitating bottom up initiatives to a comprehensive PPC based on equivalence, in which alliances of public, private and social urban partners for joint contribution to Rotterdam's urban development, becomes self-evident in the municipal daily work processes. Current social-political context and flourishing economic climate in Rotterdam provides a good base for the alteration of these arrangements to an alliance model of PPC in which local bottom up initiatives and social parties become a full-fledged part and are at the same time connected to broader urban policy goals with more influence besides the operational level, on a tactical and strategic level. This ties in with Centraal Cultureel Planbureau (2014) who stress that collaboration between public, private and social parties, as a form of direct democracy in which private, social parties and citizens are empowered to influence governmental policy, which is currently not common yet (Montfort et al., 2012). This is an addition to the representative democracy, which needs reinforcement as Reybrouck (2013) advocates in his book, Against Elections, a case for democracy.

The characteristics defined for PPC in up-scaling and mainstreaming CA are; 1) based on collaboration between public, private, social entrepreneurs, societal actors, and community. The added value of collaboration is not mainly based on financial or economic considerations, but on 2) integration of societal benefits, knowledge sharing and higher quality of service delivery. The aim is, instead of emphasizing institutional form and contracts, 3) to establish a working process with a continuous exchange of interest and contribution, different roles and responsibilities, as in a negotiation process with many small unwritten agreements (Steijn et al., 2012). 4) Actors are jointly involved on the basis of equivalence and collaboration continues throughout the whole process, 5) with the tendency to seek an expansion of scope to integrate different goals. These characteristics show most commonalities with the characteristics of the alliance model in relation to other main PPC models, the concession model and Bottum-up self-organisation (Edelenbos and Teisman, 2008; Klijn and Teisman, 2003; Centraal Cultureel Planbureau, 2014; Montfort et al. 2012).

In response to the question, "which PPC model would be most appropriate for up-scaling CA?", all respondents emphasize on the potential of a deliberate choice for the alliance model for up-scaling climate adaptation. For up-scaling the implementation of CA, alliances on local level can be reinforcement by building strategic alliances with parties that are promising in relation to CA on the urban scale. These alliances can be specified by types of development with large implementation opportunities; real estate developments, restructuring existing neighbourhoods and for sewerage and public and private space renewal.

Besides the alliance model, respondents appoint that the concession- and bottom up model is also relevant in some specific cases. The concession model might be the best option in specific projects in highly desired locations such as the city centre, with potential for value creation and the need for innovative solutions due the combination of large climate adaptive capacity and high pressure on space. The bottom up initiatives remain an opportunity and no-regret in urban areas with an active community, although they are best integrated within an alliance to become connected to broader urban policy goals with more influence on a tactical and strategic level.

5.4 Determinant factors and PPC model for success

This paragraph elaborates on the findings of research question 3; How do the factors, approaches and models in PPC influence the success of up-scaling implementation of CA?

To avoid negative effects of flooding in Rotterdam as was agreed on in the 'National Bestuursakkoord Water' (Nationaal Bestuursakkoord Water, 2013) and avoid future costs outweigh the current investments needed to rainproof Rotterdam (European Environment Agency, 2012, Tompkins et al.

2010) up-scaling the implementation of CA currently requires to be the main objective in Rotterdam. The success of the implementation is therefore not evaluated sec through analysing success in terms of effectivity, efficiency and legitimacy of specific project outcomes (Adger et al., 2004), but it is analysed through the lenze of opportunities within these projects for up-scaling the implementation. In other words, as Frantzeskaki and Kabischc (2016) appoint, stimulating and analysing successful experiments is one thing, but ensuring it to evolve towards up-scaling needs reflection and learning for effective and well-founded adapting policy strategies in the future.

Successful implementation of CA can be determined by both content outcomes and process outcomes (Klijn et al., 2010). Following are conclusions to influence successful content outcomes that relate to opportunities for up-scaling and process outcomes, at least as important for success, related to repeated performance of networks.

Content outcomes

Reinforce driving factors

Sense of urgency and interdependence showed important drivers for collaboration in the implementation of CA, that need attention to enter into collaborative action. Sense of urgency for CA is primarily related to the first and more abstract stage of receptivity (Jeffrey and Seaton, 2003), namely awareness. Before parties proceed to take collaborative action, more advanced stages of receptivity, such as association with the problem, acquisition of resources and actual implementation needs further elaboration. Instead of aiming on creating awareness, focus on concretion of a collaborative implementation strategy can respond to all steps in receptivity. As Henk Ovink, dutch special envoy for international water affairs stresses in an interview in Vrij Nederland (2017), a water crisis is not a prerequisite for receptivity and strong CA action. “It is much more productive to take CA seriously, get all the people involved and work together on new solutions”. Interdependence, meaning individuals and organizations are dependent on each other to accomplish goals, is a broadly recognized driver for Public Private Collaboration (Gray 1989; Thomson and Perry 2006). In particular in the alliance approach which pivots on trust instead of contracts, interdependence is an essential condition for sustainable collaboration. The empirical findings displayed that direct interdependence of CA showed weak, besides exceptions due to costs of flooding or marketability. Mainstreaming CA within other policy domains and developments increased interdependence substantial. Exploiting interdependence through mainstreaming CA and explicating stakeholder interdependence is adhesive for collaboration in CA.

Effectivity and scalability in different types of development processes

Focus on a) real estate development, b) restructuring existing neighbourhoods and c) program links of sewerage, public space programs with inclusion of private courtyards prone to flooding, has significant potential to scale up CA and increase effect and efficiency on an urban level. As Klijn and Teisman (2010) describe, the principle of a one-time investment that provides recurrent output, is applicable within these situations;

a. Real estate development; Recent beneficial market condition for real estate and a substantial demand of approximately 51.000 houses between 2016-2040 as described in a recent elaboration on the ‘The Kaart van de Stad’ (Municipality, 2016) is a major opportunity to integrate CA in sustainable real estate developments.
b. Restructuring existing neighbourhoods; There is great potential for integration of CA in restructuring and renovation of social housing as this covers approximately 45% of all housing in Rotterdam (CBS, 2016) and 60-80 % in the old city neighbourhoods which are prone to flooding, in a renovation cycle of approximately 30 years. A specific opportunity in the near future is integration of CA in the major program National Program Rotterdam South.
c. Sewerage renewal program; often has negative effects on flooding nuisance in the adjacent courtyards which are vulnerable for flooding. An integral water system approach which includes courtyards prone to flooding, integration of public space programs and the GRP (municipal sewerage plan) with a capacity of approximately €40 million per year, has the opportunity to implement CA in a large part of the city’s streets and adjacent courtyards, within the 40 years’ life cycle of the sewerage system (municipality, 2015).

The integrative aspect of the solution

The degree of success showed to a considerable degree, dependant on the integrative aspect; the way in which the project represents different policy goals, such as quality of life, economic competitiveness, social cohesion, health, and sustainability (Klijn et al., 2010). In line with the definition of Adger et al.

(2004) successful implementation is based on effectiveness, efficiency and legitimacy, the case study shows integration results in enhance effectiveness as in greatest possible added value, efficiency in terms of increased and shared resource capacity and more legitimacy for execution as actors can influence the solutions according to their needs and costs are distributed not only onto actors that suffer from flooding burden or later generations, but onto all parties with advantage of the integral solutions. The importance of the integrative aspect of solutions is, together with greater integration opportunities for CA and opportunities for PPC, advocate for the approach of mainstreaming.

Focus on tactical level to allow up-scaling

Rotterdam has a strong national and international reputation with respect to CA, due to an early adaptive approach with innovative experimental projects, which was recently rewarded with a UN Global Centre of Excellence on CA. In honour of this reputation and with respect to the large challenge that is ahead of us, the next step within the implementation of CA, is up-scaling through learning from these experimental projects.

In imitation of the Multi-Level Perspective transition theory (Rotmans et al., 2001; Geels, 2011), the niche level of CA experimental showcases, paved the road to influence the next level in transition, the regime, which allows up-scaling. Bulkeley and Broto (2012) argue that governing CA, especially takes place through experiments which is preferred over policies and plans. Meanwhile, Edelenbos et al. (2015) emphasize that both exploration (learning, reflexivity), which can be related to an experimental aproach and consolidation (productivity, exploitation), related to up-scaling are needed for successfull governance of CA. The Multi-Level Perspective (Rotmans et al., 2001; Geels, 2011) and combination of exploration and consolidation (Edelenbos et al., 2015), raises the opportunity of transition and alteration of the approach for CA and allows learning from experiments to iterate policies and plans to allow up-scaling.

Alteration from focus on performance in individual projects on an operational level, to main effort on a tactical level will support the opportunities to scale up the implementation of CA. As the majority of the respondents in this research appointed, the strategic level of often progressive visions and operational level of executing projects are well represented, but there is a hiatus on a tactical level, which includes policy and programs. Elaboration of this tactical level in CA program and policy, assists coherent outcomes and in accordance to Klijn and Teisman (2010) can give recurrent output in projects on the operational level, through one time investment in the development of a program and policy. Successful implementation in this sense is not only limited to the physical result on the ground, but it includes intermediate physical, environmental, social, economic, or political results, which are in agreement with Ansell and Gash (2007), important to recognise.

Attention for compliance

A main challenge within the implementation of climate adaptation, as van Buuren (2013) brings forward, is to balance between a robustness and flexibility. Robust and clear aims, norms and goals are demanded, on one side, to enable social and economic functions to flourish. On the other side, flexibility is required to establish creative combinations between the implementation of CA and other urban goals and stakeholder's interests (van Buuren et al., 2013).

In Rotterdam's practise, inclusion of CA on a wide scale is not evident yet and has a mainly non-binding character. The balance as van Buuren et al. (2013) describes, tips to flexibility in the cases studied in Rotterdam. WSR follows the principle to enthuse and 'conduct without power' (Municipality, 2016) with main emphasize on incentification. This qualitative research and a policy review shows, CA goals and aims are formulated very broadly and responsibilities for property owners as formulated in the Water act, are not complied with. This practise associates with Fleurke and Koeman's (2005) observation that, in order to create flexibility, practices of adaptive governance often tend to pass over the legal context, in preference of more informal policy making approaches, however later in the process this legal context often turns out to be inevitable.

Besides several frontrunners who set an example, this research shows mainstreaming CA in urban policy domains within the municipality is not business as usual yet. The main focus on incentification and the voluntary character of the approach shown in the cases, was effective in the early experimental stage of CA implementation. Nevertheless, as the majority of all respondents appoint, mainstreaming does not automatically lead to up-scaling. For evolving to the next stage of up-scaling implementation of CA besides incentification, more attention is needed for compliance. This is in accordance to Edelenbos et al. (2015), vital implementation of CA needs both exploration and consolidation.

Private, social and public respondents are unanimous about the necessity of explication of goals and aims towards climate adaptation in order to scale up CA. Besides, actors within the municipality also appoint that to allow mainstreaming CA within other policies and projects more specific CA policy and information on goals and aims is a prequisite. The information to formulate these goals is still in progress. In the policy document Waterplan 2 (2011), the goals were formulated very broad, as the need of 600.000 m3 of water storage in the whole city, while recently a computer model, 3DI is under construction, which maps detailed flooding scenario's depending on an adjustable downfall. The 3DI model provides opportunities for translation of this information into more detailed climate adaptive goals and aims. Not as a blueprint for solutions but as a starting point, providing the desired information for mainstreaming and PPC parties to integrate CA.

Responsibility of property owners, both public or private, for processing and managing rainwater that falls onto their property, is clearly described in the Wateract. This general legal principle, which builds upon socially accepted values (Termeer et al., 2011), is not comprehensively communicated and complied with in Rotterdam. Clear communication and translation of responsibilities described in the Water act in local policy and supporting instruments is the first step for compliance. A review on opportunities within existing policy and regulation in chapter 4.2.2., based on the findings of Driessen et al. (2011) show adjustments in existing policy and regulation provide opportunities for translation of responsibilities from national law to the local situation.

Besides compliance of CA at the outset and during the process, especially in real estate development, instruments for compliance of CA are needed. Land policy instruments such as residual land pricing and air rights can be enforced with regulation instruments such as the omgevingsvisie, building acts, zoning plans, a water label can comply CA in real estate development, as this type of development showed little incentives yet to include CA on its own.

Finally, the integral approach of alternative measures, demands monitoring and adjustments so that effects are in accordance with the CA challenges for a robust system. *"As the real estate developer points out; The alternative approach for the problems with rainwater, raises the question if all different measures are attuned and will in the end lead to a robust system. Public leadership and recurrent evaluation of the long-term problem and the effects of the measures is needed."*

Process outcomes

Public leadership

Researchers stress that government has a role in CA, for the reason that;

a. Climate change can have enormous repercussions on society, and in tandem adapting brings new opportunities for social and economic evolution (van Buuren et al., 2013; Driessen et al., 2011; Montfort et al., 2012; Ter Meer, 2012; Uittenbroek, 2014).
b. Public leadership is a critical factor bringing parties to the table and steering them through the collaborative process (Ansel and Gash, 2007; Burger et al. 2001; Roussos and Fawcett 2000).

Respondants emphasized that the municipality is the appropriate party to perform public leadership regarding CA implementation. Reasons respondants appointed for a municipal public leadership role are; the complex and uncertain character of climate change and long-term perspective CA which is in accordance to theoretical literature. This empirical study includes as a reason for municipal public leadership; the comparative advantages of the municipality regarding overview and knowledge of stakeholders, processes and urban goals nessecary for implementation and overview towards Rotterdam's watersystem and its interrelations.

In most cases WSR performs as a leader towards CA, although predominantly in projects in a facilitative role. The municipality is best equipped to take a leadership role, although in the execution of this role focus on connective leadership increases the effect of this leadership, as it allows coordinating mainstreaming, foces on measures for up-scaling CA and repeated performance of networks. The studied cases, in which this connective leadership role was most present, namely the Robert Fruinstraat and the up-scaling stage of the greening initiatives in the Oude Westen, showed most succesfull in terms of up-scaling opportunities and repeated performance of networks.

The alliance model of PPC associates well with this connective leadership role and strategy of coordination as it includes collaboration based on equality. The capacity for connective public leadership can be interpreted as one of the resources which the municipality contributes to the process, just as other stakeholders invest resources which most suit their qualities. Elaboration a CA program

and policy coordinating different departments input and collaborating with private and social stakeholders is an opportunity to consolidate public connective leadership.

Lead organisation governed networks

Many of the cases within WSR, including the Hofbogen High line and the Oude Westen were Participant Governed Networks. When up-scaling CA, the respondents emphasize that a brokered governance organisation, in which certain overall tasks are delegated to one lead party, is most effective for up-scaling the implementation of CA. A Lead Organisation with focus on the strategic and tactical level in combination with partial performance of activities by network participants is most preferred. If the municipality and WSR perform the public leadership role in this governance form, this will allow utilization of the municipal capacity and internal legitimacy, but also utilizing the capacity of other alliance partners. This is in line with literature on performance of networks and the influence of governance form on effective performance of networks, in which Provan and Kenis (2007) conclude that in the situation of increased complexity, brokered forms of network governance, Lead Organizations and NOA's (Network Administrative Organizations), are likely to become more effective than shared-governance networks (Provan and Kenis, 2007).

Respondents indicate attention is needed for a certain distance to the municipal organisation for reasons of external legitimacy and decisiveness. Although these requirements might match with characteristics of the more independent NOA governance form as Provan and Kenis (2007) describe, respondents reject this form in favour of the Lead Organisation considering the work processes might become too separated from the daily municipal processes determinant for the organisational capacity. Another disadvantage appointed is lack of municipal internal legitimacy for a NOA. Several examples of NOA's such as Rotterdam's program for Sustainability, Hof van Delfland and Stadshavens lately showed that lack of legitimacy resulted in degradation. This disagrees with findings of Provan and Kenis (2007), which suggests that a NOA favours administrative efficiency and is an answer to the tension between both internal and external legitimacy.

Boundary Spanning

Boundary spanning capacity showed an important organisational factor for success of the implementation of CA through PPC. This in in line with Williams (2002), confirming boundary spanning activities and competences are necessary to perform, "reaching across borders to build relationships, interconnections and interdependencies in order to manage complex problems" (Williams, 2002).

The different respondents in all cases affirmed the importance of this concept repeatedly, which is in line with conclusions of Meerkerk and Edelenbos (2014) in a large N empirical research, that boundary spanners and connective capabilities are important for the performance when governing complex public private collaboration.

In the multiple case study, boundary spanning showed important for the organisation of sectoral policy integration and network integration synergies. This has effect both on mainstreaming CA (policy integration) and on interconnections and relationships between collaborative partners in PPC (network intergration). The alliance model of PPC is eminently, the collaborative model which can thrive through boundary spanning. Eventually, boundary spanning capacity has extensive influence on opportunities for up-scaling and repeated performance of networks which is determining for overall success of the implementation. Several researchers under scribe the comprehensive effect of boundary spanning in the mainstreaming approach and the related complex governance networks. Although different terms such as connective capacity or institutional entrepreneurship are used, boundary spanning is considered essential to find synergies in policy goals and activate actors and resources (Healey 2006; Meerkerk and Edelenbos, 2014; Uittenbroek, et al., 2014).

Within the case study, especially the social entrepreneurs and the program manager WSR, showed extensive boundary spanning activities, that relate to the description of Williams (2002). Although boundary spanning capacity shows to be present, respondents emphasize it is present within the municipality to a limited extent. This finding is partially in line, with the conclusion of Meerkerk and Edelenbos (2014), appointing that "boundary spanners originate mainly from private and societal organizations, and less from governments, as it seems more difficult for governmental agents to operate at the borders or their home organization". Although it might be difficult for governmental organisations to perform boundary spanning capacity, it shows to be present and very conducive for succesfull CA implementation as it is inevitably important for the organisation of policy and network integration. Amplification of boundary spanning capacity in up-scaling and mainstreaming CA, is appointed as an important prerequisite for success. Building on this conclusion, the boundary spanning capacity of social

entrepreneurs, who showed excellent boundary spanning capabilities, earn appreciation and can be employed to make a significant contribution to the available boundary spanning capacity.

5.5 Why and which factors determine successful implementation through PPC?

Ultimately, the explanation of the main research question, "Why and which different factors determine successful implementation of climate adaptation through public-private collaboration?'' can be elaborated on based on the above explanation of the sub-research questions. In summary, CA demands public leadership. And more specific, in the endeavour of CA, connective public leadership is exclusively important, as the practise of CA implementation is fragmented whereupon the capacity to make connections is precisely important. The municipality has best comparative advantage to perform this connective leadership role for CA, due to its extensive knowledge of the cities DNA, and overview on the total urban level, of societal and CA stakeholders, urban goals, implementation processes, and the total water system in the city whereas the three waterboards are restricted to a sectoral approach and administrative boundaries.

Sense of urgency and interdependence showed important drivers for collaboration in the implementation of CA, that need attention to enter into collaborative action. Mainstreaming and the factors determining mainstreaming, showed to have great influence on the opportunities of PPC, as there is often a much greater chance of gaining value for potential PPC partners. Therefore, mainstreaming CA is the best approach for up-scaling CA.

To accomplish that mainstreaming can actually lead to up-scaling of the CA, focus on the tactical level of the policy cycle, through elaboration of more specific policy and a comprehensive CA program is most effective. Focus in policy and programs on a) real estate development, b) restructuring existing neighbourhoods and c) program links of sewerage, public space programs with inclusion of private courtyards prone to flooding, has significant implementation opportunities for CA and potential to scale up to an urban level. CA policy can contribute to a structured framework for translation of visions into better projects outcomes, allows mainstreaming and other actors, public, private and social, to initiate and perform projects which can immensely increase CA capacity. A CA program can effectuate the different influencial factors described in chapter 5.2, the mainstreaming approach through an implementation strategy, establish PPC alliances and organize boundary spanning capacity. Focus on the tactical level can connect societal capacity for CA and demands less time-consuming municipal interference in the actual operationalization of individual CA projects, which enlarges feasibility of up-scaling, especially in the context of current municipal restraints on human resources.

The approach of WSR is already based on a strategy to integrate societal capacity, through facilitating individual bottom-up self-organization initiatives. Although this PPC approach greatly benefits the integrative aspect of the solutions and benefits public and municipal support for CA, the effects on the actual CA capacity is still limited. When up-scaling CA, the alliance approach of PPC, could enhance greater effect towards CA. The municipality can perform connective public leadership through building alliances, with representation of public, market with attention for wholesome inclusion of social stakeholders. These alliances can integrate stakeholders on an urban and local level, with direct or indirect CA interest. In the alliance model, it is possible to integrate the capacity of bottom-up initiatives through emphatically engaging the social entrepreneurs who perform representative brokerage roles within a variety of neighborhoods.

In Rotterdam's practise, inclusion of CA on a wide scale is not evident yet and has a mainly non-binding character. The approach to incentify CA needs reinforcement with focus on compliance. Compliance includes explication of goals and aims towards CA and clear communication and translation of responsibilities described in the Water act in local policy. Especially real estate development, a domain which still features little incentives for integration of CA, needs a mechanism for compliance, through a combination of land policy instruments such as residual land pricing and air rights and integration of CA within regulative instruments such as the omgevingsvisie, building acts, zoning plans, a water label.

Ultimately, boundary spanning capacity is an important organisational prerequisite for success of the implementation of CA through mainstreaming and PPC. In the mainstreaming approach, there are no extensive dedicated execution budgets, nevertheless it must be taken into account that this approach indeed needs organisational capacity for policy integration in mainstreaming and network integration for PPC. Boundary spanning has extensive influence on opportunities for up-scaling and repeated performance of networks which is determining for overall success of the implementation. Although boundary capacity within the municipality is not extensive yet, the present capacity in WSR and amongst social entrepreneurs showed very influential on successful implementation of CA on an urban level and

needs enforcement. The need for boundary spanning capacity within the collaborative process does not exclusively belong to the municipality, as other parties, especially the social entrepreneurs performed extensive boundary spanning competences on the local level, which can very well contribute to the overall capacity.

5.5 Recommendations

Policy recommendations

First of all, the ambitious approach of WSR to 'conduct without power', in the implementation of alternative solutions for CA in the cities capillaries, deserves great appreciation. The experimental process of implementation through facilitating social bottom-up initiatives provides extensive learning opportunities. WSR builds a community by enthusing a broad pallet of public, private and social actors and organisations including different municipal departments to integrate CA within their plans. This approach has accomplished prominence and support for CA and its physical, social and economic added value.

To live up to the extensive CA capacity that is needed and to avoid future costs outweigh the current investments (Tompkins et al. 2010; European Environment Agency, 2012,), WSR needs follow-up. The time is right to silver plate the recent effort and increase the impact through evolving the experimental phase into a strategy and approach for up-scaling implementation. The nationwide attention for the urgency of CA, the beneficial market condition for real estate and the political support for PPC together create momentum to enforce a comprehensive implementation of CA. This demands an innovative approach, beyond innovative showcases, which gave Rotterdam international prominence in CA. This other form of innovation encompasses focus on up-scaling, governance and compliance to extensively accomplish all public, private and social actors together are responsible for the implementation of CA.

First basic question is; who needs to perform leadership to rainproof Rotterdam? In a PPC approach it is not per se public parties that are best fit to this role. The answer as came forward from both literature and the empirical analysis is that public connective leadership is needed for tackling CA and the municipality is best fit for this role to coordinate, connect and as such, deploy the adaptive capacity for CA which is present within society and can be performed by other parties besides the municipality. Connective leadership can establish direction, alignment and commitment for CA in mainstreaming and PPC, integration of CA within other domains within different levels and scales, and connection of different public, private and social actors and organisations (Ernst and Yip, 2009; Edelenbos et al., 2013).

As up-scaling strategy, this research recommends focus on the tactical level. The city of Rotterdam has a hands-on tradition which manifests itself in the policy cycle. As the majority of the respondents in this research appointed, the strategic level of often progressive visions together with the operational level of executing projects are well represented, but there is a hiatus on a tactical level, which includes policy and programs. This general hiatus in Rotterdam's urban policy cycle, also exists in the policy domain of CA. The lack of framework on tactical level, in policy and program, seems to give flexibility and ability to customize, however direct implementation of visions into projects also results in inefficient implementation due to diffuse and incoherent outcomes and repeated elaboration of the same subjects in the operational stage which is inefficient.

This tactical level can be sustained through elaboration of a full-fledged program for CA, not as a 'dedicated approach' which requires direct political commitment and extensive dedicated financial and organisational capacity, but a program which sustains the mainstreaming strategy through indirect political commitment within other policy domains, such as urban development, urban maintenance and the social domain. A program enables to effectuate the different factors described in chapter 5.2, the mainstreaming approach through an implementation strategy, (strategic) PPC alliances and provide an organisational structure with enhancement of boundary spanning capacity. Specific components which can be elaborated on within this program are; explication of the broad lines in existing climate adaptive policy and responsibilities of private property owner, concretisation of mainstreaming opportunities and continuous analysis of process links, an organisational strategy on policy and network integration through a combination of existing organisational bodies for integration complemented with increased boundary spanning capacity, and elaboration of the instruments for public private arrangements.

A more comprehensive integration in public space is obvious while the potential is still great, but private property and real estate often still remains untouched in relation to CA while the CA capacity is substantial and there is indeed a private responsibility for CA. In the first place, the implementation

strategy needs focus on three types of urban processes which encompass both public space and private real estate; real estate development, restructuring existing neighbourhoods and program links of sewerage and public space programs, as these developments encompass great potential to scale up. These three types of urban processes can be approached on an urban scale and at the same time connect with important developments, such as the National program South, the densification strategy for the city centre and upgrading of old urban neighbourhoods. The mainstreaming approach becomes robust in that way and can actually lead to up-scaling climate adaptation.

This research states, based on academic literature and empiric findings that the PPC based on the alliance model has greatest potential for up-scaling of CA and recommends developing local and strategic alliances directed to the implementation of CA within real estate developments, restructuring of social housing and sewage and public space renewal programs. Subsequent to the current situation of a participant governed organisation of PPC, when up-scaling CA, a brokered governance organisation, in which certain overall tasks are delegated to one lead party, is most effective. If the municipality and WSR perform a public connective leadership role in this governance form, this will allow utilization of the municipal capacity and internal legitimacy, but also utilizing the capacity of other alliance partners in the performance of CA activities.

In the transition towards up-scaling CA, the current emphasis on facilitation and incentification, which is inviting, but also leaves much room for non-commitment, needs affirmation with compliance. More focus on compliance through translation of the responsibilities for property owners, to process rainwater onto their property is the first step. Explication of requirements to allow public and private property owners to find the right solutions and mainstream CA within other policy domains is another step. And finally, in addition to instruments for incentification complementation is needed of instruments that can actually comply CA, such as planning regulation, Performance agreements, and even although perhaps in a later phase, positive behaviour rewarding taxation within the waterboard and sewage tax. This research and academic literature (van Buuren et al., 2013), shows that especially towards real estate development, compliance through planning regulation and incentifying land policy needs extra attention as there are very limited natural incentives yet in real estate development to include CA.

Perhaps the most important recommendation for the organisation of CA, but also directed to the municipal organisation as a whole, is the importance of boundary spanning capacity to organise policy and network integration. This is explicitely important for a mainstreaming approach and implementation of CA through PPC. Respondents in the empirical part of the study emphasized on the opportunities of boundary spanning, which is in line with different researchers in governance (Williams, 2002; Kort and Klijn, 2011 and Meerkerk and Edelenbos, 2014), who stress investments in reorganization, which is common practise to deal with contemporary complex governance challenges, should at least be accompanied with connective and relational potential through reinforcement of boundary spanning capacity (Meerkerk and Edelenbos, 2014).

Academic recommendations

Finally, there are several recommendations regarding research subjects that would benefit from further investigation. The first subject is further research on the opportunities to extend boundary spanning capacity within public organisations among which the municipal. This organisational capacity as was described in this resreach is important for policy and network integration in the mainstreaming approach and PPC. Meerkerk and Edelenbos (2014) conclude that, private and social organisations showed boundary spanning capacity to a larger extend than governmental organisations. The reason given is that working on the boundaries of the organisation appears more difficult for governmental organisations. It is interesting to see if the type of organisation retains boundary spanning or if governmental organisations in earlier times didn't feel the urgency to work at the borders of their organisation, to be able to explain why boundary spanning is more difficult for governmental organisations. This allows to further explore the capability of the municipality to inject extensive boundary spanning capacity, as this is a major condition for success of CA.

Second subject is; further empirical research on effectiveness of brokered governance forms in relation to tensions such as internal legitimacy and effective use of existing organisational capacities that Provan and Kenis (2007) describe. Several empirical examples of NOA's such as Rotterdam's program for Sustainability, Hof van Delfland and Stadshavens lately showed that lack of internal legitimacy and political commitment resulted in degradation. This disagrees with findings of Provan and Kenis (2007), which suggests that a NOA favours administrative efficiency and is an answer to the tension between both internal and external legitimacy. Based on empirical findings, the NOA governance form seems to deviate from the desired mainstreaming approach. This pleas for a follow-

up of empirical research concerning performance of the network governance forms in relation to a mainstreaming approach.

Final subject which would complement and test the findings of this research is researching the same conceptual framework, with backwards relations. Up-scaling and repeated performance of networks, the indicators of succesfull implementation, would then be independent variables that influence the range of influencial factors that were regarded (interdependence, sense of urgency, stakeholders, leadership, …), which would be the dependent variables. Although during this thesis it showed there is a reversed relationship between the variables that were regarded in a one-way direction, it was beyond the scope of this research which was already based on an extensive framework, to include this reversed relation.

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Annexes

Annex 1: Purposive sample for multiple case study

	Case characteristics								
Name initiative	implementation opportunity	Type of ppp	Integrated goals	Climate adaptive measurement	Leadership	Main stakeholders	Municipal role	implementation phaze	planning and implementation location
Courtyard/ Street									
Bajonetzuin (part of Oude Westen)	-	Third direction, self organisation	-Quality of life -Social cohesion -Health -Value real estate	-Infiltration boxes and -Greening -re use of water by waterpump	-Social entrepeneur Stichting Tussentuin	-Housing cooperation Woonstad -Residents -Pandeijer	-co-finance planning phaze (WSR)	-Realized	-old urban districts Oude Westen
Robert Fruinstraat	Sewerage renewal	Participation	-Quality of life -Social cohesion -Health -Value real estate	?	-Municipality	-Residents -Social organisation	-Initiator -proces fascilitator -investor	-planning phaze	-old urban districts Middelland
Restructuring									
Agniessebuurt	-Restructuring -Sewerage renewal	Alliance model	-Neighbourhood upgrading -Quality of life -Social cohesion -Real estate value	-Reuse of water by waterloos ?	-Housing cooperation	-Waterschap Havensteder -Sociaal ondernemers -Stedin -Evides -	-Prestation agreement	-in progress	-Old urban district Agniesse-buurt
Oude Westen incl Kino, Bajonetzuin, Tussentuin	Restructuring social housing	Alliance model	-Renovation -Neighbourhood upgrading -Quality of life -Social cohesion -Real estate value	-Greening	-Housing cooperation -Social entrepeneur	-Residents -Pandeijer -Kino	-co-finance planning phaze Book in climate and mini conference	-Planning and realization	-Old urban districts Oude Westen
Real Estate Development									
ZoHo	-New real estate development		-Renovation -Neighbourhood upgrading -Quality of life	-Potentially adaptation as main development concept -raw infiltration greening watergarden	-Real estate developers -housing cooperation	-Social entrepeneur (urbanisten/ Stipo) -	-Fascilitation process -regulating planning	-initiation	-Old urban Districts/ city centre
City centre development	-New real estate development							-agenda setting (essays)	-City centre
Integral development projects									
Central station	-New real estate		-Infrastructure -Shopping area -public space	-underground storage capacity 2.400 m3	-Consortium		-Process coordination	-Realized	-City centre
	-Public space				NS vastgoed, Prorail, Municipality				
Hofbogen dakpark	-Real estate -Shopping -Public space	Alliance model	-public space -commercial -quality of life -real estate value	-greening -storage	-Hofbogen bv (Havensteder, Vestia)	-Vrienden van de Hofbogen -ondernemers -Zus/ Urbanisten	-division of development/M unicipality responsible for the roofpark Hofbogen,bv does the commercial real estate placemaking	-initiation of park -commercial partl realised	-Old urban districts North
Watersquares									
Beliamyplein	-		-public space -social upgrading -urban farming -childrenfriendly	-under and above ground storage capacity -greening	-Municipality Water management department	-Residents -waterboard	-initiator -finance -maintanance -operations	-Realized	-Old urban districts Delfshaven
Frederiksplein	-		-public space -social upgrading -childfriendly	-under and above ground storage capacity -greening	-Municipality Water management department	-Residents -waterboard	-initiator -finance -maintanance -operations	-Realized	-Old urban districts Crooswijk
Benthemplein	-		-public space -school playfield -outdoor church	-under and above ground storage capacity -greening	-Municipality Water management department	-European subsidy -waterboard -Zadkine school -Reformed church -Residents	-initiator -finance -maintanance -operations	-Realized	-Old urban districts Agniessebuurt
Waterplein Bloemhof	-		-public space -social upgrading -childfriendly	-under and above ground storage capacity	-Municipality Water management department	-waterboard	-initiator -finance	-Failed	-Old urban districts Bloemhof Feijenoord
Rooftops									
Roofgarden Schieblock	-Placemaking Schieblock		-Urban farming	-Green roof		-LSI real estate developers	-	-Realized	-City centre

Annex 2: Questionaire interviews

ERASMUS UNIVERSITY, ROTTERDAM
INSTITUTE FOR HOUSING AND URBAN DEVELOPMENT STUDIES
MSC. URBAN MANAGEMENT AND DEVELOPMENT
SPECIALISATION GOVERNANCE OF URBAN ENVIRONMENT AND CLIMATE CHANGE

Onderzoeksonderwerp:

Publiek Private Samenwerking in klimaat adaptatie voor een hemelwaterbestendig Rotterdam;

Succes factoren in governance van een stads-brede implementatie

Handleiding Interview

Casus project: ……..

Respondent: ……..

Datum: ……..

Introductie

Het doel van dit onderzoek is inzicht te krijgen in governance factoren van invloed op Publiek-Private Samenwerking. Met name factoren, die bepalend zijn bij een succesvolle stads-brede uitvoering (implementatie) van klimaat adaptieve (beleids) maatregelen om Rotterdam hemelwaterbestendig te maken.

Het onderzoek draagt niet bij aan de ontwikkeling van de innovatieve water-technische oplossingen zelf, maar is gericht op de manier waarop deze oplossingen stads-breed tot uitvoering gebracht kunnen worden, en op de manier waarop daar op een effectieve manier in gestuurd kan worden. Breed inzicht in de factoren geeft de mogelijkheid om de uitvoering voor de hele stad toe te passen en kan bijdragen aan het tempo en de omvang van de uitvoering. En zo recht doen aan de omvangrijke opgave in verband met de toename en intensiteit aan regenval, en Rotterdam hemelwater bestendig te maken.

In de aanpak en uitvoering is klimaat adaptatie niet per se de belangrijkste sturende opgave en resultaat van de ontwikkeling, maar de strategie is juist om de mogelijkheden te onderzoeken klimaat adaptieve maatregelen goed te koppelen in bestaand beleid en lopende ontwikkelingen. En zeker zo belangrijk, om dit te doen in een gezamenlijke aanpak met uiteenlopende partijen bij zowel de overheid, maatschappelijke partijen, marktpartijen en de gemeenschap.

Om tot inzicht te komen welke en hoe factoren invloed hebben op PPS en de implementatie van klimaat adaptieve maatregelen zijn drie casussen bekeken, die van elkaar verschillen in type stakeholders, type ontwikkeling, locatie van de waterproblematiek. De mensen die geinterviewd worden spelen allemaal een rol in deze casussen en vertegenwoordigen marktpartijen, maatschappelijke partijen of overheid.

Het interview neemt ongeveer 1 ½ uur in beslag. De vragenlijst vormt daarbij een richtlijn, zodat de uitkomsten tussen respondenten en casussen kunnen worden geanalyseerd en vergeleken. Daarnaast is er uiteraard ook ruimte voor specifieke invulling en aanvullingen, en wil ik u uitnodigen deze ruimte ook te nemen.

Interview vragen

I. Verschillende factoren van invloed op implementatie

1. Onderlinge afhankelijkheid tav doelen, middelen, stakeholders (Interdependence)

1.1. Welke stedelijke doelen en beleidsvelden zijn gerelateerd aan dit project (meerdere antwoorden mogelijk)? En waar zit een koppeling met klimaat adaptatie?

o Leefomgeving

o Economische stedelijke concurrentiekracht

o Duurzaamheid

o Sociale verbinding

o Gezondheid

o Vergroening

o Infrastructuur

o Water system

o Andere, namelijk ….

What different urban goals and sectoral policy domains are coupled within the project?

o Quality of life

o Economic competitiveness

o Resilience

o Social inclusion

o Health

o Greening

o Infrastructure

o Water

o Other

1.2. Met welke van deze stedelijke doelen kan klimaat adaptatie en hemelwater bestendigheid worden gerelateerd in dit project en in hoeverre is het project afhankelijk van deze doelen?

o Het project is verbonden met de volgende doelen……

o Het project is; zeer afhankelijk/ gemiddeld afhankelijk/ beperkt afhankelijk van deze doelen

To which urban goals can/could climate adaptation be related in this project and is the project dependant on these goals?

1.3. In welk opzicht zijn klimaat adaptieve maatregelen verbonden met dit project?

o Geïntegreerde processen

o Geïntegreerde oplossingen in het groen of gebouw

o Afhankelijkheid van middelen (geld, proces capaciteit, kennis, grond)

o Anders, ……..

In what way is inclusion of climate adaptation measures process interdependent in this project?

o Integration within the development process

o Integration of solutions in greening or building

o Dependency on resources (process capacity, finance, knowledge, land)

1.4. Welke onderlinge relatie was er tussen de private of maatschappelijke partijen en de gemeentelijke afdeling Water management (voor klimaat adaptatie)?

o Wet- en regelgeving

o Financieel

o Grond

o Kennis en informatie

o Proces capaciteit

What interdependent relation was there between the department of water management (for climate adaptation) of municipality and the private or social actors?

o Regulation

o Financial

o Land

o Knowledge and information

o Process capacity

1.5. Zijn er tijdens besluitvorming binnen het project, afwegingen gemaakt ten aanzien van de gehele levenscyclus (ontwerp, uitvoering, onderhoud en exploitatie, afbraak)? En in welk opzicht?

Are life cycle considerations included in the decision making and in what perspective?

1.6. Dragen contextuele factoren zoals een aantrekkelijker investeringsklimaat, herstelde vastgoed ontwikkelmarkt, bij aan de uitvoeringsmogelijkheden voor klimaat adaptatie en verdeling van verantwoordelijkheden bij publiek-private samenwerking?

Do contextual factors such as a more attractive investment climate and recovered market for real estate development in Rotterdam, have influence on the implementation opportunities of climate adaptation in public private collaboration and division in responsibility towards climate adaptation between public and private parties?

1.7. Is een verschuiving van stakeholders zichtbaar door het sociaal-politieke veranderde klimaat van een sociale welvaartstaat naar een participatie maatschappij?

Is a shift in stakeholders visible by social-political change from a welfare state towards a participation society?

2. Belanghebbenden (Stakeholders)

2.1. Welke belanghebbenden waren de hoofdrolspelers en wie hadden een bijrol?
Waren er hoofdrolspelers gerelateerd aan klimaatadaptatie of was dit een bijzaak?

	Publiek	Privaat	Maatschappelijk
Hoofdrol			
Bijrol			

Which stakeholders were key players within the process and which were peripheral stakeholders with an interest in the project?

2.2. Waren er hoofdrolspelers gerelateerd aan klimaatadaptatie of was dit een bijzaak?

Were there public and private key players related to climate adaptation?

2.3. Welke stakeholders zijn bewust of onbewust betrokken of juist niet betrokken in het project?

Which stakeholders (public, private or social stakeholders) were, conscious or unconsciously, included within the project?

	Publiek	Privaat	Maatschappelijk
Betrokken			
Niet betrokken			

2.4. En ontbreken er bepaalde stakeholders?

And are certain actors missing?

2.5. Zijn er specifieke middelen, die verbonden zijn aan bepaalde stakeholders?

Bijvoorbeeld; (Private) grond verbonden aan woning coöperaties, Proces capaciteit aan sociale entrepeneurs, financiën verbonden aan projectontwikkelaars via duurzame marktconcepten, kennis en proces capaciteit verbonden aan de gemeente gemeente.

o Financiën, verbonden aan ….

o Grond, verbonden aan ….

o Kennis en info, verbonden aan ….

o Proces capaciteit, verbonden aan ….

Can specific type of resources be related to specific stakeholders, for example social entrepreneurs (process time), private land by housing associations (land), real estate developers by developing profitable sustainable concepts (finance), coordination and knowledge by the municipality (knowledge), co-financing by the waterboards?

2.6. Welke allianties zijn veelbelovend in relatie tot klimaat adaptatie in gebieden met verhoogd risico op wateroverlast (oa in de oude stadswijken en centrum)?

What public-social-private alliances do you regard promising in relation to climate adaptation in areas with heightened flooding risks due to rainwater (old neighbourhoods and city centre)?

2.7. Wat zouden belangrijke overweging kunnen zijn (bv economisch, woongenot, wet en regelgeving, koppeling van middelen, showcase) voor u als stakeholder om klimaat adaptatie mee te nemen in het project? En zou dit ook een belangrijke incentive kunnen zijn voor een toekomstige samenwerking op een meer reguliere basis?

What would be (or is) the main incentive (economic benefits, increased resources, rules, showcase) for you as a stakeholder to include climate adaptation within the project? And would this be an important incentive for an alliance on a more regular basis?

3. Stedenbouw en planologie (Planning)

3.1. Wat is de gewenste volgorde bij het maken van een plan?

o Eerst een plan en vervolgens draagvlak en partijen zoeken

o Eerst initiatiefnemers verenigen en vervolgens een gemeenschappelijk plan maken

o Meerdere plannen maken met verschillende doelen?

What is the preferred planning sequence; Make a plan for which support is sought or invite parties to come up with initiatives out of which a common plan is made?

o First a plan and then support

o First initiatives and then a common plan

o Several plans for several purposes?

3.2. Waar ligt bij de gemeente Rotterdam, de nadruk in het beleidsproces?

o Focus op beleid en programma

o Focus op projecten

o Focus op visies en directe implementatie in projecten, met een leemte in de tussenfase

o Evenwichtigheid in de reeks van visie, beleid en programma sturing en uitvoering van projecten

Which phases of the policy cycle does the municipality of Rotterdam emphasize onto regarding implementation of urban goals including climate adaptation?

o Focus on visions and straight implementation in projects, with a void in program and policy planning

o Focus on policies

o Balanced sequence from vision towards policy and programs, towards projects

3.3. Welke rol heeft planontwikkeling gespeeld, met betrekking tot klimaat adaptatie en andere stedelijke opgaven?

o Helderheid bieden in het programma van eisen en prioritering in de opgave

o Verbinden van verschillende stakeholders en initiatieven

o Consensus tussen verschillende doelen in het project

o Verhogen van de ambities van stakeholders

What role did planning have within the process?

o Clarity of a program of requirements

o Connection of stakeholders and initiatives

o Goal consensus within the project

o Increased the ambition of stakeholders

3.4. Welke rol heeft de afdeling voor stedenbouw, buitenruimte en planologie van de gemeente Rotterdam gespeeld in het proces?

o Stellen van doelen en eisen als ook het bewaken van basis standaard voor beheer

o Ontwerpen van een integraal plan

o Strategisch plannen en verbinden van kansen tav financiën en proces, korte en lange termijn, en verschillende doelen en belangen

o geen rol

What role did the planning department of the municipality have in this process?

o Setting aims and boundaries towards requirements and safeguarding basic standards for maintenance

o Designing an integral plan

o Strategic planning connecting short term and long term aims, connecting (financial or process) opportunities and connecting different goals and interests

o no role

3.5. Was er helderheid ten aanzien van de klimaat adaptieve doelen in de vroege planningsfase?

a. o De klimaat adaptieve doelen waren helder

o Helderheid ten aanzien van specifieke klimaat adaptieve doelen ontbrak

b. En was er behoefte aan water-technisch richting gevende oplossingen vanuit de gemeente voor klimaat adaptatie

o Er was behoefte aan het voorschrijven van typen oplossingen

o Er was geen behoefte aan voorgeschreven typen oplossingen. In het proces werd het type oplossing dat de meeste toegevoegde waarde kon hebben duidelijk

Was there clarity about a. the climate adaptive aims early in the planning phase? And was there b. a need for water technical direction of solutions for climate adaptation?

a. o The climate adaptive aims were clear

o The knowledge of climate adaptive aims was lacking early in the process

b. o There is a need for goal oriented formulation towards requirements for rainwater

o There is a need for solution oriented formulation

3.6. Biedt de buitenruimte in het project een breed aantal eco-system diensten of ligt de nadruk op een van de diensten (meerdere antwoorden mogelijk)?

o De inrichting buitenruimte is vooral gericht op Leefomgevings diensten zoals aantrekkelijke buitenruimte bij woning of biodiversiteit

o De inrichting buitenruimte is vooral gericht op Culturele diensten zoals recreatie, sport en educatie

o De inrichting buitenruimte is vooral gericht op Provianderende diensten zoals voedsel en drinkwater

o De inrichting buitenruimte is vooral gericht op Regulerende diensten zoals infiltratie en opvang van regenwater, reductive van hitte stress, waterzuivering

o Er is bij de inrichting buitenruimte gericht op een breed aantal (drie of meer) eco systeem diensten

How many and which eco-system services does public space provide within the project (more answer possible)?

o Provisioning services (e.g. food, drinking water)

o Regulating services (e.g. retain and infiltrate rainwater and infiltration, reduction of heat stress, purification of water, carbon sequestration)

o Habitat or Supporting services (e.g. living environment, biodiversity)

o Cultural services (e.g. recreation, education)

4. Kansen voor meekoppelen en implementatie

4.1. Welke ontwikkeling of beheer opgave was de belangrijkste kans en mogelijkheid voor implementatie?

What was the leading implementation opportunity?

4.2. Welke verschillende ontwikkel-, expoitatie of onderhouds processen (herstructurering, vastgoed ontwikkeling, vergroening, infrastructuur, onderhoud of vernieuwing openbare ruimte, rioolvervanging, arbeids reintegratie, klimaat adaptatie), zijn met elkaar gekoppeld om de implementatie mogelijkheden voor dit project te vergroten?

Which different development and/or maintenance processes (e.g. restructuring, real estate development, greening, traffic, maintenance or renewal of public space, sewerage renewal, climate adaptation) were coupled in order to increase the implementation opportunity for this project?

4.3. Was er een nadruk op de koppelingen met andere processen in de initiatiefase of ontstond dit gedurende het proces?

o Koppeling tijdens initiatieffase

o Koppeling tijdens tijdens het planningsproces

o Koppeling tijdens de uitvoerinsgfase

o Geen nadruk op proces koppeling

Was the match with other processes planned in the initiation phase or did it arise during the process?

4.4. Heeft klimaat adaptatie bijgedragen aan de kans om tot uitvoering te komen bij dit project, of was het een belemmering?

o Kans

o Belemmering

o Geen van beide

Did climate adaptation contribute to the opportunity for implementation of the project or was it an obstacle?

o opportunity

o obstacle

o neutral

5. Betrouwbaarheid

5.1. Was vertrouwen en toewijding van partners een belangrijke conditie in het proces of was er een nadruk op organisatievorm en contracten?

o Sterke nadruk op contracten en organisatievorm om helderheid en zekerheid in de samenwerking te bewerkstelligen

o Nadruk op ontwikkeling van vertrouwen en weinig nadruk op contracten

Was trust and member commitment an important condition within the process or was the emphasis on institutional design and contracts?

o Strong emphasis on the use of contracts to inject clarity and certainty in the collaboration

o Less emphasis on contracts. More emphasis on mutual trust.

5.2. Was vertrouwen vanaf het begin van het proces vanzelfsprekend aanwezig of was er sprake van een ‘erfenis uit het verleden’ waardoor vertrouwen opgebouwd moest worden?

5.3. Was de gemeente een betrouwbare partner en was de gemeente een toegewijd tijdens het gehele proces?

Was there member commitment of the municipality and was the municipality a reliable partner?

5.4. Wat waren de belangrijkste condities en strategieën om vertrouwen te ontwikkelen in de samenwerking?

What were the most important conditions to build trust within the collaboration?

5.5. Wie heeft een nadrukkelijke rol gehad in het opbouwen van onderling vertrouwen tussen stakeholders?

6. Leiderschap

6.1. Kun je beschrijven welke onderstaande leiderschapsrollen er in het proces aan de orde waren? En wie deze invulde?

o Verbindend leiderschap (boundary spanning)

o Innovatief leiderschap

o Facilitative leadership of the process

Can you describe what leadership role came across within this project and who filled in these role(s)?

1. connecting leadership (boundary spanning)
2. Innovative leadership
3. Facilitating the process

6.2. Is er een specifieke leiderschapsrol, die kan worden gerelateerd aan het opschalen en mainstreamen van klimaat adaptatie?

o Verbindend leiderschap (boundary spanning)

o Innovatief leiderschap

o Facilitative leadership of the process

Is there a specific leadership role that relates to up-scaling and mainstreaming of climate adaptation?

6.3. Wie kan die leiderschapsrol vervullen ten aanzien van de integratie van klimaat adaptatie?

o Publieke partijen (gemeente en waterschappen)

o Private partijen (marktpartijen)

o Maatschappelijke partijen (natuurverenigingen, sociaal ondernemers)

o Gezamenlijk, in verschillende leiderschapsrollen, al volgt …..

All, in different leadership roles

Who could fill in this leadership role towards the integration of climate adaptation.

o Public actors (municipality, waterboards)

o Private parties

o Social parties

o All, in different leadership roles

6.4. Welke rol kan de gemeente het beste spelen ten aanzien van mainstreamen van klimaat adaptatie?

o De gemeente kan duidelijke doelen en opgaven stellen en een aanspraak doen op de verantwoordelijkheid van vastgoed eigenaren zowel publieke als private

o De gemeente kan zelf de projecten initiëren waarin klimaat adaptatie een belangrijk concept is

o De gemeente kan bottom-up zelforganisatie initiatieven, bijdragend aan klimaat adaptatie, faciliteren

o De gemeente kan de implementatie van klimaat adaptatie coördineren door programma's, verbinden van stakeholders en middelen

What role does the municipality play towards mainstreaming climate adaptation?

o Government should set clear aims and goals towards climate adaptation and appeal to the responsibility of property owners both public and private

o Government should initiate integrated projects in which climate change is the main concept

o Government should facilitate bottom up initiatives towards climate adaptation

o Government should coordinate the implementation of climate adaptation through programs, connecting parties, resources

7. Management

7.1. Welk management perspectief was meest relevant in dit project?

o Project management; specificeren van opgaven, sturen op planning schema's, en organiseren van personeel

o Proces management; doel gestuurd, ontwikkeling van een solide samenwerkingsproces, inspanning om doelen te verbinden

o Organische informele sturing; door initiatiefnemers met weinig tot geen institutionalisering

What management perspective was relevant in the project?

o Perspective of project management: specify clear objectives, set out schedules and supervise them, and organize human resources

o Perspective of process management: goal oriented operation, development of a solid cooperation process (rules and roles) and efforts to interconnect goals

o Perspective of organic informal steering: by initiators with no or little institutionalisation

7.2. Welk van bovengenoemd perspectief is vanuit uw ervaring het meest relevant voor opschaling en mainstreamen van klimaat adaptieve beleidsmaatregelen en projecten?

And what perspective would, from your experience, be most relevant for up-scaling and mainstreaming climate adaptation policy measures and projects?

o Project management; specificeren van opgaven, sturen op planning schema's, en organiseren van personeel

o Proces management; doel gestuurd, ontwikkeling van een solide samenwerkingsproces, inspanning om doelen te verbinden

o Organische informele sturing; door initiatiefnemers met weinig tot geen institutionalisering

7.3. Wat waren de belangrijkste management activiteiten gedurende het proces?

o Verkennen van inhoud

o Verbinden van inhoud, partijen en middelen

o Opstellen van proces overeenkomsten

o Arrangeren van het proces

What were the main management strategies?

o Exploring content

o Connecting content, parties, resources

o process agreements

o arranging the process

7.4. Beschikt de gemeente over voldoende en de juiste management competenties (proces, project of organisch) en/of waar is schaarste of gebrek aan?

8. Organisatie

8.1. Lag de nadruk in het samenwerkingsproces op institutioneel ontwerp of op management activiteiten?

o nadruk op institutioneel ontwerp

o nadruk op management activiteiten

Was institutional design of the collaboration an important part in management of the network, or were the amount of management activities of larger influence?

o emphasis on institutional design

o emphasis on management activities

8.2. Is het proces georganiseerd door de samenwerkende partijen zelf of gedelegeerd aan een agent?

o Gedeelde organisatie door stakeholders

o Gedelegeerde organisatie naar een van de belangrijkste stakeholders in combinatie met uitvoering van deel activiteiten door andere stakeholders

o Gedelegeerde organisatie door een aparte bestuurlijke organisatie

o Anders……

Is the process governed by the collaborative stakeholders themselves or is governance brokered to a separate organization?

o Shared governance by stakeholders

o Brokered governance by a single organization that takes some key governance activities while leaving other activities to the member stakeholders

o Highly brokered governance by a separate administrative organization

8.3. Welke organisatievorm zou effectief kunnen zijn voor opschaling en mainstreaming van klimaat adaptatie?

o Gedeelde organisatie door stakeholders zelf

o Gedelegeerde organisatie naar een van de belangrijkste stakeholders in combinatie met uitvoering van deel activiteiten door andere stakeholders

o Gedelegeerde organisatie door een aparte bestuurlijke organisatie

Which organisational form would be effective for up-scaling implementation of climate adaptation

o Shared governance by stakeholders

o Brokered governance by a single organization that takes some key governance activities while leaving other activities to the member stakeholders

o Highly brokered governance by a separate administrative organization

8.4. Hoe was de integratie tussen het samenwerkende netwerk en de interne organisatie georganiseerd?

o Formeel via stuurgroepen en kernteams

o Informeel door een veelheid aan management activiteiten

o Informeel door netwerk ontmoetingen

How was the integration of the public private collaborative network and the internal organization arranged?

o Formal through steering committees, project boards
o Informal through the amount of network management activities
o Informal through network meetings

8.5. Waar binnen de gemeente vond de integratie plaats tussen de gemeentelijke afdelingen en het samenwerkende netwerk? En hoe zou dit beter georganiseerd kunnen worden?

o Via de unit account management bij de afdeling ruimtelijke economische ontwikkeling (REO)

o Via het overleg orgaan STOR (verbinding tussen stadsontwikkeling en stadsbeheer bij buitenruimte ontwikkelingen)

o Via project of programma managers

o Via, …….

Where in the municipal organization occurred the integration between the municipal departments and the public private collaborative network?

o Through the unit account management within the department of spatial-economic development REO

o Through the consultative body STOR (connecting body for public space between the department of urban development SO and urban maintenance SB within the municipality

o Through project- or program managers

o different, …..

9. Instrumenten

9.1. Welke van onderstaande instrumenten kunnen stakeholders binnen dit project bewegen om klimaat adaptatie te integreren?

Which instruments could incentify stakeholders within this project to include climate adaptation.

Voorbeelden van instrumenten:

I. Legal instruments; Water Wet and Rainwater Duty of Care, land use planning
II. Economic instruments;
    a. instruments towards real estate development- exploitation plan, market demand or increased development opportunities
    b. market incentives – increased real estate value, increased quality of life
    c. fiscal instruments, such as water tax and sewerage charges
    d. financial instruments - grants (with or without benefit sharing), government loan system or bank guaranties, crowdfunding, climate services, social impact bonds, local revolving funds,
    e. insurance instruments
III. Communication instruments; dedicated communication campaigns, water label, risk warning systems, communication integrated within work processes executing measures.

9.2. Welk type instrumenten vind u als stakeholder het meest succesvol en haalbaar ten aanzien van opschaling en mainstreaming van klimaat adaptatie?

o Wet- en regelgeving; door beperkingen of toelating van activiteiten

o Economische instrumenten; door verandering van de kosten-baten verhouding

o Verevening via belastingen en heffingen

o Communicatie instrumenten; informatie over mogelijkheden

Which instruments would you as a stakeholder regard most successful towards up-scaling and mainstreaming climate adaptation?

o Legal instruments; by restricting or allowing behaviour

o Economic instruments; by changing the cost-to-benefit ratios

o Equalisation through taxes

o Communication instruments; informing about options

9.3. Zou er differentiatie moeten zijn in type instrumenten, gericht op een bepaalde doelgroep en type stakeholders? En kunt u dat verduidelijken met een voorbeeld?

9.4. Mist u instrumenten in het palet aan mogelijkheden in relatie tot klimaat adaptatie?

II. Mainstreaming

1. Mainstreamen

1.1. Was klimaat adaptatie geïntegreerd in sectoraal beleid, plannen, en processen in relatie tot dit project?

o In beleid

o In planontwikkeling

o In processen door management strategieën

o In processen door de organisatie via bepaald strategische platvormen, procedures en posities zoals account management

How did integration take place?

o In the policy process

o In the planning process

o Through management strategies

o Within the organisation through certain strategic platforms, procedures and positions such as account management

1.3. Waar kwam de informatie voor kansen voor integratie van

a.doelen, b. processen, c. stakeholders vandaan? (voor a., b., c. afzonderlijk beantwoorden)

o Via een database/kaart

o Via een programma of plan

o Via actoren in het samenwerkend netwerk

o Via accountmanagement

Where did the information about opportunities for integration of goals, processes, stakeholders come forward within the project?

o Through an overall database/map

o Through a plan or program

o Through actor(s) within the collaborative network

o Through the account management department within the municipality

1.2. Hoe kan deze informatie voor integratiemogelijkheden (van doelen, processen, stakeholders) het best stadsbreed beschikbaar komen, om tot opschaling te komen?

o Door een database of kaart, waarin beleid, kansen voor proces koppeling inzichtelijk gemaakt zijn

o Door integraal beleid, plannen of programma's

o Door strategische actoren bijvoorbeeld accountmanagement, programma managers

How can this information best become available on the urban scale, in order to upscale and mainstream climate adaptive measures?

o Through an overall database/map

o Through a policy, plan or program

o Through strategic actor(s) eg account management, programma managers

2. Indirect politiek commitment

2.1. Leidt mainstreamen (integratie) van klimaat adaptatie in beleid, plannen en processen automatisch tot opschaling van de implementatie of is er een toepassing specifieke aanpak nodig?

o mainstreamen leidt automatisch tot opschaling

o mainstreamen, versterkt met klimaat adaptieve programma sturing leidt tot opschaling

o alleen een toepassing specifieke aanpak waarin politieke prioriteit en omvangrijke middelen voorwaarde zijn, zal tot opschaling leiden

Does mainstreaming climate adaptation (within policies, plans, urban development processes), lead to up-scaling of implementation or is there a need for a dedicated approach for a comprehensive implementation?

o mainstreaming leads towards up-scaling of implementation

o mainstreaming reinforced with climate adaptive program steering leads to up-scaling

o a dedicated approach, in which political commitment and extensive resources are a prerequisite, will lead to up-scaling

2.2. Wat is een belangrijke voorwaarde om mainstreamen (integratie) ook te laten leiden tot opschaling?

What is an important condition so that mainstreaming will lead to up-scaling?

2.3. Draagt het system waarop vaak sectoraal politieke verantwoording wordt afgelegd binnen de gemeente bij aan een houding van boundary spanning? En hoe zou dit kunnen verbeteren?

Does the way accountability is organised within the municipality incentify a boundary spanning attitude? And if not, in which way should this change?

2.4 En hoe was dit binnen uw eigen organisatie?

III. Publiek-private samenwerking

I. Public Private Collaboration model

1.1. Wie nam het initiatief tot samenwerking?

o Het initiatief lag eerder in de maatschappij met een beperkte faciliterende overheidsrol (bottum up zelf organisatie)

o Overheid, private, maatschappelijke partijen waren gezamenlijk betrokken gedurende het proces op basis van gelijkwaardigheid (alliantie model)

o Helder onderscheid tussen opdrachtgever (publiek) en opdrachtnemer (privaat) (concessie model)

What relationship was there between the public and private stakeholders?

o The initiative lies rather in society with little governmental role as a facilitator.

o Government and private actor are jointly involved in the design, construction and operation based on equivalence

o Clear distinction between commissioner (public party) and contractor (private party)

1.2. Hoe was de houding ten aanzien van scope van het project?

o Neiging naar heldere afbakening van scope en alle verbreding kan alleen binnen afgebakende verantwoordelijkheidsgebieden van stakeholders

o Neiging tot uitbreiding van scope, vanuit het perspectief van samenhang, en het leggen van verbindingen tussen projectonderdelen

o Neiging om te zoeken naar kleine, overzichtelijke projectonderdelen en korte termijn overzichtelijke scope

What was the stance towards scope of the project?

o Tendency to look for clear distinctions and boundaries. Any broadening of scope should take place within demarcated areas of responsibility of actors

o Tendency to seek expansion of scope, and from the perspective of coherence, laying connections between elements within the project

o Tendency to seek clear, small and short term scope.

1.3. Welk Publiek-Privaat samenwerkingsmodel is het meest kansrijk ten aanzien van opschaling en mainstreamen van klimaat adaptatie?

o Concessiemodel (klassieke PPS); waarin de overheid opdrachtgever is en marktpartijen opdrachtnemer

o Alliantie model; waarin overheid, markt partijen en private partijen een gelijkwaardige rol vervullen en bijdragen naar gelang hun kwaliteiten, capaciteiten en belang

o Faciliteren van bottum up zelf organisatie initiatieven vanuit de samenleving

Which Public Private Collaboration model is relevant to this project and which model(s) are most promising towards mainstreaming and up-scaling climate adaptation regarding the need for small scaled solutions integrated within the veins of densely used urban areas? (including table concession, alliance, bottom up)

o Concession model

o Alliance model

o Bottom up self-organisation model

Characteristics	**Concession- or contractmodel**	**Alliance model**		**Third direction model, Bottum up, citizens self-organisation**
Type of relation/ partnership	Clear distinction between commisioner (public party) and contracter (private party)	Government and private actor are jointly involved in the design, construction and operation based on joint commisioning status.		The initiative lies rather in the society with little governmental role.
Type of cooperation	Cooperation limited to the phase preceding the contracting out. This phase is folowed by supervision of the private actor carried out solely by the public actor, with little or no mutual interaction.	Collaboration continues throughout the whole process. Initially, it focuses on the nature of goals and the search for connections. Later it is geared towards joint realization of goals		Cooperation limited. Government has a facilitating role in some stages.
Role of contract in the establishment and running of the ppp	Strong emphasis on the use of contracts to inject clarity and certainty in the collaboration.	Less emphasis on contracts. More emphasis on mutual trust.		Less emphasis on contracts. Contracts are mainly related to user agreements or maintanance.
Determination of the issues and direction of solutions	The public party largely defines the problem and the solutions.	Public and private parties are both involved in a joint process of defining the problem and solutions.		The private parties largely define the problem and the solutions.
Scope of the process	Tendancy to look for clear distinctions and boundaries. Any broadening of scope should take place within demarcated areas of responcibility of actors	Tendancy to seek expancion of scope, and from the perspective of coherence, laying connections between elements within the project		Tendancy to seek clear short term scope.
Management principles	Strongly founded on principles of project management: specify clear objectives, set out scedules and supervise them, and organize human resources.	Founded more on principles of proces management: goal oriented operation, development of a solid cooperation process (rules and roles) and efforts to interconnect goals.		Management by volunteers, organic informal steering by main initiators. Non or little institutionalised.

Source; Klijn and Teisman, 2003; Edelenbos and Teisman, 2008; Montfort et al. 2012; Sociaal CultureelPlanbureau, 2014; Municipality of Rotterdam, 2016

2. Boundary spanning

Definitie van Boundary Spanning; het opereren over grenzen van organisaties heen om verbindingen te maken ten aanzien van relaties, doelen, en onderlinge afhankelijkheden, om complexe processen te managen.

2.1. Was er een specieke stakeholder, die de rol van boundary spanner vervulde? En zijn er stakeholders die van nature deze rol vervullen?

Was there a specific stakeholder which fulfilled the role of boundary spanner within the project? And are there stakeholders that by nature could fulfil a boundary spanning role?

2.2. Welke verbindingen maakte de boundary spanner?

o verbindingen tussen het samenwerkende netwerk en de eigen organisatie

o verbindingen tussen het samenwerkende netwerk en andere organisaties

o verbindingen tussen het samenwerkende netwerk, de eigen organisatie en andere organisaties

Did boundary spanning occur in the sense that actors within the public private collaborative network;

o connected linkages within the collaborative network to linkages with their home organizations

o connected linkages within the collaborative network to linkage with other organizations

o connected linkages within the collaborative network to linkages with their home organizations, and linkages with other organizations

2.3. Welke stakeholders kunnen een cruciale rol spelen ten aanzien van boundary spanning in relatie tot mainstreamen en opschalen van klimaat adaptatie?

Which actors can play a crucial role towards boundary spanning specifically related to mainstreaming and up-scaling the implementation of climate adaptation?

2.4. Is er een specifieke fase waarin boundary spanning het meest belangrijk is?

o initiatie fase

o planning fase

o uitvoeringsfase

o alle fasen

Is there a specific phase in which boundary spanning is most evident?

o initiation phase

o planning phase

o execution phase

2.5. Welke boundary spanning vaardigheden en competenties zijn het meest relevant voor opschalen van klimaat adaptatie bij publiek private samenwerking (in volgorde van belang)?

o bouwen van duurzame relaties en vertrouwen

o ondernemende en innovatieve competenties om nieuwe flexibele aanpak te ontwikkelen

o managen door beinvloeden en onderhandelen

o managen van inter-organisatorische afhankelijkheden

o managen van verantwoording afleggen

What boundary spanning skills and competences are most relevant for up-scaling climate adaptation in public private collaboration (put in order of importance)?

o building and sustaining relationships and trust within the networks and in other organisations

o entrepreneurial and innovative competences in order to build new flexible approaches

o managing through influencing and negotiation

o managing complexity and interorganizational interdependence

o managing accountability

2.6. Heeft de gemeente voldoende aandacht, capaciteit en competenties ten aanzien van boundary spanning? En bevindt die capaciteit zich op het strategische niveau of ook op uitvoerende niveau?

Is there enough boundary spanning capacity and competence within the municipality? And does this capacity occur on a strategic level or also on the implementation level?

2.7. Welke obstakels komen boundary spanners tegen binnen de gemeentelijke organisatie, die de link tussen het samenwerkende netwerk en de interne organisatie bemoeilijken (in volgorde van belang)?

o sectoraal georganiseerde afdelingen

o het afleggen van verantwoording is georganiseerd naar sectorale doelen, delen van de totale levenscyclus en niet naar toegevoegde waarde van de gehele keten

o veranderingen in prioriteit door verschuivingen in politiek of hoger management

o gebrek aan capaciteit om organisatorische verantwoordelijkheid te nemen

What obstacles do boundary spanners come across within the municipality organization which complicates to link the collaborative network to the internal organisation (put in order of importance)?

o sectoral organised departments

o accountability is organised towards sectoral public aims and goals, and parts of the life cycle and not towards added value as a whole

o changing prioritisation through personal or political shifts

o lack of capacity to take certain responsibilities and adjust to the speed of the network

II. Succesvolle implementatie

1. Effectiviteit

1.1. Was het klimaat adaptieve doel binnen het project 100% regenwater verwerken, of was alle mitigatie van regenwater is mooi meegenomen?

Was the aim to mitigate 100% rainwater within the project, a clear goal or was it nice to have as much as possible?

1.2. Vergroten de klimaat adaptieve maatregelen de toegevoegde waarde voor het project als geheel, bijvoorbeeld ten aanzien van kwaliteit van leven, toekomstbestendigheid en stedelijke concurrentiekracht? En zo ja, waarom?

Can climate adaptive solutions, increase added value for other social or economic urban development goals such as quality of life and urban competitiveness?

1.3. Door middel van welke vorm van netwerk governance is het opschalen van klimaat adaptatie het meest effectief?

o Gedeelde organisatie door stakeholders bij ieder individueel project

o Gedelegeerde organisatie naar een van de belangrijkste stakeholders in combinatie met uitvoering van deel activiteiten door andere stakeholders

o Gedelegeerde organisatie door een aparte bestuurlijke organisatie

o Anders, …

Through what network governance form will up-scaling and mainstreaming implementation of the climate adaptive goals be most effective?

o Shared governance by stakeholders

o Brokered governance by a single organization that takes some key governance activities while leaving other activities to the member stakeholders

o Highly brokered governance by a separate administrative organization

2. Efficiëntie

2.1. Wat was efficient of juist heel inefficient in het proces?

Was their optimal use of resources (time, finance, knowledge, land) from different stakeholders, within the project? And what could be optimised?

2.2. Wat zouden goede strategien zijn voor de gemeente om efficienty te vergroten ten aanzien van klimaat adaptatie (maak 3 keuzes)?

o Verhogen van belasting en zelf maatregelen uitvoeren

o Strengere handhaving van wet- en regelgeving

o Coördineren in stedelijke ontwikkeling en beheer in publiek-private samenwerking

o Faciliteren van initiatieven

o communicatie ten aanzien van risico’s en oplossingen op private grond

What would be efficient strategies for the municipality to increase effectivity toward integrated climate adaptation (choose 3)?

o increase tax related to the increased precipitation and execute climate adaptation measures

o setting clear aims and goals and enforce these with rules, regulation

o coordinate in including climate adaptive measure in urban developments by public private collaboration

o facilitates bottom up self-organisation initiatives

o communication about the risks and advantages of climate adaptive measures onto private land

2.3. Welke schaalvoordelen, in relatie tot allocatie van middelen, kan worden georganiseerd door mainstreamen en opschalen?

What types of advantages of scale in relation to resource allocation can be organised through mainstreaming and up-scaling climate adaptation?

2.4 Was het samenwerkingsproces alleen relevant voor dit project of zijn er kansen voor duurzame relaties of herhaaldelijke uitkomsten?

Was this collaboration only relevant for this project, or are there opportunities for durable relations and repeated performance?

1. Legitimiteit

1.1. In hoeverre was er draagvlak voor klimaat adaptatie in het project?

To what extend is there support for actions and plans related to climate adaptation?

1.2. Kan publiek-private samenwerking en integratie in andere stedelijke doelen, het draagvlak voor klimaat adaptatie vergoten?

Can public private collaboration and integration in other urban development goals increase public support for climate adaptation?

1.3. Is er een relatie tussen legitimiteit en ontvankelijkheid (=Bewustzijn van het probleem, Verbintenis met probleem, Capaciteit om te acteren) van stakeholders?

Is there a relation between legitimacy, and receptivity of stakeholders (awareness, association, capacity to act and response action)? And what role does communication play in this?

1.4. Hoe kunnen we legitimiteit en draagvlak voor klimaat adaptatie vergroten, om te kunnen acteren, en buiten- proportionele lasten voor toekomstige generaties voorkomen?

In what way can legitimacy be increased now, in order to be able to act and avoid disproportionate burden for future generations?

1.5. Vindt u het legitiem om vastgoed eigenaren te vragen een belangrijke bijdrage te leveren aan de kosten en verantwoordelijkheid om regenwater te verwerken dat op eigen grond valt, zoals recent is bepaald in de zorgplicht als onderdeel van de Waterwet? Of denkt u dat er meer draagvlak voor het alternatief van het verhogen van rioolheffing, waterschapsbelasting of acceptatie van meer overlast?

Is it legitimate to demand property owners (public and private) to take an important part of the initiative and costs as a responsibility for processing rainwater that falls on their land as was recently agreed on in the duty of care within the Water Wet, or is increased sewerage tax, waterboard tax or more nuisance more legitimate?

Annex 3: National, regional and local climate adaptive policies and programs

An overview of national, regional and local CA policies and programs.

a. National level

KNMI climate scenario's

Klein Tank et al. (2014) describe that; "The Royal Dutch Meteorological Institute has developed several possible climate change scenarios for the Netherlands until 2050 (which have been updated in 2014). Although these scenarios vary in the global temperature rise and changes in airflow patterns, there are general projections. First, the temperature will continue to increase in The Netherlands. This will result in softer winters and hotter summers with possibly more heatwaves. The latter implies that there is a higher risk of heat stress. Second, the Dutch winters are expected to become wetter as downpours become more extreme and more frequent. Also, in the summer, the intensity of precipitation events is calculated to increase. This implies that cities might experience more urban flooding events. Third, the sea level will continue to rise, and faster than first projected. This indicates an increase in flood risk".

Nationaal Bestuursakkoord Water

Background

In February 2001 Provincial Authorities, Association of Water Boards and the Association of Dutch Municipalities agreed on the 'Startovereenkomst Waterbeleid 21th century'. The first step in establishing the necessary common approach. In 2003 this resulted in the Nationaal Bestuursakkoord Water, which is updated in 2008.

Purpose

The public authorities determine how, by what means and by what time frame they jointly tackle the major water issues for the Netherlands in the 21st century with a focus on land subsidence, sea level rise and climate change. The agreement emphasizes the joint responsibility for managing the total water system. It appoints which instruments are used, the tasks and responsibilities each party has and how parties fascilitate each other.

Parties

National government, the provinces, the Cooperative Association of Provincial Authorities (IPO), the Association of Dutch Municipalities and the Association of Waterboards.

Duration

Anticipation towards climate change in 2050 met a view through to 2100.

National Waterplan

Background

The national government prepares a National waterplan as a building block for the integral Omgevingsvisie. This will be part of the Omgevingswet that is planned to be implemented in 2018.

Purpose

The water plans contain the national and regional (strategic) waterpolicy. With this plan the Netherlands meets the European requirements arising from the Kaderrichtlijn Water, de Richtlijn Overstromingrisico`s en de Kaderrichtlijn Mariene Strategie.

Parties

Ministry of Infrastructure and the Environment, Ministry of Economic Affairs, Rijkswaterstaat, the Water Boards.

Duration

The duration of the National Water Plan is from 2016-2021 of December 22, 2015 to December 22, 2021.

National Adaptation Strategy (NAS)

Background

The NAS is the Dutch answer to the European Commission's call to establish a climate adaptation strategy by 2017.

Purpose

The NAS turns on new initiatives and accelerates and broadens existing initiatives. The NAS builds on a decade of climate adaptation policy in the Netherlands and covers in addition to the Delta Programme, the Dutch challenge for climate adaptation. Important component of the strategy is to connect all parties and promote a common approach.

Parties

The NAS has been produced under the responsibility of the State Secretary of Infrastructure and the Environment. The NAS is the result of a participatory process with the active participation of provinces, municipalities, water authorities, research institutions, civil society and the business community.

Duration

In 2017 an implementation plan will be based on the determined NAS. This is done in close conjunction with the Delta Programme, in which plans for flood and waternuisance are included.

Delta Program

Background

In 2007, the government has set the Delta Commission which in 2008 made recommendations on the management of water for climate resilience, taking into account climatic and social developments. The government has accepted the recommendations of which the Delta Programme arised.

Purpose

The goal of the Delta Programme is that the Netherlands is waterrobust and climate proof in 2050. The Delta Programme is divided three generic themes: Fresh Water, Flooding and Regional Adaptation. Regional adaptation is related to this research.

The Spatial adaptation program promotes the transition of cities and towns to climate-proof. In 2020 water robustness should be the standard practice for all governments and market parties, so that the Netherlands is climate proof in 2050.

There are also a number of distinct areas which Rijnmond Drechtsteden is one of them. This area - around Rotterdam, is under influence of both sea and riover water. Since 2014, the region is working on the implementation.

Parties

National government, provinces, municipalities and water works in an innovative manner with input from civil society, research institutions, citizens and businesses.

Duration

Climate proof act included in policy in 2020 and executed in 2050.

Delta Plan Spatial Adaptatie

Background

In addition to the Delta Plan Flood and the Delta Plan Freshwater from 2018 there will be a Delta Plan Spatial Adaptation.

Purpose

The Delta Plan Spatial Adaptation must help to outline, strength and mutual inspiration around the challenges of the part program: limiting the effects of flooding, heat stress, flooding and drought by climate-proof and water-robust planning in the Netherlands in 2050. The Delta Plan gives a boost to the Delta Programme and will target the Delta Decision - "Planning climate proof and waterrobuust" – and further concretize and operationalize this target. In addition, the Delta Plan will give insight into the possible instruments, governments and society can use.

Parties

Water boards, municipalities, provinces, state work together in a workgroup and are represented in the administrative steering committee.

Duration

The Delta Plan will be delivered at Prinsjesdag 2017, as part of Delta Programme 2018.

Omgevingswet
Background

The environmental code, which comes into force is expected in 2018, integrates some 26 laws in the physical environment. This includes topics such as: construction, environment, water management, spatial planning, heritage and nature. The old laws are usually constructed sector. In conjunction used, these laws no longer meet the needs of today. With the Omgevingswet, the government wants to make the legal system 'simply better'.

Purpose

The environmental code is, with a view to sustainable development, aimed at the interdependence: (a) achieve and manage to maintain a safe and healthy physical environment and good environmental quality and (b) effective maintanance, use and development of the physical environment in order to make possible social functions.

Part of this Omgevingswet is the Omgevingsvisie in which the National waterplan is integrated. Water safety and spatial adaptation play an important role in this.

Parties

National, provincial and local governments, businesses and citizens.

Duration

In 2018 in operation

b. Regional

Citydeal klimaatadaptatie

Background

Commitment of the parties and partners connect to the initiatives and incentives from the Delta Programme and helps accelerate the transition around climate-proof design of urban areas.

Objective

The objective of the City Deal is to strengthen our approach to climate-proof construction and management of the urban area with the greatest social value of urban society. The main focus of this citydeal is watersafety. Also, the Citydeal input for the new delta plan.

Parties

City Amersfoort, Breda, The Hague, city of Dordrecht, city of Eindhoven, City of Rotterdam, city of Zwolle, Ministry of I & M, Delfland Water Board, Water Board Schieland and Krimpenerwaard Water Board Amstel, Gooi and Vecht Water Board Drenthe Overijssel Delta, Valley Water Board Veluwe, Province of Overijssel, BDP North-East, trade association VHG, Ecoshape, Hanze University, Heijmans, University of Amsterdam, Kennisland, NWP, RDC, TAUW, UNESCO-IHE, University of Utrecht.

Duration

This Citydeal enter into force on the day after signature and consists of several stages during the period to 31 December 2020.

Watertable Delfland

Background

On November 16, 2011 by the Haaglanden region, the municipalities in the Metropolitan and the Water Authority of Delfland and Rijnland signed a management agreement Water and Climatetafel. This agreement includes the establishment of the administrative platform, which has since been organized by Delfland eight times. It is the intention to broaden the water table to all municipalities within the area managed by Delfland, and if appropriate other parties.

Objective

Watertafel is a strategic (administrative) consultation between different parties. Thus, the water table is intended to be the focal point within the metropolitan area to discuss integrated water and climate related issues. One of the proposals of the water table was a Community of Practice. A growing group of climate adaptation specialists from governments in the southern Randstad met four times a year to exchange experiences, gain new knowledge and help each other in climate adaptive planning and design.

Parties

Delfland, the 13 municipalities within its management area, Dunea, Evides, South Holland province, district water boards of Rhineland and Schieland and Krimpenerwaard.

Duration

No endpoint

c. Rotterdam

Rotterdamse adaptatie strategie (RAS)

Background

Since 2008, the Rotterdam Climate Proof Programme (RCP) is active, with the main objective in 2025 is 100% Rotterdam climate proof. The vision and the road towards it are described in the Rotterdam Adaptation Strategy (RAS).

Target

Rotterdam adaptation Strategy (2013) sets the route along which Rotterdam wishes to adapt to climate change and shows how residents, businesses and the city can take full advantage. This strategy provides the framework and basis for a future-proof development of Rotterdam and ensure that henceforth be included in any (spatial) development from the beginning of the trial subjects as water safety, accessibility and robustness of the city as starting points.

Party

City of Rotterdam

Duration

2025 climate proof

Herijking Waterplan Rotterdam 2

Background

In Rotterdam Water Plan 2 (2007) the urban water challenges and spatial developments come together. The economic recession and policy developments have meant that the challenges are different now than in 2007 when the Waterplan was made. The review Herijking Waterplan 2, focusses from 2013 to 2018.

Goal

Solving the various water issues while contributing to an attractive and climate-proof city. To achieve this, five "crucial decisions" made: Attractive city, protection, clean water, sanitation and together.

Parties

City of Rotterdam, Holland Delta Water Board, Water Board Schieland and Krimpenerwaard and Delfland

Duration

Implementation Programme 2013-2018 with an outlook to 2020

Rosa (Rotterdam Cooperation in the wastewater chain)

Background

Following the Reassessment Water Plan 2 Rotterdam water chain partners choose to close the cycles to respond to the changing world and contribute to the circular economy. In this way we give at the regional level to implement the national Water Management.

Objective

The long-term vision focuses on a change to a closed wastewater chain by 2050. This means more attention to closing cycles and for the recovery of energy and raw materials from wastewater. As much as possible we are going to flow separation and reuse. Step by step towards closed cycles and respectful of the built system. A robust system is central to a healthy, dry and livable city.

Parties

City of Rotterdam, City of Capelle aan den IJssel, Water Board Schieland and Krimpenerwaard, Delfland, Hollandse Delta Water Board.

Term

Vision for the future of the Rotterdam waste water chain in 2050

Rotterdam Resilience Strategy

Background

In 2013 Rotterdam was selected to participate in the 100 Resilient City program (100RC) initiated by the Rockefeller Foundation (RFF). Following this, the Rotterdam Resilience Strategy is drafted.

Objective

A resilient city, after an incident, crisis or setback recover quickly and stronger again. Resilience is a delta and port city like Rotterdam therefore essential. The Resilience Strategy ensures that Rotterdam is ready for the opportunities and challenges of the future. From a vision with 7 goals and dozens of actions Rotterdam will in the coming years to work to strengthen the resilience of the city. The program is based on "Climate resilience ',' Cyber resilience 'and' Social resilience. Climate resilience to the principles of the RAS been leading.

Party

City of Rotterdam

Term

Vision for Rotterdam in 2030

Water Sensitive Rotterdam

Concept of Water sensitive cities
Definition of the concept of a Water Sensitive City is; “one where water’s journey through the urban landscape is managed with regard for its rural origins, coastal destinations and spiritual significance. A philosophy of flexibility in supply and use to meet all users’ needs underpins the collection and movement of water, and the technologies to facilitate the physical movement of water are designs that manifest these ideals visually for all to acknowledge and appreciate. Three principles set the foundation for this vision of a Water Sensitive City:

- Cities as Water Supply Catchments: meaning access to water through a diversity of sources at a diversity of supply scales;
- Cities Providing Ecosystem Services: meaning the built environment functions to supplement and support the function of the natural environment; and
- Cities Comprising Water Sensitive Communities: meaning socio-political capital for sustainability exists and citizens’ decision-making and behaviours are water sensitive.
- The attributes of a Water Sensitive City, compared with our current urban water management paradigms have been described as follows:

Attributes	Traditional Regime	Water Sensitive Regime
System Boundary	Water supply, sewerage and flood control for economic and population growth and public health protection	Multiple purposes for water considered over long-term timeframes including waterway health and other sectoral needs i.e. transport, recreation/amenity, micro-climate, energy etc.
Management Approach	Compartmentalisation and optimisation of single components of the water cycle	Adaptive, integrated, sustainable management of the total water cycle (including land-use)
Expertise	Narrow technical and economic focussed disciplines	Interdisciplinary, multi-stakeholder learning across social, technical, economic, design, ecological spheres etc
Service delivery	Centralised, linear and predominantly technologically and economically based	Diverse, flexible solutions at multiple scales via a suite of approaches (technical, social, economic, ecological etc)
Role of public	Water managed by government on behalf of communities	Co-management of water between government, business and communities
Risk	Risk regulated and controlled by government	Risk shared and diversified via private and public instrument

While there is not one example in the world of a Water Sensitive City, there are cities that lead on distinct and varying attributes of the water sensitive approach and examples from Australia and Singapore are presented" (*Wong and Brown,* 2009).

Approach

WSR is not a classic program, but a process to create awreness and public support for climate adaptation, with the aim to integrate climate adaptation within Rotterdam, through integral implementation, in order to increase the sponge effect of the city and avoid rainwater to flood directly into the sewerage system within 30-40 years. The approach was to start with fascilitating bottom up self organisation initiatives to incentify inclusion of climate adaptation. Not as a main purpose, but as part of the initiative. Within a short period of one year 40 projects on diverse scales were appointed. These were not initiated by WSR, but fascilitated according to what was nessecity to bring together actors, expertise or finance.

Process and goals were not predetermined, but are gradually formed by those involved. There is cooperation based on equality and active participation of the actors. Results include the publication of a book, the development of a community garden, the delivery of a document of inspiration and an awarded European subsidy.

WSR is now in the next phase where besides achieving success in projects, there is emphasis on the spread of ideas, drawing lessons from the process and giving more structure to the implementation. To do this, a core team has been formed of seven people who will further develop WSR, communication and extention of a water sensitive communities, monitoring and supporting projects and knowledge assurance and sharing. Concrete goals include launching a website, giving area workshops, conducting periodic consultations at strategic level, filling a knowledge bank, doing research, developing a community in the Old West area and organizing WSR Network cafes (www.watersensitiverotterdam.nl, 2017).

Background

In june 2015 frontrunners within the municipalities watermanagement department developed Water Sensitive Rotterdam (WSR) as a follow up on the current waterpolicy. The ambition of WSR is to achieve climate resilient, including quality of life within a socially strong environment. These intentions follow a two track path.

In june 2015 frontrunners within the municipalities watermanagement department developed Water Sensitive Rotterdam (WSR) as a follow up on the current waterpolicy. The ambition of WSR is to achieve climate resilient, including quality of life within a socially strong environment. These intentions follow a two track path.

To become a fully climate-resilient city it is necessary to shift towards smaller-scale measures. These small-scale measures in the capillaries of the city are essential, if done on a large scale. Cooperation with citizens, organizations and businesses need to implement these measures in the 70% private area in the city. This cooperation is central to the program Water Sensitive Rotterdam.

Objective

Water Sensitive Rotterdam gives concrete expression to its ambition to tackle climate resilience. WSR has the ambition to carry out all projects in Rotterdam in a "water sensitive" manner. Also standard construction projects, restructuring or maintenance programs have sustainable use of water and the environment. For developers, designers, administrators, residents and business owners should be granted to give water a valuable role in the development. The first track is trough 3 pilot projects, with the aim to execute te ambitions. There is a project on street level, where sewerage maintanance is used as a starting point to involve residents in the development of a future-proof environment street with social value. There is a project at the district level, which have been developed with the local people building blocks to set up a water neutral, potentially self-sustaining, community in the future. And there is a project which seeks to address social problems such as low sense of security, exclusion and language barriers by transforming with residents paved areas to social, green-blue meeting place.

Within the second track, different stakeholders dealing with urban watermanagement (municipality, waterboards, housing cooperations and other local organisations), are given the opportunity to appoint different projects in which water and greening can be connected with social issues. Within a year 40 projects on diverse scales were appointed. These were not initiated by WSR, but fascilitated according to what was nessecity to bring together actors, expertise or finance.

Process and goals were not predetermined, but are gradually formed by those involved. There is cooperation based on equality and active participation of the actors.

Results include the publication of a book, the development of a community garden, the delivery of a document of inspiration and an awarded European subsidy.

Parties

WSR is set up as a "community". All relevant public and private aprties participate in WSR. Parties participating include designers, architects and other city-makers, but also housing associations, community organizations, communications advisers and natural municipality and water.

Duration

Not clear yet, but the ambition is an activation role of the municipality to mainstream climate adaptation untill 2018, and then the different policy fields and community continue to self-employ implement climate adaptation.

Annex 4: Overview of PPC in direct democracy approach of Kendoe

Citizens Jury

The Citizens Jury evaluates municipal policy. In total there are about 150 citizens in the jury who meet twice a year. They engage with one or more councillors and the mayor on a number of themes and topics. Their opinions and recommendations are included in new policy or revision of existing policies.

Talk with the Town (Gesprek met de Stad)

Extensive dialogues during the first months of 2017, between the municipalities major and alderman, citizens, experts, companies and knowledge institutes about the development goals of the next 20 years for Rotterdam.

Meaxchange

The Maexchange is a tool that gives insight in social initiatives within Rotterdam. The municipality of Rotterdam and Kracht in NL strengthen these initiatives, through the Maexchange, a nationwide online platform for social initiatives. The MAEXchange shows in a low-threshold manner, the social value of resident's initiatives, how they contribute to the wellbeing of an area and who is the initiator.

Right to Challenge

As an experiment, the municipality calls citizens to challenge municipal approaches and propose better or more effective solutions. If an initiator has a challenge, the municipality gives insight in the budget and the municipal solution that can be challenged. The responsible alderman finally decides how the citizens proposal is implemented.

Citylab010

The municipality supports private parties with an idea to increase the attractiveness of Rotterdam towards, living, working and studying. Through a citylab010 platform they can share the idea, meet parties to develop their ideas and request support for seed money. In total a budget of 3 mln euro's is available for social relevant, innovative initiatives that meet the municipal goals. This is the successor of the Stadsinitiative, an annual competition for one best urban initiative, which was rewarded by 3 mln euro's.

Opzoomeren

Campaign that challenges people for social or quality of life initiatives within their direct living area. The opzoomer budget is limited to a maximum subsidy of €250. This campaign exists from 1995, as one of the first low thresholded citizen partcipation programs in the Netherlands.

Residents initiatives

Residents who have a proposal to improve quality of life in their neighbourhood, can request a public contribution. The district administration selects initiatives that are eligible to get a subsidy. The budget ranges from €250 to €10.000.

Annex 5: Response Sense of Urgency

Table 10; Comparative analysis of sense of urgency

Case	Sense of urgency				Score per project
	Awareness	Association	Acquisition	Application	
Hofbogen					
Real estate developer	x				
Municipality, department of City Development, Project Management	x				
Social Entrepeneur	x	x	x		
Total score	100%	33%	33%	0%	41.5%
Oude Westen					
Housing association	x	x			
Municipality, department of City Development, Housing	x				
Social Entrepeneur	x	x	x	x	
Total score	100%	66%	33%	33%	58%
Robert Fruinstraat					
Municipality, Water Sensitive Rotterdam	x	x	x	x	
Private house owner	x	x	x		
Total score	100%	100%	100%	50%	87.5%
Overall score	100%	66%	55%	28%	

Source: author, based on the model of receptivity of Jeffrey and Seaton (2017)

Annex 6: Response on factor Explication of goals, aims and responsibilities

Hofbogen	Real estate developer	Municipal department of City development	Social entrepeneur
Clarity on climate adaptive goals and aims	*no*	*no*	*no*
Clarity on the responsibility of property owners towards climate adaptation	*No*	*No*	*No*
Oude Westen	Housing association	Municipal department of Housing	Social entrepeneur
Clarity on climate adaptive goals and aims	*no*	*no*	*Yes, but very recently*
Clarity on the responsibility of property owners towards climate adaptation	*No*	*No*	*No*
Robert Fruinstraat	Private house owner	Municipality, Water Sensitive Rotterdam	
Clarity on climate adaptive goals and aims	*Yes*	*Yes*	
Clarity on the responsibility of property owners towards climate adaptation	*No, but became clear during the process*	*Yes*	

Annex 7: Response on factor Stakeholders

Hofbogen

Phase 1; Stakeholders basic development of the Hofbogen Highline			
	Market parties	Societal parties	Public parties
Lead role	-Hofbogen BV -Social housing associations Vestia and Havensteder as board		-Municipality of Rotterdam, City Development -Prorail *(with the ministry of I&M as supervisor)*
Supporting role	-Tennants of Hofbogen	-Friends of the Hofplein Highline -The Urbanisten	-Waterboard
Actors missing	-Havensteder as a stakeholder with a long-term scope -In first instance the municipality was missing. After the Collaboration agreement the municipality was in the lead role. -Ministry of I&M (Prorail) and Ministry supervising housing associations in relation to the strict restraints they put on the process		
Phase 2; Stakeholders roofpark development – current municipal appoach			
	Market parties	Societal parties	Public parties
Lead role	-New owner of the Hofbogen *(real estate developer or real estate investment company)*		-Municipality of Rotterdam, City Development
Supporting role	-Havensteder	-Friends of the Hofplein Highline -The Urbanisten	-Waterboard
Missing	-diversity of stakeholders (besides the municipality) with an interest in developing the roofpark -neutral stakeholder that can fascilitate a coalition of stakeholders		

Alternative stakeholders alliance in the roofpark development			
	Market parties	Societal parties	Public parties
Lead role	-Future owner of the Hofbogen *(real estate developer or real estate investment company)* -Era Vastgoed (developer of the housingblock directly connected to the Hofbogen highline) -Havensteder (own 70% of the real estate property in the direct neighbourhood) -Evides -Stedin or company for sustainable energy -Tennants of commercial Hofbogen -Generally parties that have a long-term interest in real estate, such as mortgage	-Friends of the Hofplein Highline -The Urbanisten -Social parties with reintegration programs	-Waterboard -Municipality of Rotterdam, City Development -Municipality Water Sensitive Rotterdam

	banks, pension funds, larger local companies		

Oude Westen

a. Stakeholder that executed the masterplan			
	Market parties	Societal parties	Public parties
Lead role	-Social housing associations Woonstad		-Municipality of Rotterdam, City Development-Housing
Supporting role		-Social entrepeneur Wolbert van Dijk -House tennants (80% of housing stock is social housing in Oude Westen)	
a. Organic network towards greening projects			
	Market parties	Societal parties	Public parties
Lead role	-Kino, entrepeneur	-Actiegroep Oude Westen -Social entrepreneur Wolbert van Dijk	-Municipality Gebiedsnetwerker Oude Westen
Supporting role	-Social housing associations Woonstad (alternating between lead and supporting role)	-Pamijer	-Municipality Water Sensitive Rotterdam -Waterboard

Robert Fruinstraat

Stakeholders in development Robert Fruinstraat			
	Market parties	Societal parties	Public parties
Lead role	-Cable infrastructure companies -Real Estate Developer Rotterdamse Vastgoed Maatschappij	-Private house owners -Housing tenants	-Municipality of Rotterdam, program WSR -Waterboard
Supporting role	-Housing associations Woonstad -Atelier Goenblauw got an assignment for a climate adaptive garden design.	-Binder groenprojecten, organised a workshop -The womens organisation, Arosa	-Municpal departments of Maatschappelijke Ontwikkeling (MO) and City Development

Promising stakeholders for CA implementation

Promising stakeholders for CA implementation		
Market parties	Societal parties	Public parties
-Parties that have a long term interest in the sustainability of real estate such as mortgage bankers	-All real estate owners, such as private house owners, real estate investors	-Municpality, department of Urban Development -Municpality, department of Urban Maintenance -Municipality Water sensitive Rotterdam -Waterboards

Annex 8: Response on factor Policy and planning

Hofbogen: Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Real estate developer			x
Social entrepeneur	x		x
Municipal projectleader	x		x

Oude Westen: Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Housing association	x		x
Social entrepeneur	x		x
Municipal policy advisors of housing	x		x

Robert Fruinstraat: Balance within the policy cycles of the municipality of Rotterdam			
	Strategic level; Emphasis on visions	Tactical level: Emphasis on policies and programs	Operational level; Emphasis on projects
Private house owner			x
Municipal projectleader WSR	x		x
Program manager WSR	x		x

Annex 9: Response factor implementation opportunities

	Coupling opportunity	Time of process coupling	Scale of coupling	Medium of coupling	Coupling with climate adaptation
Hofbogen	Main opportunity: Commercial real estate development	Planning phase	Project scale	Project manager	No, but possibly in later phase
	Other coupling opportunities: -Public space redesign and greening -Neighbourhood renovation and restructuring -Sewerage renewal -Infrastructure				

	Coupling opportunity	Time of process coupling	Scale of coupling	Medium of coupling	Coupling with climate adaptation
Oude Westen	Main opportunity: -Neighbourhood renovation and restructuring	Operation phase	Local scale	Process manager	Yes, but incidental in the greening projects that Wolbert van Dijk executed
	Other coupling opportunities: -Greening -Sewerage renewal -Private and communal garden redesign -Social cohesion				

	Coupling opportunity	Time of process coupling	Scale of coupling	Medium of coupling	Coupling with climate adaptation
Robert Fruinstraat	Main opportunity: -Sewerage renewal	Initiation phase, but flexibility for coupling in planning phase	Local and urban scale	Process manager	Yes
	Other coupling opportunities: -Greening				

	-Private and communal garden redesign -Sustainable real estate development -Underground infrastructure renewal				

	Coupling opportunity	Time of process coupling	Scale of coupling	Medium of coupling
Comparative	Main opportunity: -Commercial real estate development -Neighbourhood renovation and restructuring -Sewerage renewal and greening	Diversifies between the planning and operation phase and initiation phase. Preferably the initiation phase.	Often links on a local scale, except for Robert Fruinstraat. Preferably insight in coupling of climate adaptation on the urban scale combined with the local scale	Medium is through project related managers. Preferably through a GIS map on urban scale in combination with urban managers.
	Other coupling opportunities: -Greening -Private and communal garden redesign -Sustainable real estate development -Underground infrastructure renewal			

Annex 10: Response factor trust

	Role towards trust	Long-term relations	Mandated people
Hofbogen	No specific actor with a role towards trust	Long-term relations within the core team, but alternating representation within streering group Personel changes result in limitation of long-term relations and trust towards the social entrepreneur	Hierarchical organisation within the municipality restricts mandate
Oude Westen	The social entrepreneur had an important role to build trust within the greening projects	Long-term relations with focus on relation between municipality and housing association. Limited relation with social entrepreneur.	Confined municipal mandate towards renovation and restructuring real estate Mandate towards sewerage renewal, public space or green roofing program was limited, which restricts mandate for an integral approach
Robert Fruinstraat	The municipal projectleader and her trainees have an important role towards trust	Long-term relation and continuity of projectleader resulted in trust	Redraw of mandate within participative processes harms the basis of trust

Annex 11: Response on factor Leadership

	Main leadership towards climate adaptation	Role of WSR towards climate adaptation in cases	Desired public leadership role towards mainstreaming climate adaptation	Desired public leadership strategies
Hofbogen	-public leadership of the Municipality Note: with certain distance to the municipal organisation	-Facilitative leadership -Innovative leadership	-Connective leadership (3-out of 3)	Set clear aims and goals (3-out of 3) Initiate integrated showcases (3-out of 3) Facilitate bottom up initiatives(3-out of 3) Coordinate the implementation(3-out of 3)
Oude Westen	-public leadership of the Municipality Note: public leadership towards the main line, but not towards the full operation	-Facilitative leadership	-Connective leadership (3-out of 3)	Set clear aims and goals (1-out of 3) Initiate integrated showcases (0-out of 3) Facilitate bottom up initiatives(3-out of 3) Coordinate the implementation(3-out of 3)
Robert Fruinstraat	-Municipality	-Connective leaderships	-Connective leadership (2-out of 2)	Set clear aims and goals (1-out of 2) Initiate integrated showcases (2-out of 2) Facilitate bottom up initiatives(2-out of 2) Coordinate the implementation(2-out of 2)
Program WSR	-Municipality -Waterboards	-Fascilitative leadership -Connective leaderships -Innovative leadership	-Connective leadership 1-1 (one-out of 1)	Set clear aims and goals (1-out of 1) Initiate integrated showcases (1-out of 1) Facilitate bottom up initiatives(1-out of 1) Coordinate the implementation(1-out of 1)

Prefered leadership strategies	Set clear aims and goals	Initiate showcases	Facilitate bottom up initiatives	Coordinate the implementation of climate adaptation
Hofbogen				
Real estate developer	I	I	I	I
Municipal projectleader	I	I	I	I
Social entrepreneur	I	I	I	I
Oude Westen				
Housing association			I	I
Municipal policy advisor				I
Social entrepreneur	I			I
Robert Fruinstraat				
Municipal projectleader	I	I	I	I
Private house owner		I	I	I
Program WSR	I	I	I	I
Overall score	6	6	7	9

Annex 12: Response on factor Organisation

Integration bodies within the municipality of Rotterdam					
Organisational bodies for integration	Sectors	Network integration	Scale	Strategic level of integration	Hiatus in integration
Directory team	Build environment-Outdoor space	Public- Private Limited focus on private or collective outdoor space	Urban, district, local scale	Strategic, tactical and operational	In the directory team all aspects are covered, but at this level it is impossible to cover all files on both a strategic, tactical and operational level
Account Management (SO - REO)	Build environment-Outdoor space Main emphasis on integral developments	Main focus on fascilitating private developments, parallel public execution processes.	District and local scale	Tactical	Clear portal for private parties, less focus on social parties. Focus on economic benefits and less on social benefits. Limited structural integration of urban policies within these initiatives. Overview on district scale, but lack of overview on urban scale.
	Limited connection with social issues	Limited integration of urban policies within private initiatives	Lack of overview urban scale		
STOR, (platform Stedelijke Team Openbare Ruimte)	Public space Main focus on connection City Development and City Maintenance	Public space	Urban, district, local scale	Operational	Clear focus on public space, integrating development, maintenance and operation. Limited integration with build environment And very limited integration of private, collective, semi public outdoor space with an effect on public space
	Limited connection with build environment and social	Limited connection with semi public, collective or private space		Lack of tactic and strategic approach	
Gebiedsnetworker of the District commissions	Social Public Space Build environment	Public and Private, main focus on fascilitating smaller private initiatives	Local and district scale, main focus on smaller local developments	Operational	The gebiedsnetworkers integrate all sectors, but their mandate is limited to the operational level. Limited integration on a tactical, strategic level. Limited influence.
		Limited integration of urban policies within private initiatives	Lack of urban scale	Lack of tactic and strategic approach	
Project leaders	Public Space Build environment Social depends on scope of project	Public and private	Local scale	Tactical, Operational	Projectleaders tend to integrate different sectors, scales and public-private, as long as it is clearly integrated in their scope, mandate and what they are judged on. Limited integration on a urban strategic and tactical level. Limited considerations towards externalities of the project on the urban scale.
		Taking advantages of collaboration with private parties, when performing public goals are not a matter of course yet	Lack of considerations on the urban scale	Limited strategic efforts	

Organisation Hofbogen											
Institutional design or management activities	Main emphasis on institutional design combined with management activities on an operational level										
Project organisation	-Collaboration agreement contract, Steering groups, committees -Management activities by Hofbogen b.v. and social entrepreneur (but limited influence)										
Body for integration within municipality	-account management and -projectleader municipality										
	Private	Social	Public parties								
			Municipality								waterboards
Integration of:			SO, REO	SO, SI, Ruimte &Wonen		SO, PMB	SB, areas	SB, water	MO	W&I	Schieland, Delfland, Hollandse Delta
	Private parties	Social parties	Real estate . economy	Out door space	Urb an planning	Management	public space	Sewerage	Health, welfare, recreation	Work	Schieland
	x		x	x		x		x			

Organisation Oude Westen											
Institutional design or management activities	Masterplan: Main emphasis on institutional design combined with management activities on an operational level Greening initiatives: Main emphasis on management activities and informal networkmeetings										
Project organisation	-Steering group										
Body for integration within municipality	-account management and -processleader municipality -gebiedsnetworker of the District commissions -directory team (a single time)										
	Private parties	Social parties	Public parties								
			Municipality								waterboards
Integration of:			SO, REO	SO, SI, Ruimte &Wonen		SO, PMB	SB, areas	SB, water	MO	W&I	Schieland, Delfland, Hollandse Delta
	Private parties	Social parties	Real estate . economy	Out door space	Urb an planning	Management	public space	Sewerage	Health, welfare, recreation	Work	Schieland
	x	X (greening)	x		x	x	x	x	x		X (greening)

Organisation Robert Fruinstraat										
Institutional design or management activities	Main emphasis on management activities and informal network meetings institutional design was limited, but sufficient to accommodate the municipal organizational structure									
Project organisation	Management activities through projectleader									
Body for integration within municipality	-processleader WSR municipality -gebiedsdirector of urban maintenance -STOR -gebiedsnetworker of the District commissions									
	Private	Social	Public parties							
			Municipality							waterboards
Integration of:			SO, REO	SO, SI, Ruimte &Wonen		SO, PMB	SB, areas	SB, water	MO	W&I	Schieland, Delfland, Hollandse Delta
	Private parties	Social parties	Real estate . economy	Out door space	Urb an plan ning	Manage ment	public space	Sewer age	Health, welfare, recreati on	Work	Schieland
	x	x	x	x			x	x	x		x

Annex 13: Response on factor Instruments

Instruments real estate development Hofbogen		
Instruments in case	Instruments related to stakeholders interest	Incentify or compel
Capacity building instrument, through commissioning the Urbanisten	Market incentive instrument Land policy instrument	Incentify, and gradually compel through Legal instrument
Instruments restructuring existing neighbourhood Oude Westen		
Instruments in case	Instruments related to stakeholders interest	Incentify or compel
Capacity building instrument Financial instrument through contribution of WSR and waterboard	Financial instrument Capacity building instrument	Incentify, and compel through Collaboration Agreement (with Land policy instrument as backup)
Instruments public and private space renewal Robert Fruinstraat		
Instruments in case	Instruments related to stakeholders interest	Incentify or compel
Capacity building instrument	Financial instrument Capacity building instrument	Incentify, and compel through Regulation which rewards positive climate adaptive behaviour Tax instrument

GEMEENTEN LATEN OPVANG REGENWATER AAN BURGER OVER

19 jul 2017 2 reacties

In steeds meer Nederlandse gemeentes moeten burgers zelf regenwater opvangen. Sinds gemeentes in 2009 de mogelijkheid kregen burgers te verplichten op eigen terrein hemelwater op te vangen, hebben al ruim veertig gemeentes regels hierover ingevoerd.

Weinig tegels

Burgers mogen zelf bepalen hoe het regenwater wordt opvangen, dat kan via ondergrondse bassins, verlaagde gazons of tuinen met weinig tegels. In de toekomst zal het aantal gemeentes dat hier regels over opstelt, alleen maar verder stijgen zegt Rioned, de koepelorganisatie van stedelijk waterbeheer en riolering in Nederland woensdag.

Rioolheffing

Rioned is dan ook positief over het voornemen van de gemeentes Aalburg, Woudrichem en Werkendam die een tuintegeltaks wil invoeren. Deze drie gemeentes maakten deze week bekend de rioolheffing te willen koppelen aan de hoeveelheid verhard oppervlak bij een huis. (ANP)

Source: Binnenlands Bestuur, 2017

Preferred variety of instruments in up-scaling (in relation to used instruments in cases)								
	Legal instrument	Tax instrument	Financial instrument	Land policy instrument	Capacity building instrument	Market incentives	Insurance instrument	Communication instruments
Hofbogen								
Case					x			
up-scaling	x			x		x		x
Oude Westen								
Case			x		x			x
up-scaling	x	x	x	x	x	x		x
Robert Fruinstraat								
Case			x		x			x
up-scaling		x	x		x	x	x	x
Total used in Cases	0	0	2	0	3	1	0	2
Total preferred in up-scaling	2	2	2	2	2	3	1	3

Annex 14: Response on Mainstreaming

	Direct integration of climate adaptation in case	Integration through mainstreaming of climate adaptation	Favourable policy domains for mainstreaming climate adaptation	Indirect political commitment though policies, procedures, plans and/or processes
Hofbogen	no	Not integrated	-Real estate development -Economic competitiveness -Greening -Resilience	-Plan (plan of the Urbansiten is an attempt for indirect political commitment)
Oude Westen	no	Mainstreamed in private greening initiatives	-(social) Housing -Public space and greening -Sewerage program	-Performance agreements -Tuning sewerage, public space, restructuring and renovation programs and social programs -Inclusion in build environment, outdoor space policy and social policy
Robert Fruinstraat	no	Integrated in sewerage program and in the waterboards climate adaptive program.	-Build environment -Public space and greening -Greening -Social inclusion -Resilience	-Yes, through the sewerage renewal program -Through the waterboard

Integrated goals in Hofbogen				
Favourable policy domains for mainstreaming climate adaptation	Private party	Societal party	Public party	Score
Build environment	I	I	I	3
Economic competitiveness	I	I	I	3
Resilience	I	I	I	3
Social inclusion	I		I	2
Health		I		1
Public space and greening	I	I	I	3
Infrastructure	I		I	2
Water system		I		1

Integrated goals in Oude Westen				
Favourable policy domains for mainstreaming climate adaptation	Private party	Societal party	Public party	Score
Build environment	I	I	I	3
Economic competitiveness			I	1
Resilience	I		I	2

Social inclusion	I	I	I	3
Health			I	1
Public space and greening	I	I	I	3
Infrastructure	I			1
Water system		I		1

Integrated goals in Robert Fruinstraat			
Favourable policy domains for mainstreaming climate adaptation	Societal party	Public party	Score
Build environment	I	I	2
Economic competitiveness			
Resilience	I	I	2
Social inclusion	I	I	2
Health	I	I	2
Public space and greening	I	I	2
Infrastructure			2
Water system	I	I	2

Annex 15: Response on PPC

Response on prefered PPC model for up-scaling climate adaptation		
	Prefered PPC model for mainstreaming and up-scaling	Advantages mentioned
Hofbogen		
Real estate developer	Consession model Alliance model Bottum up self organisation	Different developments demands a different strategy; -Concessions model in cases with a large pressure on space and concentration of large amounts of climate adaptive capacity. Steering towards the goal of no rain in the sewerage system in return for a lower land price will stimulate the market to come with innovative solutions. -Building strategic alliances with parties that are promising in relation to implementation of climate adaptation -Fascilitating bottom up initiatives is a no regret activity.
Municipal projectleader	Alliance model	With resources from the sewerage program as an opportunity to contribute in WSR
Social entepreneur	Consession model Alliance model Bottum up self organisation	Different contexts demand for different models; -The consession model in locations, such as the city centre, that are highly desired and have potential for large value creation. In this situation there is the opportunity to demand higher ambition from market parties -Alliance model in locations that are less desirable, but in which parties involved have something to gain. -Bottum up initiatives in urban areas with an active community. Fascilitating by coupling climate adaptation to these initiatives, or framing them for climate adaptation.
Oude Westen		
Housing association	Alliance model Bottum up self organisation	-Alliance model is preferable in collaboration of municipality, waterboards and housing association. The problem has such scale that it demands an approach on a larger scale -Bottum up initiatives stay relevant as a communication strategy and public support for climate adaptation, although the effectivity towards climate adaptation is low it is a no regret measure
Municipal housing	Alliance model	
Social entepreneur	Alliance model	Local alliances
Robert Fruinstraat		
Municipal projectleader	Alliance model	Opportunity to build strategic alliances on the scale of the city as a whole
Private house owner	Alliance model	Public, market and private parties accomplish an equivalent role, in which each partner contributes as appropriate to their qualities, interests, and resources capacity
Program WSR		
Program manager	Alliance model Bottum up self organisation	-Alliance model for implementation on an urban scale. With market, societal and public partners collaborating on the base of equivalence -Besides fascilitating bottom up initiatives stay relevant as a communication strategy and public support for climate adaptation, although effectivity towards climate adaptation is low it is a no regret measure

Characteristics of PPC in Hofbogen Highline (marked in grey)

Characteristics	***Concession- or contract model***	***Alliance model***		***Third direction model, Bottom up, citizen's self-organisation***
Type of relation/ partnership	Clear distinction between commissioner (public party) and contractor (private party)	Government and private actor are jointly involved in the design, construction and operation based on joint commissioning status.		The initiative lies rather in the society with little governmental role.
Type of cooperation	Cooperation limited to the phase preceding the contracting out. This phase is followed by supervision of the private actor carried out solely by the public actor, with little or no mutual interaction.	Collaboration continues throughout the whole process. Initially, it focuses on the nature of goals and the search for connections. Later it is geared towards joint realization of goals		Cooperation limited. Government has a facilitating role in some stages.
Role of contract in the establishment and running of the PPP	Strong emphasis on the use of contracts to inject clarity and certainty in the collaboration.	Less emphasis on contracts. More emphasis on mutual trust.		Less emphasis on contracts. Contracts are mainly related to user agreements or maintenance.
Determination of the issues and direction of solutions	The public party largely defines the problem and the solutions.	Public and private parties are both involved in a joint process of defining the problem and solutions.		The private parties largely define the problem and the solutions.
Scope of the process	Tendency to look for clear distinctions and boundaries. Any broadening of scope should take place within demarcated areas of responsibility of actors	Tendency to seek expansion of scope, and from the perspective of coherence, laying connections between elements within the project		Tendency to seek clear short term scope.
Management principles	Strongly founded on principles of project management: specify clear objectives, set out schedules and supervise them, and organize human resources.	Founded more on principles of process management: goal oriented operation, development of a solid cooperation process (rules and roles) and efforts to interconnect goals.		Management by volunteers, organic informal steering by main initiators. Non or little institutionalised.

Characteristics of PPC in Oude Westen (marked in grey)

Characteristics	***Concession- or contract model***	***Alliance model***		***Third direction model, Bottom up, citizens self-organisation***
Type of relation/ partnership	Clear distinction between commissioner (public party) and contractor (private party)	Government and private actor are jointly involved in the design, construction and operation based on joint commissioning status.		The initiative lies rather in the society with little governmental role.
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Characteristics of PPC in the Robert Fruinstraat (marked in grey)

Characteristics	***Concession- or contract model***	***Alliance model***		***Third direction model, Bottom up, citizen's self-organisation***
Type of relation/ partnership	Clear distinction between commissioner (public party) and contractor (private party)	Government and private actor are jointly involved in the design, construction and operation based on joint commissioning status.		The initiative lies rather in the society with little governmental role.
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