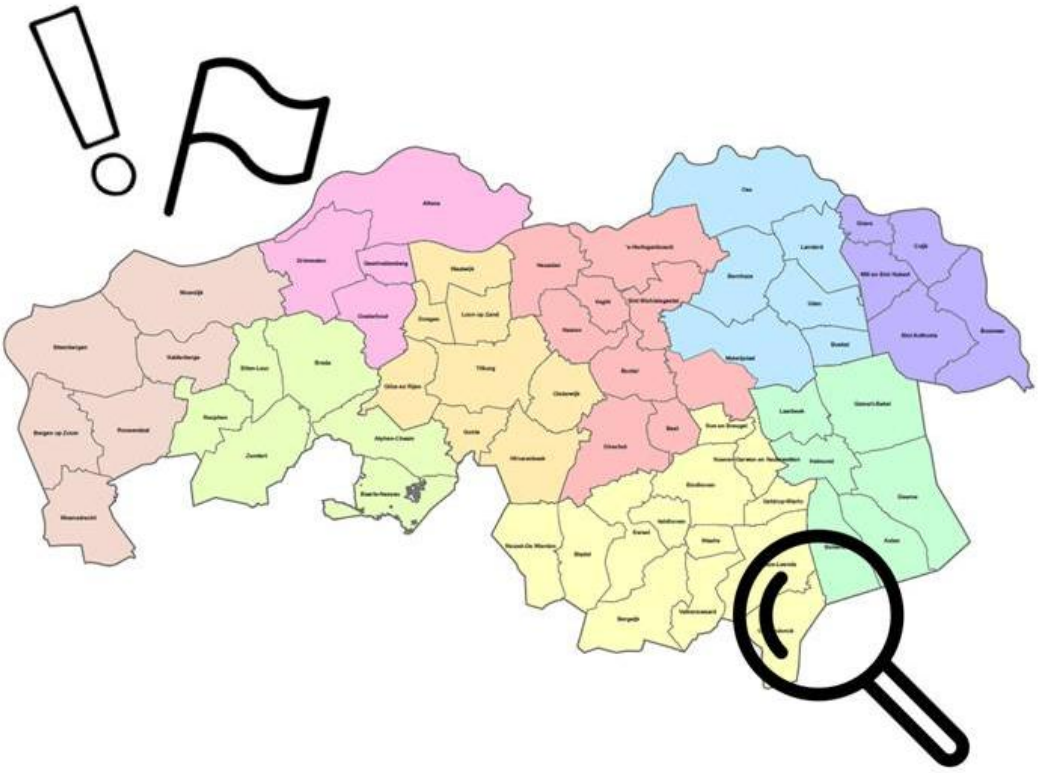
The municipal quest from stress test to risk dialogue

An exploratory research to the stimulating and hindering factors
in the municipal climate adaptation process from a collaborative learning perspective



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Colophon

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Preface

Dear reader,

This thesis represents my completion of the Master Spatial Planning at Radboud University Nijmegen. I have been working hard on this study of the climate adaptation process of municipalities in Noord-Brabant. It was an educational journey, both in terms of content (I learned a lot about climate adaptation and the municipal practice) as in terms of process (such as setting up such a large project, or completing the research during covid). And I am very proud that, despite some setbacks, this is the result!

I would like to take this opportunity to thank the following people who helped make this thesis a success. First of all, I would like to thank all the respondents who participated in this study; without their cooperation, I could not have conducted this research. I would also like to thank my supervisor Prof. Peter Ache for his support during this process. His critical feedback, involvement and thoughtfulness helped me get the best out of myself and of this thesis. I would also like to thank the Province of Noord-Brabant for giving me the opportunity to do an internship there and to conduct this research. And in particular my supervisor from the Province, Maarten van der Heide, for his committed guidance, feedback and for including me in his work and network. The research report I wrote for the Province can be found in Appendix VI.

I would also like to thank my writing group, who have supported me in the writing process with a week structure and good tips. And finally, I would like to thank my friends and family for their motivating words and unconditional support.

Enjoy reading!

Roos van Aartsen

Nijmegen, January 2022

Summary

The climate is changing; which has several negative consequences, now, and even more in the future. This calls for climate adaptation: actions to respond to the impacts of climate change. To achieve a climate proof living environment, a complex social process with a multiplicity of actors is required. The Deltaplan Ruimtelijke Adaptatie (DPRA) gives direction to this process by prescribing a stress test; i.e. mapping out vulnerabilities, and risk dialogue; i.e. a conversation between different stakeholders in which it is determined whether action must be taken, and by whom. This new practice of climate stress test and risk dialogue is resulting in many questions related to how this process is shaped. A primary issue is how the collaboration process with multiple parties is managed and how strategies are jointly developed. Furthermore, making the step from stress test to risk dialogue proves difficult. So, in this research it is aimed to gain qualitative insight into the stimulating and hindering factors in making the step from stress test to risk dialogue. Therefore, the following main question is used:

How do municipalities in the province of Noord-Brabant give substance to the process of climate stress test and risk dialogue and what are stimulating and hindering factors in making the step from stress test to risk dialogue from a collaborative governance and learning perspective, and how can this be improved in the future?

To characterise the process and explore the components of this specific system, an analytical framework is used, consisting of two dimensions. First, collaborative governance, focusing on collaboration drivers and collaboration dynamics. And the second dimension, collective learning, consisting of four succeeding phases: discovery, definition, deliberation and determination. Using a case study research design, these elements were studied per DPRA phase: stress test phase, 'intermediate phase' and risk dialogue phase. An analysis using interviews, documents and mind mapping data, underpins the conclusions that are drawn.

One of the conclusions is the importance of intermediate outcomes; i.e. the 'small wins' are crucial. Such as a stress test 'light', achieving a diversity in problem frames, or informal internal dialogues where other municipal domains get to hear the 'climate adaptation story'. These intermediate outcomes help in building momentum and encourage a cycle of trust building and shared motivation. Furthermore, the main findings of this research indicate the importance to reduce the 'gap' between stress test and risk dialogue. At the moment, we speak about two separate processes, with very different characteristics. The stress test is very technical in nature and mainly suitable for professionals, while the risk dialogues are a social process. Another contrast is that the stress test is an internal process, which takes place within the municipalities, while the risk dialogue is eminently an external process. This 'gap' can be reduced by making the stress test more an inclusive or public process. There are several options for doing this: by including other domains (not just 'water people'); by providing a more accessible language so that it is also understandable for non-professionals; by including more social information; by also looking at opportunities that the changing climate may offer; or by making use of 'citizen science'. An additional advantage is that in this way, parties get involved earlier in the process; increasing the chance that they will commit to climate adaptation. All in all, if the focus of the stress test remains on quantifying vulnerabilities and technical detail, there is a risk of a mismatch between stress test and practice.

Samenvatting

Het klimaat verandert, wat verschillende negatieve consequenties heeft, nu, en nog meer in de toekomst. Dit vraagt om klimaatadaptatie: maatregelen om in te spelen op de gevolgen van klimaatverandering. Om te komen tot een klimaatbestendige leefomgeving is een complex sociaal proces met een veelvoud aan actoren nodig. Het Deltaplan Ruimtelijke Adaptatie (DPRA) geeft richting aan dit proces door het voorschrijven van een stresstest; d.w.z. het in kaart brengen van kwetsbaarheden, en een risicodialoog; d.w.z. een gesprek tussen verschillende stakeholders waarin bepaald wordt of er actie ondernomen moet worden, en door wie. Deze nieuwe praktijk van klimaatstresstest en risicodialoog leidt tot veel vragen over de manier waarop dit proces wordt vormgegeven. Een eerste vraag is hoe het samenwerkingsproces met meerdere partijen wordt gemanaged en hoe strategieën gezamenlijk worden ontwikkeld. Bovendien blijkt de stap van stresstest naar risicodialoog moeilijk te maken. In dit onderzoek wordt daarom beoogd om kwalitatief inzicht te krijgen in de stimulerende en hinderende factoren bij het maken van de stap van stresstest naar risicodialoog. Om dit doel te bereiken, wordt de volgende hoofdvraag gebruikt:

Hoe geven gemeenten in Provincie Noord-Brabant invulling aan het proces van klimaatstresstest en risicodialoog en wat zijn stimulerende en hinderende factoren bij het maken van de stap van stresstest naar risicodialoog vanuit een 'collaborative governance' en 'collective learning' perspectief, en hoe kan dit in de toekomst worden verbeterd?

Om het proces te karakteriseren en componenten van dit specifieke systeem te onderzoeken, wordt een analytisch kader gebruikt dat uit twee dimensies bestaat. Ten eerste, 'collaborative governance', met de nadruk op 'collaboration drivers' en 'collaboration dynamics'. En de tweede dimensie, 'collective learning', bestaande uit vier opeenvolgende fases: 'discovery', 'definition', 'deliberation' en 'determination'. Met behulp van een casestudy onderzoeksopzet werden deze elementen bestudeerd per DPRA fase: stresstestfase, 'tussenfase' en fase van de risicodialoog. Een analyse aan de hand van interviews, documenten en mind-mapping data, onderbouwt de getrokken conclusies.

Een van de conclusies is het belang van tussentijdse uitkomsten; i.e. de 'small wins' zijn cruciaal. Zoals een stresstest 'light', het bereiken van een diversiteit aan probleemkaders, of informele interne dialogen waarbij andere gemeentelijke domeinen het 'klimaatadaptatieverhaal' te horen krijgen. Deze tussentijdse resultaten helpen bij het opbouwen van momentum en stimuleren daarnaast een cyclus van vertrouwen en gedeelde motivatie. Verder wijzen de belangrijkste bevindingen van dit onderzoek op het belang om de 'kloof' tussen stresstest en risicodialoog te verkleinen. Op dit moment spreken we over twee afzonderlijke processen, met zeer verschillende karakteristieken. De stresstest is zeer technisch van aard en vooral geschikt voor professionals, terwijl de risicodialogen een sociaal proces zijn. Een andere tegenstelling is dat de stresstest een intern proces is, dat zich binnen de gemeenten afspeelt, terwijl de risicodialoog bij uitstek een extern proces is. Deze 'kloof' kan worden verkleind door van de stresstest meer een inclusief of publiek proces te maken. Er zijn verschillende mogelijkheden om dit te doen: door andere domeinen te betrekken (niet alleen 'watermensen'); door een toegankelijker taalgebruik, zodat het ook voor niet-professionals begrijpelijk is; door meer sociale informatie op te nemen; door ook te kijken naar kansen die het veranderende klimaat kan bieden; of door gebruik te maken van 'citizen science'. Al met al, als de focus van de stresstest blijft liggen op het kwantificeren van kwetsbaarheden en technische details, bestaat het risico van een mismatch tussen stresstest en praktijk.

Table of contents

List of tables & figures

Figures

Tables

Abbreviations list

BAW	Bestuursakkoord Water
DPRA	Deltaplan Ruimtelijke Adaptatie
GGD	Gemeentelijke Gezondheidsdienst
GIS	Geographic Information System
GRP	Gemeentelijk Rioleringsplan
REKS	Regionale Energie- en Klimaatadaptatiestrategie
RES	Regionale Energiestrategie
ZLTO	Zuidelijke Land- en Tuinbouworganisatie

1. Introduction

1.1 Project framework

1.1.1 Need for action

The climate is changing; which has several negative consequences, now, and even more in the future. Consequences such as heat waves, droughts, floods, damage to ecosystems, threat to food production and damage to health (Strengers et al, 2013). At the present, the effects in the Netherlands are still limited (WUR, n.d.). However, by looking at news items from recent years, weather extremes are becoming a more common phenomenon. "*Heavy thunderstorms on 22 and 23 June full of extremes*" (Sluijter, 2016). "*Water nuisance in large parts of the Netherlands due to heavy weather*" (AD, 2018). "*2018, hottest and driest summer in three hundred years*" (Wassens, 2018).

These extreme weather events are expected to become more severe in the future with rising global average temperatures (Strengers et al, 2013). Mitigation is therefore necessary, i.e. actions to reduce emissions. Unfortunately, either way there will be negative impacts resulting from climate change that is already unavoidable due to past emissions (Noble et al., 2014). Therefore, besides mitigation, 'adaptation' is needed. Climate adaptation can be referred to as "*the actions that countries will need to take to respond to the impacts of climate change that are already happening, while at the same time preparing for future impacts*" (UNFCCC, 2015). It is the process of adjustments to actual or expected climate and its effects (Noble et al., 2014). So, in the case of climate adaptation, actors are acting proactive (Grothmann et al, 2011; Meijerink et al., 2015).

There is no single approach to adaptation; many different options for measures are conceivable. Ranging from green roofs and facades to water squares, and from wadi's to roads made of porous paving materials (Urban green blue grids, n.d.). Moreover, adaptation does not only entail spatial adjustments. Besides physical options, also social and institutional options are possible, such as a 'heat plan' or subsidies. Climate adaptation is 'custom work'; vulnerability and resilience differ per area and per function (Kennisportaal Ruimtelijke Adaptatie, n.d.a). Climate adaptation is context-dependent and it is uniquely linked to location, making it predominantly a local government and community level of action (Mimura et al., 2014).

Besides the diverse and context-dependent nature of adaptation and its measures, the process of adaptation is even more complex because of the multiplicity of parties that are needed (Kennisportaal Ruimtelijke Adaptatie, n.d.a). Many actors are associated with successful adaptation, because the identification of needs and the selection and implementation of measures require the engagement of a diversity of parties (Noble et al., 2014). Not only governments, such as municipalities, water boards and provinces, but also residents, businesses, and other organisations such as pipeline operations can take deliberate adaptation measures. This notion is further underlined by the fact that the majority of the territory in a municipality is owned by private parties. "*About 50 till 70 percent of the surface in cities is private land*" (Bor & Mesters, 2018, pp. 3). E.g. business parks, buildings owned by housing corporations, or private homes and gardens (Kennisportaal Ruimtelijke Adaptatie, n.d.a). In order to make an entire municipality climate-proof, something will therefore have to be done also on this private territory. All in all, doing it together, with a wide range of parties, is important.

1.1.2 Deltaplan Spatial Adaptation

In recent years, there has been increasing attention for the issue of climate adaptation. Worldwide, the topic is more and more on the agenda. For instance with the Paris Agreement of 2015, which aims to strengthen the ability of countries to deal with the impacts of climate change (United Nations, 2015). Also in the Netherlands, adaptation is becoming more a 'hot topic', and is incorporated in strategies and plans, such as the 'Nationale Klimaatadaptatiestrategie' (IenW, 2016). Furthermore, climate adaptation is mentioned as an important theme in context of the new environmental law, i.e. the 'Omgevingswet', and environmental visions (Aan de slag met de Omgevingswet, n.d.).

Also with the Deltaplan Spatial Adaptation, or in Dutch 'Deltaplan Ruimtelijke Adaptatie' (DPRA), attention is focused on the subject of climate adaptation. This is a joint national plan of municipalities, water boards, provinces and the national government with concrete actions and goals for the responsible authorities. The purpose of this plan is to speed up the process of spatial adaptation and to make it less 'non-committal' (Deltaplan Ruimtelijke Adaptatie, 2018).

DPRA consists of seven ambitions, which together outline the course or expectation for national, regional and local governments. In short, these seven ambitions are the following: portraying vulnerability; conducting a risk dialogue and drawing up a strategy; drawing up an implementation agenda; utilizing 'linking opportunities'; stimulating and facilitating; regulating and safeguarding; and acting in case of calamities (Kennisportaal Ruimtelijke Adaptatie, n.d.d).

According to this Deltaplan, collaboration at local and regional level is necessary to achieve these ambitions (Kennisportaal Ruimtelijke Adaptatie, n.d.c). To actualise this collaboration, in total 45 work regions are formed (see Figure 1).

Figure 1. Work regions climate adaptation. Source: https://klimaatadaptatienederland.nl/

These work regions underline the importance of informing each other and working together on the task of spatial adaptation. These partnerships are divers; some work regions consist of the Province with all the municipalities and water boards in that province. Other work regions consist of some municipalities together, or an existing collaboration within the water chain (Kennisportaal Ruimtelijke Adaptatie, n.d.c).

1.1.3 Process outline: stress test and risk dialogue

As mentioned in the previous paragraph, DPRA specifies seven ambitions. The first two are "*mapping out vulnerabilities"*, i.e. stress tests, and "*conducting risk dialogues and drawing up a strategy"* (Kennisportaal Ruimtelijke Adaptatie, n.d.d). These describe the beginning of a methodological guideline which is prescribed by the national government and which municipalities have to follow. These process steps are also stipulated in 'Bestuursakkoord Klimaatadaptatie' (Ruimtelijke Adaptatie, 2018) and are the focus of this research.

Stress test

The first step to accomplish that the Netherlands is water robust and climate proof in 2050, is that before 2020 all governments will have carried out a 'stress test'. Because climate adaptation requires adequate information on risks and vulnerabilities in order to identify needs and appropriate adaptation options to reduce risks and build capacity (Noble et al., 2014). Such a stress test is focussing on four climate themes: water nuisance, heat, drought, and flooding (Kennisportaal Ruimtelijke Adaptatie, n.d.a). In such a stress test, the potential vulnerabilities within an area are identified. It is investigated where, when and which problems may arise. The stress test itself does not include a value judgement and does not impose measures (Kennisportaal Ruimtelijke Adaptatie, n.d.a).

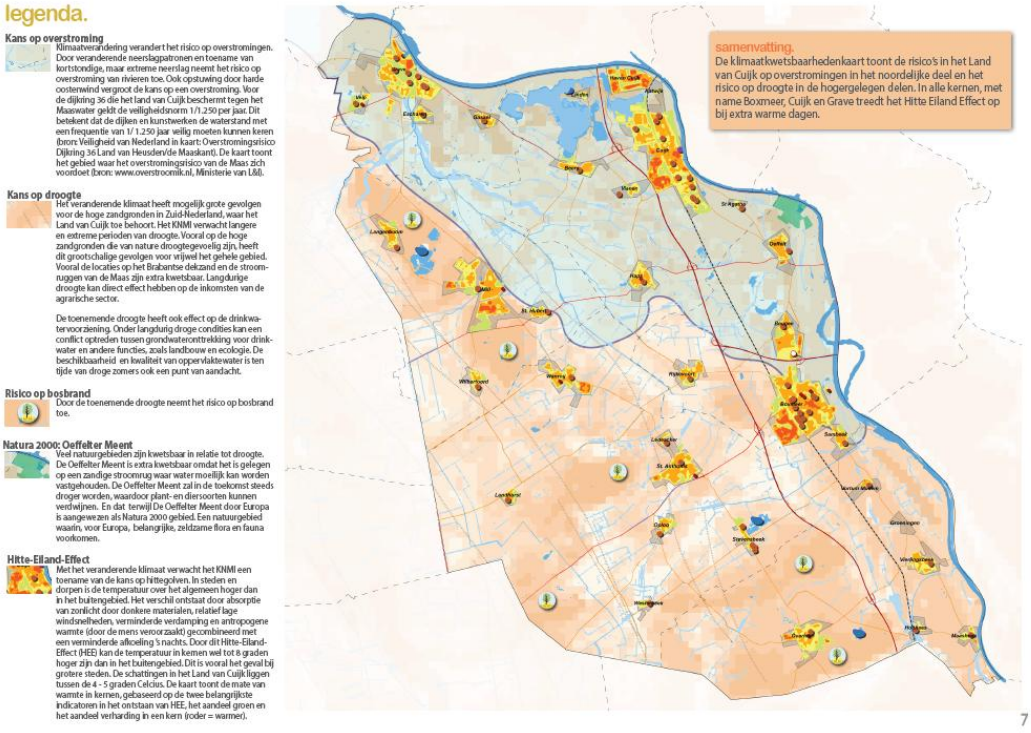

Figure 2. Map from a stress test in work region Land van Cuijk. Source: https://www.klimaatadaptatiebrabant.nl/

Risk dialogue

A risk dialogue, or climate adaptation dialogue, is a conversation between different parties who are possibly exposed to weather extremes, i.e. the stakeholders, and parties who have a key position in possible solutions (Kennisportaal Ruimtelijke Adaptatie, n.d.b; Graaff et al., 2018; Deltaplan Spatial Adaptation, 2018). So, there is a wide range of involved parties, both public and private. This links to the importance of promoting the engagement of diverse stakeholders in adaptation decisions and actions (Gupta et al., 2010). In a risk dialogue it is determined whether the potential vulnerabilities which were discovered in the stress test are a problem and whether action must be taken, and more importantly, by whom. In other words, it is a conversation about the discovered risks related to climate change and how these risks possibly can be managed (Kennisportaal Ruimtelijke Adaptatie, n.d.b).

The concept 'risk dialogue' can be seen as an overarching term for all conversations about climate adaptation. Therefore, risk dialogues can differ a lot, i.e., there is a great diversity in dialogues (De Graaff et al., 2018). First, dialogues can be conducted at different scale levels; for example on a local, regional, or national scale. As a consequence, the initiating party can also differ; this can be for example a municipality, province, or water board. Second, the exact purpose of the dialogue can differ. Different purposes can be mentioned: creating general awareness about climate change; creating awareness about the outcome of the stress test; ambition and strategy development; or developing specific measures or action plans to deal with the risks. Third, starting a risk dialogue can have different reasons. The most obvious one is after the mandatory stress test is carried out. However, other reasons can be: an emergency due to extreme weather or by developing new (construction) projects (Kennisportaal Ruimtelijke Adaptatie, n.d.b). Fourth, the dialogues can also differ on aspects like format, orientation, target group or participants, or the status of implementation (De Graaff et al., 2018).

In short, a risk dialogue is completed if the relevant parties involved recognize the risks, it has been jointly determined which damage and nuisance are acceptable, and it has been agreed who should take any adaptation measures. In this way, risk dialogues can be seen as a preparation for the implementation agendas (Kennisportaal Ruimtelijke Adaptatie, n.d.b).

Figure 3. Routekaart Risicodialoog. Source: https://klimaatadaptatienederland.nl/

To guide governments in conducting these risk dialogues, a 'Routekaart Risicodialoog' has been made by the DPRA (Kennisportaal Ruimtelijke Adaptatie, n.d.c), see Figure 3. This roadmap consists of three parts: prepare, implement and finalise. This research will mostly focus on the first element, namely preparing the dialogues; i.e. the next step after the stress test. Matters to be considered in this regard are: the reason, the form, who is present, the plan of action, etc.

1.2 Research problem and aim

1.2.1 Research problem statement

Despite the available information from the DPRA about the process steps that need to be taken (Kennisportaal Ruimtelijke Adaptatie (n.d.d), municipalities experience difficulties with making the step from stress test to risk dialogue (De Graaff, et al., 2018; Kennisportaal Ruimtelijke Adaptatie, 2018). After conducting the stress test, the vulnerabilities are identified, but then municipalities get stuck. The tendency after carrying out the stress test is often to analyses further, however, climate adaptation goes beyond detailed analyses (Kennisportaal Ruimtelijke Adaptatie, 2018). I.e. climate adaptation measures in practice are not only driven by calculating risks, but also by ambitions, opportunities and information of other parties. Furthermore, successful implementation of adaptation actions depends on the availability of information, access to technology and funding (IPCC, 2014). In other words, multiple parties are needed, and that is why the risk dialogues are also important. Horizontal coordination and collaboration among different agencies and departments, and vertical coordination and collaboration of various stakeholders from national, regional to local actors are significant.

However, because the stress test and dialogues are a relatively new phenomenon, without a lot of experiences in practice, there are still many uncertainties for municipalities. There is a tendency to consider adaptation planning a problem free process capable of delivering positive outcomes, underestimating the complexity of adaptation as a social process (IPCC, 2014). A primary issue is how the collaboration process with multiple parties is managed and how strategies are jointly developed. Another concern is how the stress tests do provide input for the dialogues; i.e. how is the link between these two different kinds of processes made? In other words, the research focus is the interface between the stress test and the dialogue element; i.e. the 'prelude' to the risk dialogues.

1.2.2 Research aim

Stress tests and risk dialogues are being set up all over the Province of Noord-Brabant, with some areas as front runners. In the coming years, more and more municipalities will further engage in this climate adaptation process. This research can be seen as an exploratory research on how this process is organised, resulting in the following research aim:

The aim of this research is to contribute to the existing practices of the climate adaptation process in municipalities in the Province of Noord-Brabant, by providing qualitative insight into the stimulating and hindering factors in making the step from stress test to risk dialogue from a collaborative learning perspective, in order to reach an implementation agenda and ultimately a climate proof living environment.

So, this is a practice-oriented research, which eventually results in the formulation of lessons and recommendations for conducting stress tests and risk dialogues in the future. It is hereby important to mention that the climate adaptation process in every municipality is different. For example, the

form, the amount and type of participants, and the topics can be different per area. I.e. none of the risk dialogues are the same. Customization is always the case, which also applies to the rest of the process. Formulating a 'blueprint' is therefore not the objective of this research. However, a lot can be learnt from previously conducted stress tests and risk dialogues, which results in certain lessons for the design of the process steps, which governments can consider in the future. Since the climate adaptation process is an iterative process, and always subject to change.

1.3 Research questions

To achieve the aim of this research, the following main research question will be used:

"How do municipalities in the province of Noord-Brabant give substance to the process of climate stress test and risk dialogue and what are stimulating and hindering factors in making the step from stress test to risk dialogue from a collaborative governance and learning perspective, and how can this be improved in the future?"

To answer this main question, the question is being divided into a number of sub-questions:

1. How do municipalities give substance to the **stress test**?
   a. What is the municipal perception of the objectives of a stress test?
   b. What characterises the discovery phase of collective learning in this process?
   c. Which actors are involved in this stress test phase? And how are they engaged?
   d. Which collaboration drivers are present in this stress test phase?
   e. To what extent is there capacity for joint action in this stress test phase?

2. How do municipalities give substance to the **risk dialogue**?
   a. What is the municipal perception of the objectives of a risk dialogue?
   b. What characterises the deliberation and determination phase of collective learning in this process?
   c. Which actors are involved in this risk dialogue phase? And how are they engaged?
   d. Which collaboration drivers are present in this risk dialogue phase?
   e. To what extent is there capacity for joint action in this risk dialogue phase?

3. What entails making **the step** from stress test to risk dialogue? (i.e. intermediate phase)
   a. What is the municipal perception of the necessary intermediate steps between stress test and risk dialogue?
   b. What characterises the definition phase of collective learning in this process?
   c. Which actors are involved in making this step? And how are they engaged?
   d. Which collaboration drivers are present in this intermediate phase?
   e. To what extent is there capacity for joint action in this intermediate phase?

4. How can the municipality itself and the Province of Noord-Brabant reduce **hindering factors** and strengthen **stimulating factors** in this climate adaptation process?

1.4 Relevance

The relevance of this research consists of two parts: the scientific relevance (par. 1.4.1) and the societal relevance (par. 1.4.2).

1.4.1 Scientific relevance

In recent years, there has been an increasing amount of literature on the topic of climate adaptation (IPCC, 2014; UNFCCC, 2015). A part of these investigations focuses on the physical impact of climate change (Kershaw, 2017; IPCC, 2014; Willems et al, 2012; et al.), or on the possible measures that can be taken (Runhaar et al., 2011; Foster et al., 2011; Ven et al., 2011; et al.). Another branch of climate adaptation research focuses on the social dimension; e.g. about financing climate adaptation measures (Schultz, 2012), or about investments that must be made (Hirte et al., 2018). Such research often has a focus on how an individual can be encouraged to change their behaviour to take climate adaptive measures. There are several theories that focus on behavioural change among individuals (Grothmann & Patt, 2005; Ajzen, 1985), and on social and psychological barriers for this behavioural change (Adger et al., 2009; Gifford, 2011).

However, existing literature shows that one of the challenges in climate adaptation is how to manage the decision-making process and how to develop plans and strategies (IPCC, 2014). In this regard, the roles within multilevel governance become an issue, such as horizontal coordination among different agencies and departments, and vertical coordination of various stakeholders from national, regional, to local actors (IPCC, 2014). So, besides individual action, collective action is also an important dimension. Many different theories can be considered in this regard: participatory action research (Campos et al., 2016), deliberative planning (Sager, 2002), collaborative planning (Healey, 1997) or interactive decision making (Edelenbos & Klijn, 2015).

Furthermore, the complexity of climate adaptation means that adaptation options are influenced by forms of learning and sharing of knowledge (IPCC, 2014). I.e. adaptation planning is a dynamic iterative learning processes, recognizing the complementary role of adaptation strategies, plans, and actions at different levels. "*Adaptation to climate change is transitioning from a phase of awareness to the construction of actual strategies and plans in societies*" (IPCC, 2014, pp. 871). One of these plans is the DPRA, consisting i.e. of the methodological guideline of stress test and risk dialogue (Kennisportaal Ruimtelijke Adaptatie, n.d.d). Overall, little research has yet been done about this relatively new phenomenon. De Graaff et al. (2018) did conduct an exploratory investigation of already performed risk dialogues in the Netherlands. In this report, they indicate on various aspects what was successful in these dialogues and what was not. However, the research of De Graaff et al. (2018) was not theoretically grounded. Therefore, in this research there is build on literature about collaborative governance and collective learning. In order to create participatory approaches maintaining regard for the highly contextual nature of climate adaptation, and facilitating a collaboration for production of knowledge (IPCC, 2014). Therefore, the process of stress test is also considered; i.e. how is this set up to increase the likelihood of adaptive action. All in all, this research attempts to reduce the knowledge gap of empirical research of the practice of stress test and risk dialogue, by building a better understanding of limitations and strengths, to help avoid the underestimating of the complexity of adaptation as a social learning process.

1.4.2 Societal relevance

Climate adaptation is needed, and in recent years there is an increasing attention and interest for this topic (as described in previous paragraphs). However, still a lot must happen to make the Netherlands fully water robust and climate proof. This is a challenge that different stakeholders have to tackle together; there is a role for governments at all levels, water boards, businesses, planners, project developers and citizens.

The climate adaptation process of stress test and risk dialogue can help steer movements in the right direction. However, there exists still a lot of uncertainty how to best utilise these 'tools'. This research helps in building a better understanding on diverse elements of this complex collaborative learning process. This is done by giving insight in how the process steps are organised in practice, by identifying barriers and incentives at every stage, and by ultimately formulating lessons and recommendations. In this manner, the practice and effectiveness of the process of stress test and risk dialogue can be improved. In a way that it results in the different involved parties being aware of the risks that climate change involves, that they feel owner of the problem, and commit to taking concrete measures.

The lessons and recommendations made in this research are not only relevant for the municipalities that participated in this research; i.e. municipalities in the Province of Noord-Brabant, but also for municipalities in other regions. Furthermore, the relevance is not limited to municipalities that have yet to start the whole process. It is also interesting for municipalities who e.g. already did set up dialogues, because the process is iterative; it is constantly subject to change, and can therefore always be adjusted and improved.

1.5 Reading guide

The overall structure of this research takes the form of five chapters, including this introductory chapter. The second chapter begins by laying out the theoretical dimensions of the collaborative learning perspective chosen in this research, and also contains a conceptual framework and operationalisation. The third chapter is concerned with the methodology used in this research; the choices for the research strategy and qualitative methods will be explained. The fourth section presents the research findings, focusing on the three stages: stress test, intermediate, and risk dialogue; further subdivided by a description and analysis section. The fifth chapter, the conclusion, gives a brief summary of the findings and provides for an answer to the main research question. The final chapter, the discussion, reflects on the theoretical implications and methodological limitations of this research; and will also contain recommendations for practice and for follow-up research.

2. Theoretical framework

This research looks at the municipal process of stress test and risk dialogue , which will be analysed by the means of an analytical framework, consisting of different dimensions and elements. This framework allows for a systematically review of the process of stress test and risk dialogue, in order to discover stimulating and hindering factors. An analytical framework from a collaborative learning perspective is used to characterise the process and can be seen as a broad conceptual map for situating and exploring components of this specific governance system. This framework is based on different social theories, of which different elements are extracted. It consists of two main dimensions, explained in the following paragraphs (par. 2.1, 2.2 and 2.3). This chapter concludes with a conceptual model (par. 2.4) and operationalisation (par. 2.5).

2.1 Two theoretical dimensions

The first dimension focuses on the concept of Collaborative Governance (par. 2.2), whereby the 'Integrative framework for collaborative governance' of Emerson, Nabatchi and Balogh (2012) is used as basis. It can be argued that the risk dialogue process set as one of the DPRA ambitions, fits a situation of collaborative governance. Namely, a risk dialogue can be defined as "*an iterative dialogue with all relevant stakeholders, in which joint ambitions and possible measures for spatial planning are drawn up, based on information about the effects of climate change*" (De Graaff et al., 2018, pp. 23). Several elements of collaborative governance, as described by Emerson et al. (2012), are present in this definition. First, the purpose of these dialogues is to jointly formulate ambitions for spatial climate adaptation, and to draw up an 'implementation agenda' (Deltaplan Ruimtelijke Adaptatie, 2018), which can be seen as an example of public policy decision making (Emerson et al., 2012). In this strategy it is jointly determined whether the potential vulnerabilities are a problem and whether, where, and by whom action must be taken. Second, a risk dialogue is a conversation between different relevant stakeholders who have a position in possible solutions and who are possibly exposed to weather extremes. This wide range of involved parties shows the engagement of people across the boundaries of the public, private and civic spheres (Emerson et al., 2012). Third, municipalities organise these dialogues in order to get other parties involved in climate-proofing their territory. In other words, the municipality needs other parties in order to carry out a public purpose, such as becoming climate proof, that could otherwise not be accomplished (Emerson et al., 2012).

With the stress test and other activities that precede these dialogues and making of joint decisions, necessary conditions for a situation of collaborative governance may or may not be formed. Since, in each process step horizontal coordination and collaboration among different agencies and departments, and vertical coordination and collaboration of various stakeholders from national, regional to local actors are of significance (IPCC, 2014). Therefore, it is useful to apply this framework to the entire process, starting with the making of stress tests. The description of Emerson et al. (2012) is suitable for this purpose as it is an integrative and general framework, consisting of multiple dimensions and elements. Allowing for situating and exploring the components and factors in this specific governance process.

The second dimension is focused on four collective learning phases (see par. 2.3): discovery, definition, deliberation and determination. The municipal process of stress test and risk dialogue can be characterised by means of these different phases, as adaptation planning is a dynamic learning process (IPCC, 2014). In other words, it can be used as a 'frame' to look and analyse this process. A

risk dialogue can be defined as "*an iterative dialogue with all relevant stakeholders, in which joint ambitions and possible measures for spatial planning are drawn up, based on information about the effects of climate change*" (De Graaff et al., 2018, pp. 23). This information where joint decisions are based on is, among other things, the climate stress test which identifies potential vulnerabilities to the climate issues within an area (Kennisportaal Ruimtelijke Adaptatie, n.d.a.). This information for the stresstest must be brought together from different sources, and different parties must learn from this knowledge; i.e. acquaint themselves with it and adapt their behaviour accordingly. So, this theoretical frame allows for a systematically analysis of the climate adaptation process, with a focus on the use of knowledge and learning processes. These collective learning phases can be used to characterise certain steps in the process: the stress test can be seen as 'discovery', the step from stress test to risk dialogue as 'definition', the risk dialogue as 'deliberation' and the implementation agenda as 'determination'.

2.2 Collaborative governance

2.2.1 Definition of collaborative governance

Successful climate adaptation depends on the engagement of a diversity of stakeholders, including the public and private sector, organisations on different scale levels and civil society (Eikelboom & Janssen, 2017). Stakeholders are those who can influence a decision, as well as those affected by it. There exists a growing trend of the involvement of stakeholders in the planning process (Johnson et al., 2018), and collaborative arrangements to manage shared problems are rising (Weber, 2009). This has not gone unnoticed in academia, and various scholars are theorizing this participatory concept. Such as co-production or co-creation (e.g. Maciuliene & Skarzauskiene, 2016); collaborative planning (e.g. Healey, 1997); adaptive co-management (e.g. Baird et al., 2014); or collaborative governance (e.g. Ansell & Gash, 2008; O'Brien et al., 2009; Brink & Wamsler, 2018).

Collaborative governance, or participatory or inclusive governance, is tackling societal needs through social-political engagement among actors (Brink & Wamsler, 2018). "*Collaborative governance can be defined 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*" (Emerson et al., 2012, pp. 2).

By using elements from the 'Integrative framework for collaborative governance' of Emerson, Nabatchi and Balogh (2012) it will be possible to analyse the collaborative process of stress test and risk dialogue. This framework is further deepened with elements from, among others, Grecksch (2013), Gupta et al. (2010) and Gerlak and Heikkila (2011).

Two dimensions will be focused on: collaboration drivers (par. 2.2.2) and collaboration dynamics (par. 2.2.3).

2.2.2 Collaboration drivers

Some drivers for collaboration can be mentioned. It are factors that cause that different parties want to engage in a collaborative process. Five will be elaborated upon: interdependence, uncertainty, leadership, incentives and adaptation belief and motivation. The more these drivers are present and recognized by participants, the more likely a collaboration process will be initiated and joined by different parties (Emerson et al., 2012).

Interdependence

This driver is a widely recognized and accepted precondition for collaborative action. It states that parties are unable to accomplish something alone, and are dependent on each others' involvement. Collaborative governance is generally initiated with an instrumental purpose in mind; i.e. to drive actions that could not have been attained by any of the actors alone. Four different forms of interdependence can be distinguished (Emerson et al., 2012). First, input or resource interdependence; referring to actors possessing or having unique access to different resources. I.e. interconnectedness in terms of actors depending on another for access to critical resources. Second, process interdependence, which is a term that can be used when multiple processes, functions or actors rely on each other to accomplish tasks or to deliver a product. These different workflows require coordinated action. Third, goal interdependence, which captures interdependent or cooperative goals. Fourth, reward or feedback interdependence, referring to the interconnectedness among actors in terms of how performance is rewarded.

Uncertainty

Uncertainty is seen as a primary challenge for the management of 'wicked' societal problems (Koppenjan & Klijn, 2004), such as climate change. Namely, the development of adaptation plans is a complex task, especially because the consequences of climate change are uncertain, multiple, complex and controversial (Eikelboom & Janssen, 2017). In addition, it can be a search for the best solution to reduce these complex negative consequences. This calls for collaboration: "*uncertainty that cannot be resolved internally can drive groups to collaborate in order to reduce, diffuse, and share risk*" (Emerson et al., 2012, pp. 10).

Leadership

Leadership is a driver for change; showing a direction to go and motivating others to follow (Gupta et al., 2010). Leadership in the process of stress test and risk dialogues can be interpreted in two ways. First, presence of an identified leader who is in a position to initiate and help secure support and resources (Emerson et al., 2012). Accordingly, such a leader must possess a commitment to collaborative problem solving, a willingness not to advocate for one particular direction, and also exhibit impartiality (Emerson et al., 2012). Different sorts of leadership can be distinguished: visionary (giving long-term visions), entrepreneurial (stimulating action) and collaborative (encouraging collaboration and bringing parties together) (Gupta et al., 2010). Related are the skills of the facilitator of the dialogue at assisting expression of diverse viewpoints and whether the leader has a certain authority or predominance which is widely recognized and accepted by the parties (Emerson et al., 2012).

Second, leadership that expresses itself in the social process, i.e. the process can mobilise leadership qualities by different involved parties (Gupta et al., 2010). This can be linked to the 'complexity leadership theory' which focuses on shared leadership in a networked environment (Meijerink et al., 2015). Different actors can fulfil different functions of leadership: enabling, adaptive, political-administrative and dissemination leadership functions (Meijerink et al., 2015).

Incentives

Incentives that stimulate parties to participate are another collaboration driver. These incentives can refer to 'negative incentives' such as problems, resource needs, situational crises, threats or opportunities (Emerson et al., 2012). However, the timing or pressure for solutions must be ripe and it must be salient to participants. Next to these negative incentives, there can also be positive ones, such as a new funding opportunity. These negative and positive incentives can be indicated as 'consequential' (Emerson et al., 2012).

Also providing parties with necessary means and information in the process can be an incentive. For example, sufficient financing and tools must be in place. Also, sufficient knowledge must be present; i.e. continuous access to information about the particular procedure and about the issue in question, in this case climate adaptation (Bora & Hausendorf, 2009). Information about for example the risks that actors run or about the possible measures they can take, increases the 'action perspective' of these actors (Kennisportaal Ruimtelijke Adaptatie, n.d.b.). So in other words, elements of capacity for joint action (see par. 2.2.3) may be offered upfront as an inducement for collaboration by the initiating party.

Adaptation belief and motivation

Adaptation belief and motivation can be seen as drivers for parties to participate in a collaborative process focused on climate adaptation. Namely, when this belief and motivation for adaptation are present by parties, it is more likely they will collaborate. It refers to the perspectives and perceptions of participating actors (Grecksch, 2013). Although some of the involved parties are representatives of larger organisations, this psychological dimension can be an important factor in the process. Firstly, 'adaptation belief' refers to the ability of actors to adapt to climate change. On the one hand, the objective capacity plays a role (Grecksch, 2013); i.e. what an actor could do indicated by the availability and access to resources. On the other hand, the subjective or perceived ability also determines whether an actor decides to take measures (Grothmann et al., 2011). This also has to do with the perception whether an individual actor believes he can move climate adaptation forward through their own commitment (Grecksch, 2013) and the management of expectations. Secondly, 'adaptation motivation' refers to the motivation actors have to support and realise climate adaptation measures (Grecksch, 2013), which is also related to a sense of urgency. The perception people have of climate change related risks is shown to be an important determination factor in the realisation of adaptation; this capacity is often underestimated (Grothmann & Patt, 2005).

2.2.3 Collaboration dynamics

Three 'collaboration dynamics' will be elaborated upon: principled engagement, shared motivation and capacity for joint action (Emerson et al., 2012). These dynamics are related to each other; i.e. they can be seen as 'gears' which are interacting. For example, the ongoing principled engagement creates and reinforces shared motivation and also builds the necessary capacity for joint action. And in turn, once initiated, shared motivation also reinforces the principled engagement process.

Principled engagement

It is general agreed upon, in practice and in research, that getting the 'right' people to the table is important (Emerson et al., 2012; Ansell & Gash, 2008), also in the light of 'fair governance principles', which uphold the basic principles of democracy and fairness (Gupta et al., 2010). One might think of whether participation for all is possible in the risk dialogues (Grecksch, 2013). This has a link with one of the norms of a 'Habermasian dialogue': "*no party affected by what is being discussed should be excluded*" (Flyvbjerg, 1998, pp. 213). There can be thought of a variety of actors (multi-actor), a variety of political/administrative levels (multi-level) and a variety of sectors (multi-sector) that can be incorporated into the process (Johnson et al., 2018). Also, "*all participants should have equal possibility to present and criticize validity claims in the process*" (Flyvbjerg, 1998, pp. 213); i.e. parties should have autonomy.

This inclusion and diversity of actors are not only valued as normative organizing principles, but also for instrumental reasons. Namely in this way, voice is given to multiple perspectives and different interests. As a result, more thoughtful decisions are made that take a broader view of who will be benefited or harmed (Emerson et al., 2012). This relates to having a diversity of problem frames included in the process. The presence of various perspectives on the effects of climate change prevents the establishment of a constricted framework (Grecksch, 2013). This is important in the view of the uncertainty that is accompanied with climate change. So, the process should give room to multiple opinions and problem definitions; i.e. the process should not steer participants in a certain direction (Gupta et al., 2010). The presence of various possible solutions, adaptation measures and policy options is limiting a 'lock-in' (Nooteboom, 2006). Hereby it is not a problem if measures are overlapping; some redundancy is positive. This increases the chance of a climate proof living environment (Gupta et al., 2010).

Shared motivation

A second collaboration dynamic is shared motivation, which can be defined as a self-reinforcing cycle, consisting of four elements: mutual trust, understanding, internal legitimacy and commitment (Emerson et al., 2012). Trust is developed over time as parties work together, get to know each other, and prove that they are reasonable and that they can be relied upon. This trust is instrumental in the sense that it stimulates learning, the exchange of knowledge and innovation. A consequence of this developed trust, is the generation of mutual understanding, i.e. the ability to understand and respect the, sometimes deviant, interests of others (Emerson et al., 2012). This mutual understanding in turn generates legitimacy: "*the confirmation that participants in a collective endeavour are trustworthy and credible, with compatible and interdependent interests, legitimizes and motivates ongoing collaboration*" (Emerson et al., 2012, pp.14). Ultimately, bonds of shared commitment are created, through which organizational, sectoral or jurisdictional boundaries can be crossed.

Capacity for joint action

Capacity for joint action, or collaborative capacity, can be seen as the link between strategy and performance (Emerson et al., 2012), it are essential elements in the collaborative process without which no action is possible. The more parties are engaged in the process and a shared motivation is developed, the more a capacity for joint action is created. In other words, it can be interpreted as an

intermediate outcome in the collaboration process. This capacity for joint action can be divided into three different elements (Emerson & Gerlak, 2014). First, structural arrangements. The procedures and protocols in collaborative governance regimes may include informal norms of reciprocity, but also more formal rules, e.g. for assigning responsibilities. These arrangements are recognised as an important determinant of adaptive capacity. It is about how a cooperation structure is designed; i.e. it is about whether it is obligatory or voluntary to participate, how non-committal participation is, or if sanctions are included in the process. It is thought that more flexible and participatory designs are increasing the adaptive capacity; and also help catalyze experimentation, self-organisation and innovation (Gupta et al., 2010). Second, leadership which is essential for initiating and convening parties (see also par. 2.2.2), and also for moderating in dialogues and for implementing decisions (Emerson & Gerlak, 2014). Third, resources are a last an essential part of capacity for joint action. Collaboration requires the acquisition and application of adequate resources, which may include "*funding, legal, technical and expert assistance, logistical and administrative support, communication and information technology, and even power*" (Emerson & Gerlak, 2014, pp. 772). The mobilisation of the following resources must be encouraged: legal and political mandate; human resources, such as skills, expertise, knowledge and human labour; and financial and technological resources (Gupta et al., 2010). In the collaborative process, agreements must be made about the use of these resources (De Graaff et al., 2018). This element can be associated with the objective capacity: what a social actor could do indicated by access or availability of resources (Grecksch, 2013).

2.3 Collective learning process

2.3.1 Definition collective learning

An important and defining attribute in a collaborative setting is an emphasis on learning, so that all actors have shared understandings of the situation and potential improvements (Emerson et al., 2012; Daniels & Walker, 2001). It is acknowledged that learning is an important feature for the endurance and success of collaborative arrangements (Ansell & Gash, 2008). "*An entity learns if through processing information the range of its potential behaviours is changed*" (Huber, 1991, p.89). This definition of learning holds whether this entity is an individual or a group. There can be distinguished between individual and collective learning (Gerlak & Heikkila, 2011). By individual learning, learning remains solely at the individual level. In contrast, collective learning occurs when learning across members of a group is translated into social or institutional transformation at the group level. This collective learning involves both a collective process as collective products, such as new shared ideas, strategies, rules and policies (Gerlak & Heikkila, 2011).

The collective learning process can be understood as a set of actions that allows new information or knowledge to be acquired, processed and shared, interpreted and transferred across individuals within a group (Gerlak & Heikkila, 2011). In other words, processing the information (Huber, 1991). Often this process is described through sequential steps (Huber, 1991; Emerson & Gerlak, 2014; Daniels & Walker, 2001). The engagement of parties in this collaborative learning process occurs over time through the repetition of four phases (Emerson et al., 2012): 'discovery' (par. 2.3.2), 'definition' (par. 2.3.3), 'deliberation' (par. 2.3.4) and 'determination' (par. 2.3.5). Through this iterative process, collaboration parties develop a shared sense of purpose and a shared theory of action for achieving that purpose; i.e. conditions for a situation of collaborative governance are being formed in this collective learning process.

2.3.2 Discovery

A collective learning process starts with a 'discovery phase' (Emerson et al., 2012) which refers to the identification and analysis of the problem situation. This phase exists of two core aspects. On the one hand, information acquisition; and on the other hand, dissemination and integration of this information (Huber, 1991; Gerlak & Heikkila, 2011). Information is viewed in this research in the broadest sense of the word; i.e. it is ranging from substantive knowledge about climate effects and technical solutions, to procedural and personal knowledge about the design of the process itself and communication strategies. Also the detection of errors and new opportunities can be seen as knowledge (Gerlak & Heikkila, 2011).

The learning-related construct of knowledge acquisition consists of diverse actions or processes of obtaining new information (Gerlak & Heikkila, 2011). Huber (1991) identifies five sub-processes of knowledge acquisition. First, congenital learning, which means drawing on knowledge available in the organisation; i.e. inherited knowledge. Second, experimental learning or substantial practice. By this 'learning by doing' knowledge is acquired through direct experience, which is often unintentionally or unsystematically. Vicarious learning is a third process of knowledge acquisition, which is learning by observing others and therefore acquiring 'second-hand experience'. This experience can entail strategies, administrative practices or technologies. A fourth process is 'grafting', which means increasing an organisation's store of knowledge by acquiring new members who possess new and additional knowledge. Lastly, searching and noticing. Searching refers to focused observing of the organization's internal or external environment. Noticing refers to the unintended acquisition of information.

Information availability is an important element of knowledge acquisition, and it refers to the access to impartial, reliable and transparent information (Gerlak & Heikkila, 2011), e.g. the information is applicable to the specific (local) situation. The availability of information enhances informed decision-making by revealing knowledge gaps. The usability of information for decision-making is more important than the quantity (Ford & King, 2015). In other words, it meets the current demand and there is no or small difference between the actual information and the desired or expected information (Huber, 1991).

Another element are information characteristics; i.e. variety in content and in form. Variety in content has to do with the width of primary climate information, namely temperature and precipitation variables. This can, among other things, be derived from the four climate themes of the Deltaplan Ruimtelijke Adaptatie (Kennisportaal Ruimtelijke Adaptatie, n.d.a.). In other words, are the climate themes flooding, heat, drought and water nuisance all covered? Besides this variation in substantive and technical information, the usability of information can also be increased by bringing primary climate information together with policy-relevant data and social aspects (Goosen et al., 2014), such as process arrangement, communication tools or a stakeholder analysis. Variety in form can help in the information transparency; i.e. information on the climate adaptation challenge is accessible and understandable also for non-experts (Koop et al., 2017). Information can appear in the form of reports and studies, debate and dialogue, online portal, maps and visuals, etcetera. According to Goosen et al. (2014) visualisation is helpful in quickly exploring climate data maps and getting an impression of the problem at hand.

A last element of knowledge acquisition is the source of information. The importance of variety in terms of knowledge resources within the learning process is often emphasized (Gerlak & Heikkila, 2011; Koop et al., 2017). Participants in collective learning processes share a broad pool of information available from multiple sources (Emerson & Gerlak, 2014). A distinction can be made between expert and local or citizen knowledge, or rather the combination of these two. The importance of joint knowledge production (Hegger et al., 2012), joint inquiry (Emerson & Gerlak, 2014), collaborative science (Johnson et al., 2018), or the co-creation of knowledge (Laudien et al., 2019) is often reported in literature. Rather than relying solely upon experts and scientists to identify problems related to climate change, local citizens are allowed to identify vulnerabilities and resiliencies. By considering local knowledge alongside scientific knowledge, new two-way knowledge is built, providing deeper understanding of complex problems (Emerson & Gerlak, 2014). Locals are empowered through interactive and site-specific data collection, rather than relying only upon distant-scale knowledge and projections. It helps translating information in a way that it is understandable and has meaning for them (Johnson et al., 2018). However, the co-creation of knowledge is a time-consuming and labour-intensive process and it can be questioned whether it is always needed (Laudien et al., 2019).

Besides the acquisition of knowledge, the dissemination of this knowledge is also a key action in the discovery phase of collective learning (Huber, 1991; Gerlak & Heikkila, 2011). This points out the process by which information from different sources is shared across individuals within a group and between groups within networks (Gerlak & Heikkila, 2011). When information is widely distributed in a collaborative, more varied sources for it exist, resulting in the fact that this information is more easy to find for individuals. Thus, information distribution leads to more broadly based learning (Huber, 1991). In addition, new information can be developed by piecing together items of information that are obtained in this dissemination process. In other words, information is integrated (Cheng & Sturtevant, 2012).

Several aspects can indicate this dissemination process. First, the media richness, i.e. multiple tools that are used for information sharing (Huber, 1991; Gerlak & Heikkila, 2011). Just as multiple sources of information are important, so too are multiple venues of dissemination. E.g. regular meetings, e-mail, phone calls, online portals, workshops, conferences or informal dialogue. These communication tools suggest that social factors, in specific frequent face-to-face interactions, as well as technical factors, such as online information sharing, can play a role in facilitating a learning process. In addition, more diverse interactions have a likeness to support this step, just like intern structures that allow for open and informal dialogue (Gerlak & Heikkila, 2011). A second aspect is diversity in terms of the vehicle of information dissemination; information can for example be shared via external groups or via advisory bodies (Gerlak & Heikkila, 2011). Also leaders can fulfil this task; leaders can draw out knowledge held by collaborative participants and identify knowledge gaps (Cheng & Sturtevant, 2012). Furthermore, it can be experienced helpful when intermediaries are used in the process, such as boundary organisations or consultants (Laudien et al., 2019). A fourth aspect are actor's social connections or broad-reaching social networks that can promote more extensive access to external sources of knowledge (Gerlak & Heikkila, 2011; Cheng & Sturtevant, 2012), therefore allowing for multiple and diverse sources of information. Lastly, the probability of information sharing, which is influenced by a willingness to share information, sharing costs,

workload, a frequency of sharing in the past, rewards for sharing and/or a view of the information's relevance (Huber, 1991).

2.3.3 Definition

The definition phase refers to continuous efforts in the process to build shared meaning (Emerson et al., 2012). This can be done by articulating common purpose and objectives, agreeing on concepts and terminology, clarifying and aligning tasks and expectations of the process, and stating shared criteria with which to assess information and alternatives (Emerson et al., 2012; Ansell & Gash, 2008). In order to build this shared meaning, two elements are of importance: a shared knowledge level and shared knowledge interpretation.

Firstly, a shared knowledge level among collaborative members. Everyone has a different level of knowledge; i.e. everyone has their own expertise. One can also state that different actors speak different languages, which is a result of the functional differentiation of society, and which may create communication barriers (Bora & Hausendorf, 2009). These different knowledge levels should be noted and must be addressed, so that eventually the information is accessible and comprehensible for experts as well as for non-experts (Koop et al., 2017; Gerlak & Heikkila, 2011). Visualisation methods can be helpful in this matter, because it stimulates to explore complex climate data and getting more quickly an impression of the trend, speed and extent of the problem (Goosen et al., 2014). Another indicator of a shared knowledge level, is the extent to which knowledge is internalised by individuals in the collective (Tsai & Lee, 2006). This knowledge internalisation is a process in which the ability to apply knowledge arises; i.e. people enhance their 'knowledge applicative capability'. A related aspect is the level of knowledge. Tsai and Lee (2006) distinguish four different levels. The first level is cognitive knowledge; i.e. 'know-what', which refers to understanding what the content is about. The second level are advanced skills, i.e. 'know-how', which refers to knowing how to utilize certain knowledge. The third level is systems understanding, i.e. 'know-why', referring to deeply understanding the complex causal relationships underlying a system. The fourth and last level of knowledge is self-motivated creativity, i.e. 'care-why, which refers to the ability to create knowledge through self-thinking and self-learning. The higher the level of knowledge, the more effective knowledge becomes, i.e. people are more likely to take action and bring the value of knowledge into play (Tsai & Lee, 2006). 'Learning by doing', i.e. trying out, combining, making connections and reflecting, is an helpful activity to internalise knowledge (Tsai & Lee, 2006).

Secondly, this definition phase also relates to the learning-related concept of shared knowledge interpretation (Huber, 1991). Knowledge interpretation is the process through which information is given meaning and shared understandings and conceptual frames are developed. This shared understanding of information relates to uniformity in framing of the information as it is communicated (Huber, 1991). If information is not uniformly framed, shared interpretations are less likely to be achieved. Naturally, differences in language or in cognitive maps require individual messages be used to create uniform framings. In addition, the amount of 'unlearning' that is necessary is important (Huber, 1991), which is a process through which obsolete and misleading knowledge is discarded, in order to generate a new interpretation. In this way, thinking patterns and habits are adjusted. Lastly, information overload is also a relating factor, because this interpretation is less effective if the information to be interpreted exceeds the capacity to process the information adequately (Huber, 1991).

2.3.4 Deliberation

'Deliberation' is about candid and reasoned communication, which can be seen as an essential element in a collaborative process (Emerson et al., 2012). This dialogue takes place in frequent and diverse interactions; i.e. on different moments, via different communication channels and on different scale levels. It is stimulating when dialogue takes place face-to-face (Ansell & Gash, 2008). The 'thick communication' allowed by this direct form of dialogue is necessary for actors to build trust, mutual respect, shared understanding and to identify opportunities for mutual gain.

A related element in this deliberation phase is the presence of consensus building mechanisms. Namely, "*it is a communication process of weighing the available data, considering alternative possibilities, arguing about the relevance and worthiness, and then choosing the best alternative by balancing the arguments put forward*" (Sager, 2002, pp. 367). A consensus is power neutral, so actor asymmetries do not play a role (Flyvbjerg, 1998). Such a consensus building process can change the actors and their actions; new relationships, practices and ideas can be produced (Emerson et al., 2012). Promoting factors in reaching consensus and in generating commitment amongst all parties, is that actors have a cooperative mindset, a joint road map is created and that it is searched for win-win situations (Bora & Hausendorf, 2009).

Furthermore, the quality of dialogue can vary and is depending on both the skilful advocacy of individual and represented interests and the effectiveness of conflict resolution strategies. Asking and answering challenging questions and expressing disagreements are parts of such effective deliberation (Emerson et al., 2012). One of the preconditions is that a 'safe space' is created in the collaborative process; which requires thoughtful examination of issues and listening to others (Emerson et al., 2012).

2.3.5 Determination

Lastly, 'determination'; i.e. the phase in which multiple joint decisions are made (Emerson et al., 2012). While the former three collective learning phases where about learning processes, this phase is about establishing learning products (Gerlak & Heikkila, 2011). Collective learning products that emerge from the process and that can be viewed in a generic way; e.g. new shared ideas, strategies, rules or policies. The joint decisions can be procedural, such as setting agendas, assigning a work group or stating follow-up actions. Or they can be substantive products, such as making action agreements and a shared theory of action (Emerson et al., 2012). In other words, it is about whether outputs are produced in the process and follow-up actions are stated to support action.

Another element in this last learning phase is evaluation and monitoring. By incorporating feedback mechanisms, the collective will be more sustainable in time (Emerson et al., 2012) and it is stimulating institutional memory (Gupta et al., 2010; Grecksch, 2013). It can be seen as a 'memory system' that stores information, knowledge and agreements. By including processes of monitoring and evaluating, conclusions can be drawn from past experiences and this learning allows in time for changed understandings. Thus, collective learning is continuous and the collective learning phases have an iterative character (Emerson et al., 2012).

2.4 Conceptual model

Within this research, the conceptual model as shown in Figure 4 is used. This model shows what the relations are between the different theoretical concepts that are central to this research. The box

indicates the research topic: the municipal climate adaptation process, of which four components are considered to break down collaboration in this process.

The first component are the DPRA phases: stress test, 'intermediate phase' (i.e. step from stress test to dialogue), risk dialogue, and implementation agenda. These phases are seen and interpreted as collaboration processes and learning processes, and therefore act as 'containers' for the other three components of this model.

The second component are the collaboration dynamics, which is a dimension of collaborative governance (see par. 2.2), consisting of three aspects: principled engagement, shared motivation and capacity for joint action. These elements are interconnected; i.e. there exists an interplay. An example is when there exists a tendency to prioritize other concerns over climate adaptation (i.e. an issue of principled engagement), this has implications for the availability of resources (i.e. an issue of capacity for joint action) (IPCC, 2014). Or another example is when the presence of leaders (i.e. an element of capacity for joint action) supports trust building activities (i.e. shared motivation) (Gerlak & Heikkila, 2011). In every phase these collaboration dynamics exist, because every stage is regarded as a separate collaboration process.

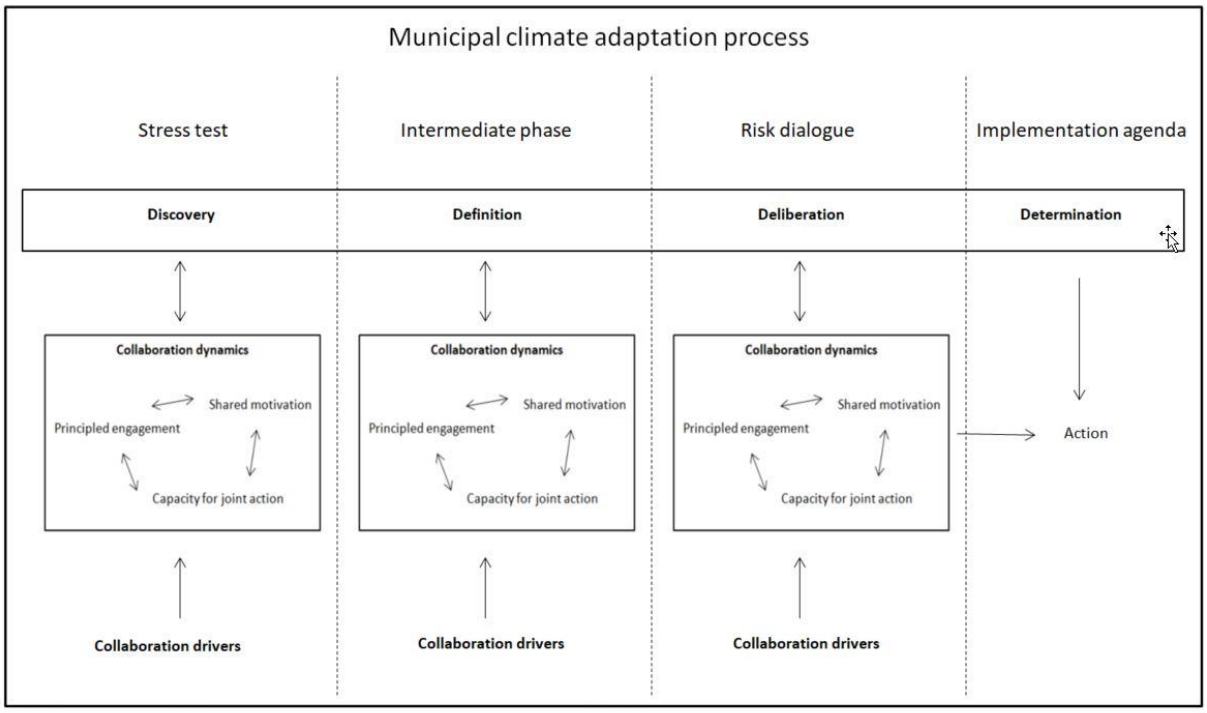

Figure 4. Conceptual model

The third component are the collaboration drivers, which also is a dimension of collaborative governance (see par. 2.2). Five different drivers were included in this research: interdependence, uncertainty, leadership, incentives, and adaptation belief and motivation. An arrow runs from these drivers to the dynamics, because they can help initiate this collaboration process. For example, the negative incentive of a situational crises such as a flood, can ensure that there is a more widespread sense of urgency for climate adaptation, which sets shared motivation 'in motion' (Emerson et al., 2012).

The fourth and last component are the four phases of collective learning (see par. 2.3), which provides for an additional emphasis on learning in this research. These collective learning phases can be used to characterise certain steps in the process: the stress test can be regarded as 'discovery', the step from stress test to risk dialogue as 'definition', the risk dialogue as 'deliberation' and the implementation agenda as 'determination'. The double-sided arrow in the model between these learning phases and the collaboration dynamics, indicates that these two concepts are interrelated and influence each other. For example, those social dynamics play a role in helping disseminate information and new ideas. And a collaborative dynamic such as trust, is needed to translate these ideas into learning products (Gerlak & Heikkila, 2011). Ultimately, the collaboration dynamics in the risk dialogue phase and determination will lead to action.

All in all, this conceptual model shows how elements of collaborative governance and collective learning together help to explore the municipal climate adaptation process. For example, when a collaboration driver is present, it is stimulating in the process, and when it is absent, it is hindering. I.e. the model allows stimulating and hindering factors to be identified.

2.5 Operationalisation

The transition from theory to empirical research is called 'operationalisation' (Van Thiel, 2014). In this research step, theoretical concepts are translated into entities that can be observed or measured in the field. As the theoretical concepts central to this research have already been defined and elaborated with much detail in the previous paragraphs, the relevant dimensions and elements can be extracted directly from these descriptions (an overview is shown in Table 1). The same applies to the indicators, i.e. the entities that can be observed. The indicators per element can be found in the detailed operationalisation tables in Appendix I. In these detailed operationalisation tables, also a description per indicator has been added. As well as a column indicating the data source used to measure it: interview part, mind map or document.

Concept	Dimension	Element
Collaborative governance	Collaboration drivers	Interdependence
		Uncertainty
		Leadership
		Incentives
		Adaptation belief
		Adaptation motivation
	Collaboration dynamics	Principled engagement
		Shared motivation
		Capacity for joint action
Collective learning phases	Discovery	Information acquisition
		Information availability
		Information characteristics
		Source of information
		Dissemination of information
	Definition	Building shared meaning
		Shared knowledge level
		Shared knowledge interpretation
	Deliberation	(Face-to-face) interactions
		Candid and reasoned communication
	Determination	Making joint decisions
		Learning products
		Evaluation and monitoring

Table 1. Short operationalisation table

3. Methodology

In this chapter, the methodology that is used in this exploratory research will be clarified. The chapter starts with the choices for the research strategy (par. 3.1), namely a case study design. Next, the qualitative research methods will be described (par. 3.2): document analysis, semi-structured interviews, an expert interview, and a mind mapping method. Then the data analysis process will be explained (par. 3.3). The chapter concludes with some remarks about the validity and reliability of the research (par. 3.4).

3.1 Research strategy

Research strategy refers to the structure or framework that guides data collection and analysis (Bryman, 2012). Different strategies are possible in social science research, ranging from quantitative to qualitative research. Qualitative research is a broad scientific method that contains a combination of non-numerical data, such as observations and interviews (Clifford et al., 2016). It is also interpretative research, based on observations in social reality (Vennix, 2011). This kind of research is about understanding, or 'Verstehen' (Weber, 2002). Therefore, certain phenomena are discussed in more detail (Verschuren et al., 2010); in this research the phenomena is the 'stress test and risk dialogue process for climate adaptation'. All in all, the qualitative method is particularly useful in this research, because it helps the researcher to understand what the respondents think is important in their own reality (Verschuren et al., 2010).

3.1.1 Case study design

The choice for the research strategy depends on the question that is central to the research (Verschuren et al., 2010). The main question in this study is as follows: *"How do municipalities in the province of Noord-Brabant give substance to the process of climate stress test and risk dialogue and what are stimulating and hindering factors in making the step from stress test to risk dialogue from a collaborative governance and learning perspective, and how can this be improved in the future?"* So, this research uses qualitative analysis in order to gain insights into the stimulating and hindering factors in making the step from stress test to risk dialogue. It focuses on the interface between the stress test and dialogue element in municipalities; i.e. the 'prelude' to the risk dialogues. To achieve this goal, different phases of the climate adaptation process in various municipalities are analysed, to get an elaborate picture of the situation. For such a purpose, the case study strategy is generally preferred (Yin, 2003; Van Thiel, 2014). A case study design is a common design in qualitative research (Vennix, 2011). According to Creswell (2013), a case study is an approach in which the investigator explores a real-life, contemporary bounded system (a case) through detailed, in-depth data collection. Another reason for choosing a case study is the fact that the researcher cannot control the behaviour of the phenomenon; i.e. the process and perception of municipalities. This reason excludes strategies such as the experiment (Yin, 2003). Lastly, the nature of the research objects plays a role. This research focuses on concepts like actors, collaboration, strategies and frames (see Chapter 2). Gaining insight into such aspects, benefits from a research strategy that makes it possible to bring out this kind of subjective and context-related information in sufficient detail. By using a case study strategy, priority is given to understanding the phenomenon under investigation in its specific social context and over time (Bryman, 2012). Namely, the major advantage is "*the closeness of the case study to real-life situations and its multiple wealth of details*"(Flyvbjerg, 2006, pp. 5).

There are different types of case studies (Creswell, 2013; Vennix, 2011; Yin, 2003), whereby a primary distinction can be made between single and multiple case study designs (Yin, 2003). In this

research, a single case study will be used, since the climate adaptation process of stress test and risk dialogue in municipalities in the Province of Noord-Brabant will be analysed. This was chosen because it is assumed that this specific case is representative for the situation in the Netherlands. So, the lessons learned from this case are assumed to be informative about the experiences in other municipalities. Within this case, several 'embedded units of analysis' are researched (Yin, 2003). These units are multiple municipalities in Noord-Brabant.

3.1.2 Selection criteria

The next methodological choice is the selection of the sub-units for analysis. In this research, these will be selected based on purposeful sampling, which is a type of non-probability sampling (Creswell, 2013; Van Thiel, 2014). So, the sub-units are not randomly selected but criteria are used; i.e. they are judged by the researcher. These criteria are listed in advance, to reduce the researcher's bias and to maximise the usability (Flyvbjerg, 2011). Four criteria were established.

The first criteria is that only municipalities in Noord-Brabant are considered. The reason for this focus on the Province of Noord-Brabant is twofold. On the one hand, it is a practical consideration, because the Province is the facilitator of this study and wants to gain insight into the approaches of its own municipalities. On the other hand, because Noord-Brabant is a leading Province on the aspect of climate adaptation by municipalities (Ministerie van Infrastructuur en Waterstaat, 2018; Zuid-Nederland, 2018).

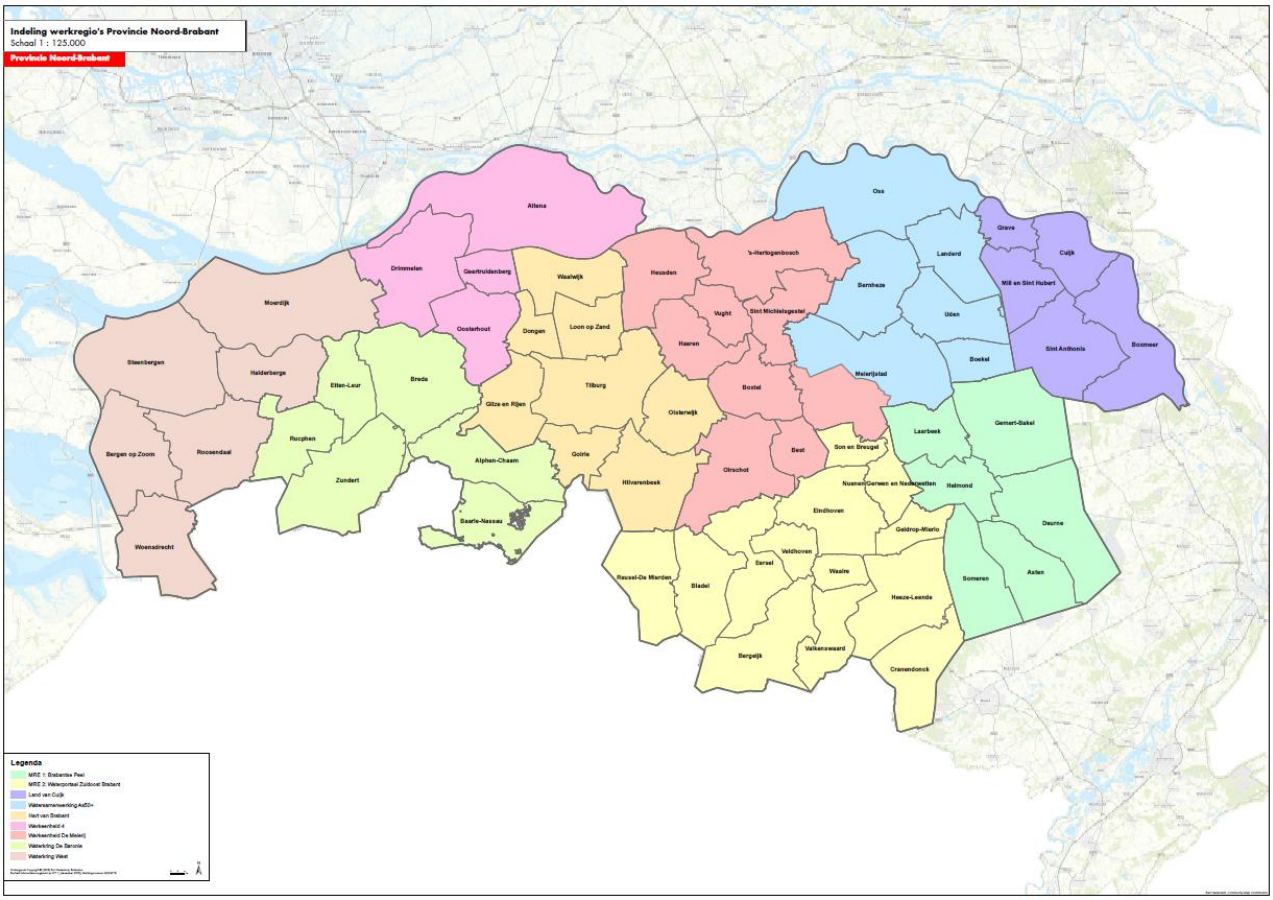

Figure 5. Map division of work regions in Brabant. Source: Province of Noord-Brabant

With the aim of generalising knowledge to some degree, the preference is maximum variation of the sub-units. However, the variables in the theoretical framework of this research are extensive and partly unknown before the start of the study. Therefore, there is aimed for a maximum variation on three aspects; the variation on these three aspects can be seen as the other three selection criteria. The first one is that there should be a maximum regional distribution over the Province's territory. As stated in the introduction, there exist nine DPRA work regions in Noord-Brabant (see Figure 5). There is ensured that a subunit was selected in each working region. A second aspect is variation in how far the municipalities are in the process; i.e. working on the stress test or further. This has been established through the expert interview (see par. 3.2.2) and by using the snowball method in the interviews (see par. 3.2.3). The last criteria is that there is variation in the size of the municipalities. Both small and large municipalities are included; ranging from ca. 19.000 inhabitants (Gemeente Eersel) to ca. 236.000 inhabitants (Gemeente Eindhoven). All in all, using these four criteria, a varied and balanced selection is made, making it possible to explore theoretical relationships as well as generate other interesting insights.

3.2 Data collection

The methodological approach taken in this study consists of four different methods. The majority of the data collection consists of semi-structured interviews (par. 3.2.3). Furthermore, document analysis (par. 3.2.1), an expert interview (par. 3.2.2), and a mind mapping method (par. 3.2.4) are used for the collection of qualitative data. In other words, there is a triangulation of methods, whereby different data sources are combined and compared with each other (Vennix, 2011; Creswell, 2013).

3.2.1 Document analysis

A document analysis, or content analysis, is a kind of analysis which relates to communication products: texts (books, newspapers, magazines), audiovisual material, and archive material such as policy documents (Vennix, 2011). This document analysis helped in gaining insight in the status and variation of the climate adaptation process in municipalities. Four different types of documentation are viewed for this purpose. First, previous made inventories (De Graaff, 2018). Second, online sources, such as news items or websites of involved organisations (such as DPRA). Third, municipal policies, such as the municipal sustainability policy, sewerage plan and/or adaptation policies. And last, completed stress tests are analysed on the following aspects: form, scale level, level of detail and content. These documents are traced by means of a snowball selection technique: on the basis of references, but also through the websites of municipalities and supplied by the interview respondents (Bryman, 2012).

3.2.2 Expert interview

An expert interview is often an one-to-one interview, with a respondent with specific expert knowledge or expertise (Meuser & Nagel, 2009). In this research the expert is the 'Kwartiermaker of climate adaptation in Noord-Brabant', whose task was to help a variety of municipalities in Noord-Brabant with climate adaptation. As a result, he has a great deal of knowledge on the subject central to this research. The purpose of this interview was to give more in-depth knowledge about the research problem; so to be able to give more clarification to later research results. Therefore, this interview was held first, before the other fourteen interviews were executed.

3.2.3 Semi-structured interviews

The purpose of the interviews is to gain qualitative insight into the process of stress test and risk dialogue, and what are seen as stimulating and hindering factors in this process. So, collecting data about the municipal perspective is important. It concerns the experiences of the respondents, rather than their knowledge or expertise, as is the case by the expert interview (see previous paragraph). The most suitable method to achieve this goal, is the semi-structured interview, whereby topics can be discussed in depth. A semi-structured interview is an interview in which the questions and answer options are not fixed, but the topics to be discussed are (Baarda & van der Hulst, 2017). It can be seen as a sort of 'checklist' with topics, whereby the order in which these topics are being discussed is free. In addition, so-called 'probing questions', or 'follow-up questions' are important. This type of interview has been chosen, because all relevant topics are covered, but there is also room for gaining in-depth knowledge and better interpretation of the answers. In this way also stimulating and hindering factors can be discovered that were not yet part of the theory. All in all, reasons for choosing this particular research method, instead of for example a survey, are: the qualitative nature of the research, possibility to gain in-depth knowledge, and there is a higher chance of minimizing interpretation differences, therefore increasing the validity (Baarda & van der Hulst, 2017).

In total, in addition to the one expert interview, fourteen interviews were held (see Table 2). This has been divided into two interview rounds. The first round are interviews with the nine work region 'trekkers'. Namely, within each DPRA working region, a trekker or leader for climate adaptation has been appointed. This person provides for the most important and relevant information, and also ensure for strategy development and connection (Zuid-Nederland, 2018). Because of this role, they have a lot of knowledge about the current status and affairs of municipalities within the region. Since these people are often delegates from a municipality, they are also involved in the climate adaptation process in that specific municipality. Therefore, these nine trekkers are interesting respondents, as they know the research topic from two perspectives. The purpose of these interviews was, on the one hand, to get a picture of what is happening in the multiple municipalities in the region. And on the other hand, to collect more specific data on stimulating and hindering factors in the municipality itself.

The second round consists of five other interviews with respondents from different municipalities; i.e. those (partly) responsible for the climate adaptation process. The purpose of these interviews was to supplement the picture from the first round; i.e. to get an elaborate picture. The interviews dealt with topics concerning: the making of the stress test, the prelude to the dialogues, the dialogues themselves, and aspects of collaboration. In addition, a so-called 'mind mapping' method was used during those interviews (see also par. 3.2.4). This method was only used in this round because these interviews only involved the perspective of the respective municipality.

Non-response by the interviews is reduced by giving a motivation for the respondents to participate, so to mention why it is interesting for them. Another tactic was to approach the respondents via the Province of Noord-Brabant, which may have increased their willingness to participate. And lastly, the 'snowball sampling' technique is used. By this method it is asked to respondents if they know other people who can participate in the interviews (Baarda & Van der Hulst, 2017).

	Respondent	Work region/municipality	Position	Reason for interview
1	Nicolette Peters	Land van Cuijk / Gemeente Boxmeer	Werkregiotrekker & beleidsmedewerker duurzaamheid en klimaatadaptatie	Knowledge about the current status and affairs of municipalities within region Land van Cuijk & Gemeente Boxmeer (water calamity in 2016)
2	Arnold Wielinga	Werkeenheid De Meierij / Gemeente Eindhoven	Werkregiotrekker & programmaleider water en klimaat	Knowledge about the current status and affairs of municipalities within region De Meierij & Gemeente Eindhoven
3	Tim Verhagen	Watersamenwerking As50+ / Gemeente Bernheze	Werkregiotrekker & beleidsmedewerker water en riolering	Knowledge about the current status and affairs of municipalities within region As50+ & Gemeente Bernheze
4	Eric Hendrickx	MRE 2: Waterportaal Zuidoost Brabant	Werkregiotrekker & adviseur stedelijk water Waterschap de Dommel	Knowledge about the current status and affairs of municipalities within region
5	Petra Mackowiak	Hart van Brabant / Gemeente Tilburg	Werkregiotrekker & beleidsmedewerker klimaatadaptatie	Knowledge about the current status and affairs of municipalities within region & Gemeente Tilburg (has developed a REKS)
6	Lennard Stigter	Werkeenheid 4	Werkregiotrekker & adviseur Waterfeit	Knowledge about the current status and affairs of municipalities within region
7	Albert Scheerhoorn	Waterkring West / Gemeente Roosendaal	Werkregiotrekker & strategisch adviseur	Knowledge about the current status and affairs of municipalities within region & Gemeente Roosendaal (internal dialogues have been completed)
8	Wendalin Kolkman	MRE 1: Brabantse Peel	Werkregiotrekker & adviseur Cleverland	Knowledge about the current status and affairs of municipalities within region
9	Bas Hoefeijzers	Waterkring De Baronie	Werkregiotrekker & medewerker stedelijk water en klimaatadaptatie	Knowledge about the current status and affairs of municipalities within region
10	Peter van der Haar	Meierijstad	Beleidsmedewerker openbaar gebied	Knowledge about the current status and affairs of Gemeente Meierijstad (stress test carried out on a regional scale)
11	Ralph Maes	Woensdrecht	Beleidsmedewerker water en riolering	Knowledge about the current status and affairs of Gemeente Woensdrecht (dialogues prepared but

				postponed)
12	Laura Meuleman	Gilze en Rijen	Beleidsmedewerker klimaatadaptatie	Knowledge about the current status and affairs of Gemeente Gilze en Rijen (are already conducting dialogues)
13	Suzanne Mesman	Helmond	Inspanningsleider klimaatadaptatie	Knowledge about the current status and affairs of Gemeente Helmond (stress tests carried out in a regional context)
14	Bas Hofhuis	Eersel	Beleidsmedewerker riolering en openbare verlichting	Knowledge about the current status and affairs of Gemeente Eersel (small municipality; process is difficult)
15	Twan Tiebosch	-	(voormalig) Kwartiermaker Klimaatadaptatie Brabant	Knowledge about the current status and affairs of municipalities in Noord-Brabant

Table 2. Interview respondents

** Interview 15 is the expert interview*

*** The line between interview 9 and 10 indicates the division between the two interview rounds*

3.2.4 Mind mapping method

A last research method is a mind mapping method used by the second round of semi-structured interviews (see previous paragraph). A mind map is a diagram in which information is displayed in a compact, visual manner and it emphasises relationships between topics. The purpose of this method is to visualise the municipal perspective on the process of stress test and dialogue. In this way, input about the actor structure and needed resources can be collected in a structured way, without directing the answers.

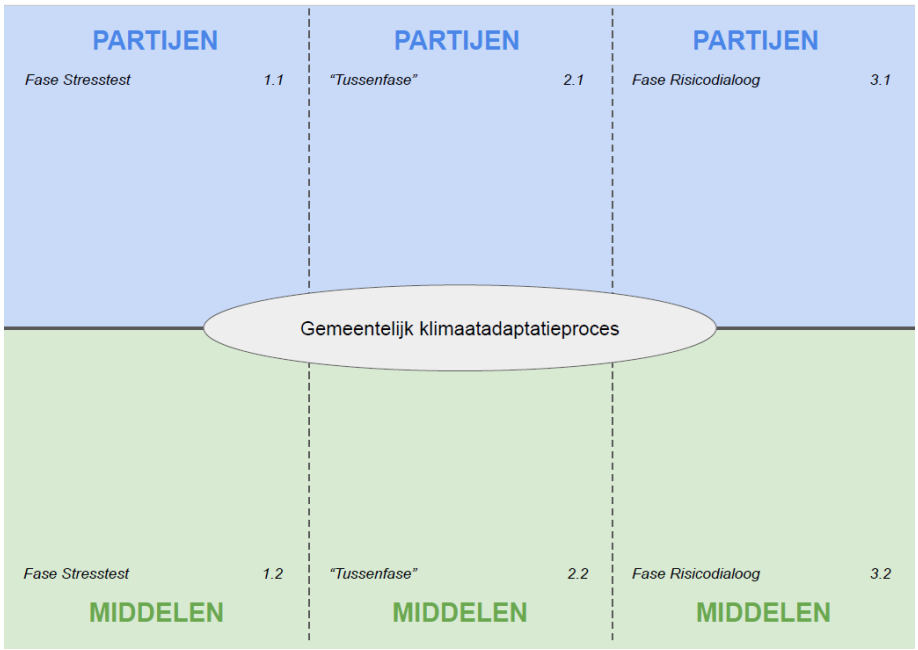

Figure 6. Blank mind map for respondents to fill in

The structure of the mind map is as follows (see Figure 6). The upper section is about the actors who are in any way involved in the climate adaptation process. This can include internal actors (within the municipality), external actors, or other governments. The bottom section is about the resources needed in the process: knowledge about content or process, financing, people, experience, etcetera. Furthermore, the mind map is divided into three phases: the stress test phase, 'intermediate' phase and risk dialogue phase. So, in this way six 'sectors' are created in which respondents can write.

Respondents were asked to fill in the mind map prior to the interview, so that this could be further explored and specified in the interview itself. The task was to write down as many parties and resources as possible in each 'sector', to make connections, and to indicate if there is an issue somewhere. The mind map was left as empty or blank as possible, to limit the degree of guidance by the researcher. Instructions given to the respondent for filling in the mind map can be found in Appendix II.

3.3 Data analysis

A characteristic of qualitative research is its iterative approach. This means that there is no linear data analysis, but that different research steps intermingle. There is a constant alternation between theory, data gathering and analysis (Vennix, 2011). This is also the case in this research. The analysis method consist of coding the collected data. Both the expert interview as the semi-structured interviews are coded. Before the interviews were coded, they were transcribed, because this enlarges the reliability of the research. Transcribing the interviews also enables the use of the program ATLAS.ti. This program helps to organise the data in a creative and systematic way (Creswell, 2013).

The creation of codes represents the core of qualitative data analysis. The coding process consists of organising text into small categories of information (Creswell, 2013). Coding provides insight into the analysis and thus increases the reliability of the research. There exist different coding strategies, ranging from 'prefigured' codes to 'emergent' codes (Crabtree & Miller, 1992). Using 'prefigured codes' means coding in a deductive way: codes are used which are based on theory. The use of 'emergent codes', on the other hand, is an inductive way whereby codes arise during the coding process itself. Creswell (2013) recommends when using pre-established codes, as a researcher also to be open to additional codes. This therefore forms a combination of the deductive and inductive way, which was also used in this research. The prefigured codes resulted from the operationalisation (see par. 2.5). However, inductive analysis, or 'free coding' is also needed to explore the contextually relevant variables and their relationships (Gerlak & Heikkila, 2011). Combining the deductive and inductive coding manner resulted in total in 190 number of codes (see Appendix III for the codebook). This large amount of codes is divided into ten families or code groups: factors, actors, collaboration drivers, collaboration dynamics, discovery phase, definition phase, deliberation phase, determination phase, DPRA phases and 'other'.

3.4 Validity and reliability

The methodological choices made have different consequences for the internal and external validity, and reliability of the researcher. First, the internal validity, i.e. the extent to which what is meant by the theoretical concepts is actually investigated (Van Thiel, 2014). This is secured by the fact that the operationalisation of most concepts is taken relatively direct from the relevant theories, thereby

reducing the possibility of systematic biases in observation or analysis (Bleijenbergh, 2015). In addition, the rich amount of information collected, contributes to the internal validity.

External validity is about the generalisability of the research (Van Thiel, 2014). By examining different units of analysis (see par. 3.1.1), it is possible to make findings that extend beyond a single situation. By means of purposeful sampling, it is tried to include as many different perspectives as possible. The involvement of this variety in respondents increases the external validity. For example, not only municipalities where it goes easy with climate adaptation, but also municipalities which are struggling are included. However, a selection bias can still occur, especially since municipalities which are struggling might not have the need to participate in such an interview, which can result in an underrepresentation in the research (Van Thiel, 2014). Nonetheless, none of the respondents requested for an interview refused to participate in this research.

Lastly, the reliability of the research, i.e. the consistency with which the variables were examined (Van Thiel, 2014). Several strategies have been used to increase reliability. First of all, to conduct comparable interviews an interview guide is used. Such a protocol adds structure to the interview and coincidence plays a smaller role. Two different kind of guides are used: one for the trekkers of the work regions (see Appendix IV), one for the municipalities (see Appendix V). The reason is that in the second round, with the municipalities, a combination is also made with the mind maps. However, the structure of the two guides is the same. Namely, they consist of four parts (A to D). Part A consists of some introductory questions, e.g. about the organisation of climate adaptation in the municipality. Part B is about the stress test process and part C is about the risk dialogue process. Last, part D is specifically about the role of the Province. These guides are checked and tested by different persons before use, to increase their validity. To further increase the reliability of the interviews, it is tried to formulate the questions as neutral and open as possible. And when possible, the interviews were conducted face-to-face, because these generally have a higher response than surveys or telephone interviews (Vennix, 2011). However, the last few interviews were conducted by telephone due to the pandemic. In addition, the interviews are recorded and transcribed, ensuring a maximum control of the quality of the interview. In the data analysis, there is a potential threat to reliability due to the absence of inter-coding reliability; as the data is only coded by one research. However, two round of coding were held to limit this threat. The reliability is also positively influenced by the strategy of triangulation (Van Thiel, 2014), by means of collecting data from multiple sources, i.e. documents, interviews and mind maps. As a result, conclusions rely on multiple data sources and methods, which increase reliability and validity. Especially for a case study research design, this is an essential step in conducting reliable and valid research (Field, 2018).

4. Results

This results chapter has a structure based on the three phases municipalities go through: stress test phase (par. 4.1 and 4.2), intermediate phase (par. 4.3 and 4.4) and risk dialogue phase (par. 4.5 and 4.6), further subdivided by a description and analysis section (see Figure 7). The description paragraphs focus on three elements: target, form and content, and engaged parties in the particular phase; all described from a municipal perspective. These paragraphs are supplemented by accompanying visualisations that schematically represent and give insight into how municipalities are implementing the climate adaptation process. The analysis paragraphs address per phase the identified collaboration drivers, collaboration dynamics and aspects of collective learning.

Figure 7. Schematic structure of the results chapter

4.1 Description stress test phase

The first phase is the 'stress test phase' in which municipalities produce a so-called 'stress test'. In such a test, the potential vulnerabilities within an area are identified. The great majority of municipalities in Brabant have already passed this phase.

4.1.1 Target

From a municipal perspective, the stresstest serves mainly four different purposes. First, the stress test has as main goal to gain insight in where vulnerabilities exist, in the field of the four climate themes: water nuisance, heat, drought and flooding. This shows a strong focus on stress. Second, besides identifying vulnerabilities, the stresstest is also seen as a suitable means to put the climate adaptation subject on the agenda, both on the level of the organisation as on the level of the board. Third, the stress test serves as input for the risk dialogue, in other words as a basis to start the conversation. It is often emphasised that to serve this goal, a stress test does not have to be 'finished' or 'complete'. Either way, it can provide for enough topics for conversation. Fourth, besides

input for the risk dialogue, it can also be used as input for other municipal trajectories, such as drafting an 'omgevingsvisie'.

4.1.2 Form and content

As prescribed by the national government, the stress test has a free form. Nevertheless, most of them look about the same. It are reports consisting mainly of GIS maps with an explanation in text. The structure is mostly based on the four climate themes, although the water theme often predominates. This can be explained, among other things, by the expertise of the responsible person, the knowledge advantage that exists on the water theme, or by the financial link with the GRP (municipal sewage plan).

Besides the maps about the four climate themes, some stress tests include some 'extras', i.e. aspects not every stress test has. For example, in some cases the report is available on a website. The municipality of Oss is such an example, whereby all results of the stress test can be found online (interview, Nicolette Peters, January 2020). Or the stress test is complemented with an online and interactive portal, on which stakeholders can sort the data by theme or by area. Another example is when the stress test includes a prioritisation. Such as in Klimaatkring De Baronie, where an attempt is being made to add an assessment of how well or badly neighbourhoods score on the different climate themes. In order to get already a step closer to an implementation agenda (interview, Bas Hoefeijzers, February 2020). A last example of an add-on to the basic stress test, is a 'klimaatonderlegger' which is made in municipalities in the region Hart van Brabant (interview, Petra Mackowiak, February 2020). Such a map illustrates how the area works in terms of climate. It can be used to explain why the vulnerabilities, that emerge in the stress test, arise. In this way, it provides additional insight and explanation.

Most of the municipalities conduct first a 'light' version of a stress test, and in a later stadium an in-depth variant. The light version focuses on the outlines without too much detail. In some cases it is carried out on a higher scale level, for example in a work region context, focusing on cross-border issues like agriculture or mobility. From a municipal perspective, it is seen as a first practice with stress tests. The in-depth version is necessary to take measures and to make detailed agreements. Therefore, it zooms in on a more local level, even down to street level in some cases. These stress tests also have more of a focus on urban areas.

4.1.3 Engaged parties in stress test phase

Figure 8 shows an overview of the parties that are involved in the stress test phase (upper part of the visualisation). It also shows what municipalities need at this stage in terms of resources, financing, knowledge, skills, etcetera; these requirements can be seen in the lower half of the figure. Finally, relationships are indicated between the two parts; i.e. on what basis are certain parties needed to be involved in the process?

In general, it can be concluded about this phase, that it is a mainly internal process. The focus is on performing the stress test, which is done with few external actors. In most municipalities, the water domain has a central role in this process; they are often the ones to take responsibility for climate adaptation, and they also have a lot of substantive knowledge to contribute. However, other domains such as spatial planning, green maintenance or traffic are also essential; but this is often still a challenge (see also par. 4.2.2). Also the council and management play an important role; they are

important for a broad commitment to climate adaptation within the municipality, an administrative mandate and the release of municipal resources.

A consultancy plays a major role in this phase too, mainly for their knowledge of a stress test approach. But also online portals play an important role, which contain for example, step-by-step plans, inspiration for maps or best practices. Two frequently used portals are the national website of DPRA and the climate adaptation portal of the Province of Noord-Brabant. Besides the knowledge of a stress test approach, consultancies also help to bring together all available substantive knowledge in one document. The general perception is that municipalities do have most of the knowledge in their organisation available, but that it must be brought together. It is also complemented with data from national open data, especially the 'Klimaateffectatlas'. Lastly, a consultancy also sometimes provides for a project manager, with certain soft skills.

Lastly, it appears that in this phase of a climate adaptation process, some certain personal skills are significant. Mainly someone with an intrinsic motivation for climate adaptation, who pulls the strings to get a movement going. In addition, competences are needed such as the ability to take a broad view and to make connections with other tasks.

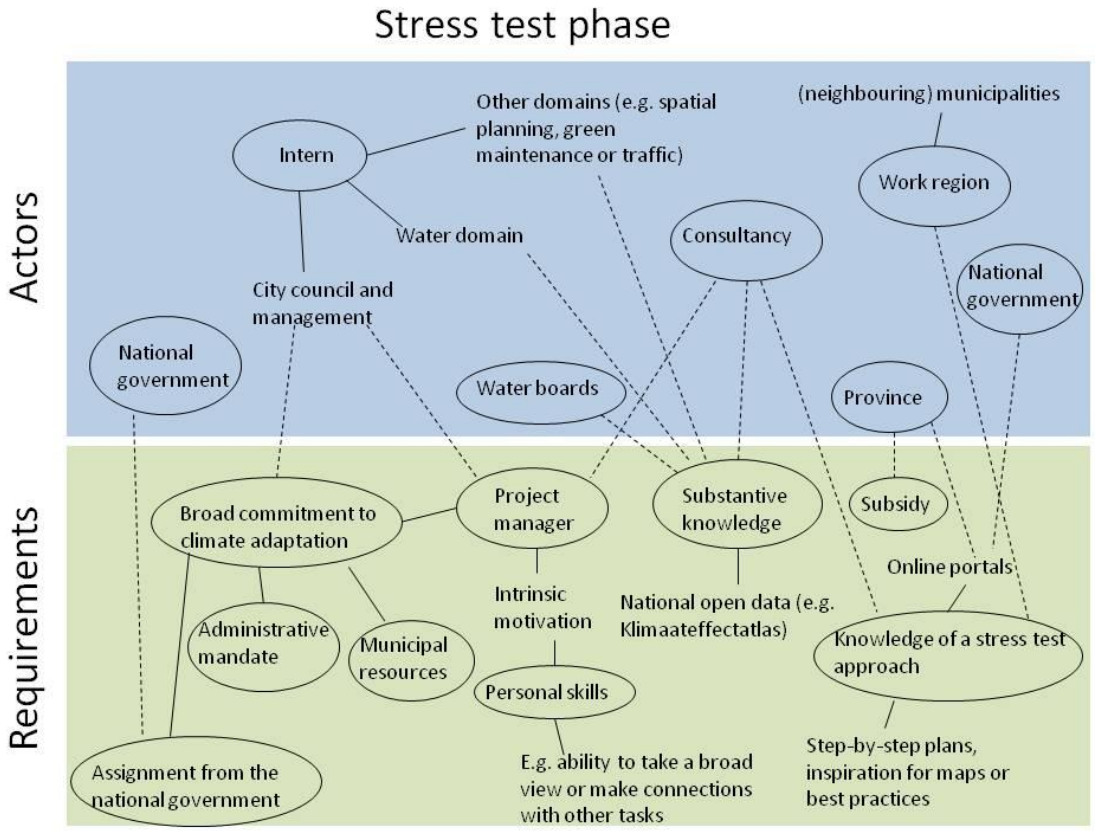

Figure 8. Visualisation stress test phase

4.2 Analysis stress test phase

4.2.1 Collaboration drivers in stress test phase

A first identified collaboration driver in this phase is the uncertainty municipalities have to deal with implementing this new climate adaptation task. Municipalities are all facing the same challenge. A second collaboration driver are the incentives for municipalities to start the whole climate

adaptation process. Mainly these are the obligation from the national government and the possibility for subsidy from the Province which can be seen as positive consequential incentives. On the other side, in some municipalities the negative consequential incentive of situational crises, such as extreme drought or a flooding, serves as a stronger driver. A third collaboration driver concerns the interdependence between municipalities; mainly process interdependence. Municipalities within a working region jointly conduct a regional stress test (see par. 4.1.2) focussing on cross-border issues, like agriculture or mobility. Or they help each other with their own stress test, by hiring a consultancy together such as in work region Hart van Brabant (interview, Petra Mackowiak, February 2020), or by forwarding the tender guideline such as in work region As50+ (interview, Tim Verhagen, January 2020). In addition, a lot of knowledge about the stress test is shared: for example the plan of action, subsidy possibilities, gatherings to visit or interesting websites.

4.2.2 Collaboration dynamics in stress test phase

The broad engagement within a municipality is considered important, because climate adaptation covers a wide field, not only concerning water management, but also spatial and social aspects. However, this realisation is not always there yet. As a consequence, it raises the question who is responsible: "*I think that is one of the biggest stumbling blocks we run into at the moment; that within an organisation the 'monkey' of climate adaptation, whether you look at it regionally or per municipality, often sits on no one's shoulder, or on many different shoulders, and then again nowhere*" (interview, Eric Hendrickx, January 2020). Resulting in that it often ends up at the domain of water and sewage; which can be seen as the 'usual suspect' to tackle climate adaptation. So, it is found difficult to involve other domains, such as spatial planning, green maintenance or traffic; i.e. it is often not multi-sector. A related matter is that in some cases a more one-sided problem frame exists; focusing mainly on water. Climate adaptation ends up on the plate of the 'water people' in a municipality, and resulting from their expertise, climate adaptation is more likely to be seen and tackled as a water issue.

Other collaboration dynamics have to do with the working region partnerships. Which are structural arrangements allowing for cross-organizational linkages between municipalities. In such a partnership, it is experienced as stimulating when a large (core) municipality naturally takes the lead in the region and in that way takes other municipalities along. For example, this can be seen in working region Hart van Brabant with Tilburg, or in Waterkring de Baronie with Breda. Accordingly, it can be experienced as hindering when such a core municipality is absent, such as in Werkeenheid 4 (interview, Lennard Stigter, February 2020). Another hindering collaboration dynamic that has to do with the working regions, is its origin. Namely, most of the work regions originated from the 'Bestuursakkoord Water' (BAW), in which it has been agreed to increase the efficiency of water management. This agreement has resulted in cost savings and improved cooperation in the field of water. Since these already existing collaboration vehicles were present, many regions chose to continue using this structure to tackle the broader climate adaptation topic. On the one hand, this continuation brings several benefits, such as that people already know each other, and as a result short mutual ties and trust have been built over time. "*From the Bestuursakkoord water, a strong mutual relationship has arisen within the region*" (interview, Lennard Stigter, February 2020). However on the other hand, it raises the question whether the 'right' people are sitting at the table. Because using the existing work regions creates a certain path dependency, whereby again mainly the 'water people' are involved in tackling climate adaptation. Such as civil servants and engineers

from the water and sewerage municipal domain and water boards, who were involved from the start of the BAW regions.

4.2.3 Collective learning phase: discovery

In this phase, the knowledge need consists of concrete climate information for developing the stress test. The characteristic of this information is that it is often not 'social' in nature, e.g. information like the financial calculation of risks or socio-economic information such as where vulnerable groups live, is used less. By contrast, it can mainly be described as technical; i.e. consisting of calculation models or GIS maps. This information has different sources, among which national public data such as the Klimaateffectatlas is, which was actually used in all cases. Another source of information comes from the municipality itself; "*the stress test confirmed that there is a lot of area knowledge within the organisation*" (interview, Ralph Maes, March 2020). In other words, collecting the knowledge civil servants have from their work experience. The same applies to the area knowledge of the water boards. When looking at these sources, it is noticeable that it consists almost only of 'expert knowledge' and not of local or 'citizen knowledge'. Another observation is that despite the fact that the necessary information is mostly known and available, it also turns out to be a 'puzzle' to combine all information from these different sources. As a result of this scattered information, it can take a lot of time and energy to bring everything together.

4.3 Description intermediate phase

The phase that follows the stress test phase and that precedes the risk dialogue phase, can be called the 'intermediate phase'. The great majority of municipalities in Brabant is currently in this phase, laying the foundation for the risk dialogue, and therefore the implementation agenda.

4.3.1 Target

In this paragraph, it is described which two activities municipalities mainly engage in during this intermediate phase. A first activity is conducting an internal dialogue within the municipality. Such a dialogue is mostly related to sharing the results of the stress test, and it can occur in different shapes, such as a workshop. In Eersel an internal workshop was organised, also with the management and a member of the city council. In this workshop, the stress test maps were shown, and in an interactive way there was brainstormed about possible measures (interview, Bas Hofhuis, April 2020). Another example is a lunch lecture that was held in Helmond, in which the results of the stress test were shared as widely as possible within the municipality (interview, Suzanne Mesman-Snelderwaard, February 2020). Or in Woensdrecht where with a broad internal session with different sectors it was tried to show how climate change impacts these different sectors (interview, Ralph Maes, March 2020). This broad sharing within the municipality is important in light of embedding climate adaptation in the municipal organisation to a greater extent. In most municipalities it is decided to have such internal sessions, before 'going outside'. It is considered important to have different sectors, outside the water sector, involved and to have a shared story.

The second activity or target in this intermediate phase is, naturally, preparing for the risk dialogue phase. This includes, among other things, inventing a suitable strategy, instructing moderators or applying for grants. It also concerns identifying all relevant stakeholders (see also par. 4.4.2 about this stakeholder analysis and its difficulties) and to establish contact with these parties. This implies making the first contact with new parties and conducting first 'trial' conversations to get to know the situation. An example of this contact with external parties is the 'Baronie brede bijeenkomst' in work

region Waterkring de Baronie. In this meeting different parties were included in the process by showing results of the stress test, and by looking ahead to the next steps such as the risk dialogues (interview, Bas Hoefeijzers, February 2020). This makes this step different from the actual dialogues, because those are mainly focused on retrieving input rather than on giving information.

4.3.2 Engaged parties in intermediate phase

Figure 9 shows an overview of the parties that are involved in this intermediate phase; and as well as in the visualisation of paragraph 4.1.3, it also shows needed resources and involved parties, and the relationships between those two aspects.

The intermediate phase can be characterised as both an internal as an external process. On the one hand, as well as in the previous stress test phase, the various municipal domains, council and management are important. Namely, to ensure that climate adaptation is widely supported in the organisation, and for the knowledge that is present in the organisation; e.g. area knowledge, the actor network, or information about which projects are already running within the municipality. On the other hand, the contact with external parties and building a relationship as conversation partners is what makes this phase external as well. Whereby conducting trial dialogues and carrying out a stakeholder analysis are important activities (see also par. 4.4.2).

As described in the previous paragraph, one of the main goals in this phase is to prepare for the risk dialogues. Knowledge about the approach of these risk dialogues, as well as the internal dialogues, is mainly gained from consultancies. But the working regions, and therefore neighbouring municipalities, also play an important role in this aspect; namely for sharing experiences and lessons learnt (see also par. 4.4.3).

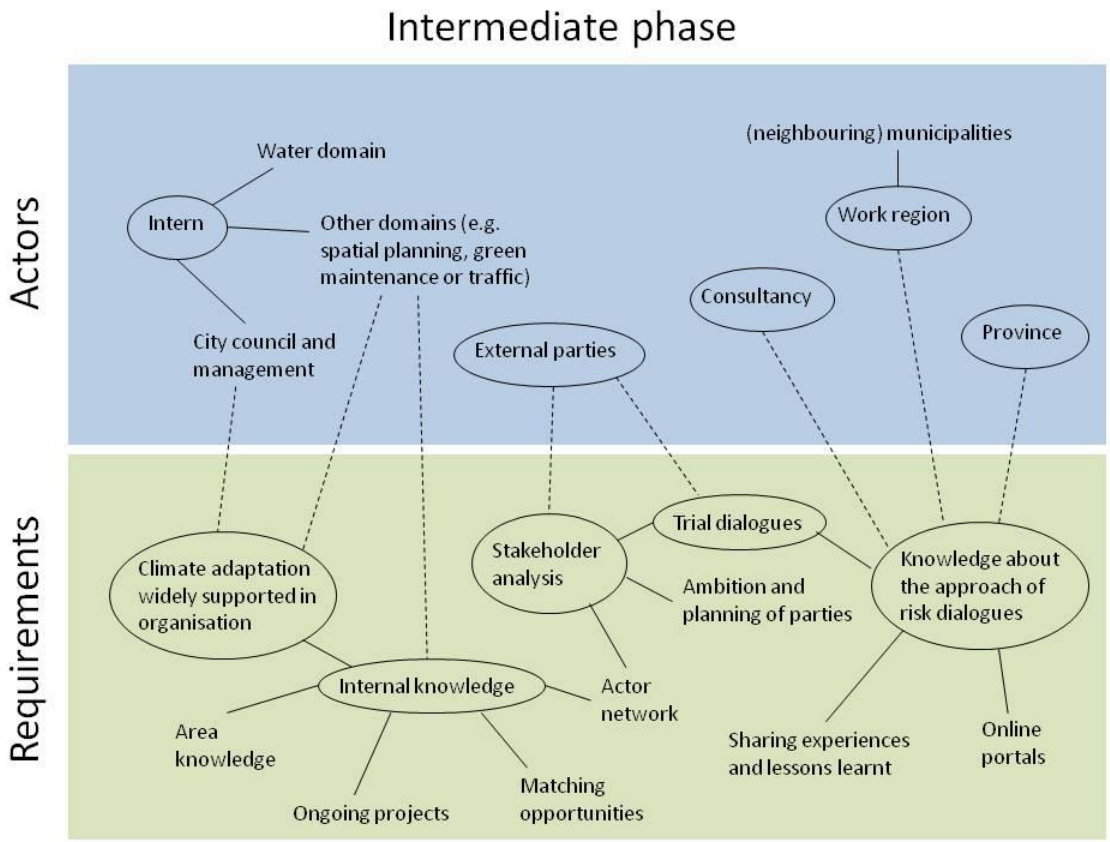

Figure 9. Visualisation intermediate phase

4.4 Analysis intermediate phase

4.4.1 Collaboration drivers in intermediate phase

Three different collaboration drivers are identified in this phase. The first one is the uncertainty that exists around the topic of climate adaptation, specifically the lack of clarity of how to organise the risk dialogues. Resulting in that municipalities are seeking each other out, especially in this intermediate phase. Sharing experiences, learning points and inspiration proves to be indispensable, since it is a relatively new process meaning that everyone is searching for the right strategy and approach. Municipalities all have different speeds in this search process; and certain municipalities, unavoidably, walk ahead. On the one hand, this difference means that there is a lot of mutual comparison, and a certain social pressure is experienced by some of the municipalities. On the other hand, this difference in speed and in focal points ensures that a lot can be learned from each other and new insights can occur; i.e. complementary knowledge arises. A second driver is adaptation motivation, which is linked with the internal dialogue (as described in par. 4.3.1), which is conducted to help increase motivation within the municipality, with varying reactions. Ranging from the discussion: "*what if we do not anything about it*" (interview, Lennard Stigter, February 2020), to increased awareness: "*oh, we have to deal with it too*" (interview, Ralph Maes, March 2020).

A last identified driver in this phase is the interdependence that exists within a municipality, between the different domains. A necessary coordination with other trajectories and transitions is necessary. This manifests itself for example in a 'battle for m²': "*It are contradictory tasks. If, on the one hand, there is something done about heat stress with trees. And on the other hand, there is a wish to install district heating, to work on the energy transition. This is resulting in an almost too full underground, leaving little space for something else*" (interview, Laura Meuleman, March 2020). This is an example of input or resource interdependence, showing a need to cooperate and coordinate, and not every sector working from its own 'pillar'. Also in the process, it can be decided to work together with other trajectories; i.e. process interdependence. For example, when the stress test forms input for drawing up an 'omgevingsvisie' or energy strategy. Another example is the REKS, a Dutch abbreviation for regional energy and climate strategy, in Hart van Brabant. In this region, it was decided to add the 'K' of climate to the regional energy strategy (RES). One of the reasons to do so, next to the coordination, was that an inventory has been made of which stakeholders should be involved. This showed that there is a lot of overlap between the stakeholders for the energy transition and for climate adaptation. Other reasons are using the stress test as input for the REKS, combining the two stories of climate and energy into one comprehensive one, and it helps in connecting linking opportunities. "*I think it has added value for us in the region that we work together on this matter. And what certainly helps us is that we have brought climate adaptation under the REKS, with a administrative mandate*" (interview, Petra Mackowiak, March 2020).

4.4.2 Collaboration dynamics in intermediate phase

This intermediate phase is characterised as both an internal and an external process. The internal aspect expresses itself mainly in the internal dialogues that are conducted within the municipalities. With these dialogues, municipal colleagues are included in the topic of climate adaptation. However it is stated that it takes time to accomplish mutual understanding and commitment to the process, on the level of the organisation as well as on the level of the board; "*it actually is a matter of 'planting seeds'*" (interview, Petra Mackowiak, March 2020). As described in paragraph 4.3.1, such an internal dialogue can be, for example, a workshop or lunch lecture. However, a more informal form is

also conceivable, meaning colleagues who meet spontaneously in the municipal building and have a chat; and in this way exchanging information and informing each other. In other words, a 'coffee corner dialogue', which sometimes proves easier in a small municipality, because colleagues here meet each other earlier, and internal lines are generally shorter. "*Helmond is a small municipality, so you are much closer together, and maybe having such a dialogue every day*" (interview, Suzanne Mesman- Snelderwaard, February 2020).

These internal dialogues, both formal and informal, work in two directions. It is not just about informing, such as sharing the stress test, but also about retrieving information. Substantive knowledge, but also information about which projects are already running within the municipality. In order to seek linking opportunities, such as greening a vulnerable neighbourhood, so that liveability problems can be tackled at the same time. Or connect to action programs for business parks for example. In other words, it is stimulating to know where the energy is, to close internal deals, and to connect with what is already there. In addition, this appears to be important to make use of the network that exists with external parties. These existing relationships are not only useful to work efficiently and to get a better grip on the practice, but also to counter the risk of over-questioning external parties. After all, a municipality often has to deal with the same parties for different domains, and wants to talk to parties about a variety of topics, not only climate adaptation. "*There are already so many lines and initiatives, and the trick is not to build a single new line, unless you are sure that that line does not yet exist*" (interview, Bas Hoefeijzers, February 2020).

Besides those internal dynamics, something can also be said about the external process. As described in paragraph 4.3.1, an important activity in this intermediate phase is to prepare for the dialogues, and therefore identify all relevant stakeholders, i.e. making a stakeholder analysis. Besides identifying conversation parties, such as an analysis also contains discovering what they are doing, i.e. their plans and ambitions. For example, plans about when relocations will take place at housing associations or what sort of business climate entrepreneurs want to create. It is about seeking 'energy' and in that way building shared motivation. Hereby it is seen as stimulating to have frequent contact, have one-to-one conversations and to actively approach parties, e.g. calling instead of e-mailing. So, investing in a long-term relationship in which parties know and trust each other. However, a hindering factor in starting such a relationship, is that it is sometimes difficult to discover which person from a certain organisation is needed. "*Just think of who you should talk to at BrabantWonen as housing association for example. It takes a while before the conversation partners are in the picture; the 'names and numbers'"* (interview, Arnold Wielinga, January 2020).

A last dynamic in this phase has to do with the capacity for joint action, and certain resources in particular. Firstly human capital; a high workload is experienced, and a capacity shortage appears to be the daily reality for many municipalities. *"There is a high need for 'extra hands'"* (interview, Tim Verhagen, January 2020). In addition to sufficient manpower, it is also important to have people with the right skills, such as translating technical information or being able to make connections with other challenges (see also par. 4.1.3). Another often mentioned resource is information; and the need for the emergence of structures in which this information can easily be shared. A stimulating factor in this regard is when there is an obligation to share; as happened with the provincial subsidy for stress tests, where it was a condition to make the product digitally available after completion. And a last aspect of the capacity for joint action is leadership. A good leader can bring parties together and link them. It is striking that this role is mainly fulfilled by the 'work region trekkers'.

"*Because I am the "trekker" in the region, people expect something from me. To pass on the information I obtain in national and regional consultations, to link municipalities, or to stimulate action*" (interview, Petra Mackowiak, February 2020).

4.4.3 Collective learning phase: discovery

It appears that municipalities have a strong need for guidance and a pragmatic step-by-step plan. Stimulating factors in this regard are therefore for example the requirements of the provincial subsidy that offer guidance, or the 'risk dialogue roadmap' which is offered from the DPRA. Municipalities are looking for concrete answers to questions they encounter in the process, but on the one hand this is sometimes complicated by a missing overview of what is already known, or where certain information can be found. On the other hand, sometimes rather an "*overkill of information is experienced*" (interview, Eric Hendrickx, January 2020). Often, a consultancy helps in overcoming these difficulties. However, this can result in "*becoming dependent on a consultancy, especially as a small municipality*" (interview, Laura Meuleman, March 2020), and this is sometimes "*experienced by municipalities as too guiding or controlling*" (interview, Eric Hendrickx, January 2020). Accordingly, it is experienced as stimulating when mainly 'own people' contribute knowledge and work on the task. In this way, the knowledge and experience is more embedded in the organisation. This is also related to the hindering factor of many internal changes (interview, Nicolette Peters, January 2020).

Another aspect that stands out is the great willingness to share experiences, lessons learned and self-developed products with each other. Often distributed through the work region trekker or Province who have 'antennae' in different places and are in a position to link parties; i.e. they act as 'vehicles of dissemination'. For example in work region Waterkring West, where a regional climate team has been established with the DPRA coordinators; the 'linking pins' within the organisations (interview, Albert Scheerhoorn, February 2020). This great willingness to share has to do with, among other things, the feeling that everyone has the same goal in mind. In addition, it is considered important that this giving of information is two-sided. "*I can fill my whole week with having coffee with someone else. But it also has to do with bringing and receiving*" (interview, Bas Hoefeijzers, February 2020). A hindering aspect is therefore also the delusion of the day that dominates, and the pressure on agendas. As a result, sharing knowledge and helping others has not the first priority. A stimulating aspect is however when information is shared between comparable municipalities; e.g. in size, or whether it is a city or a rural municipality, or whether it has a green college or not. "*It is noticeable that more comparable municipalities are more likely to look at each other*" (interview, Ralph Maes, March 2020).

4.4.4 Collective learning phase: definition

This phase is about building shared meaning, which turns out to be important to reach internally, before 'going outside' with the dialogues. "*Then you are internally prepared as an organisation the moment you finished the stress test, and you want to start a conversation with the neighbourhood or the industrial area. Then it is useful that people are prepared internally at both the level of the organisation as the level of the board*" (interview, Peter van der Haar, March 2020). However, this takes time and can be difficult (see also par. 4.4.2). A related condition is to develop aligned expectations of the process. An example where this sometimes goes wrong, is by conducting a regional stress test. The risk here is that some, often smaller, municipalities, think that this is enough

(interview, Arnold Wielinga, January 2020). But this regional process is specifically about cross-border issues and is not sufficient for completing the stress test phase.

Besides developing aligned expectations of the steps to be taken, a shared knowledge level and shared knowledge interpretation are also important aspects in this phase. With the internal dialogues, the stress test results are presented, with the necessary explanation. This explanation is required because it is often not immediately clear what can be done with it; i.e. there is demand for a, spoken, manual (interview, Laura Meuleman, March 2020). Another factor is the difference in knowledge level among colleagues in an internal session (interview, Arnold Wielinga, January 2020). For example, people from the domain of spatial planning often do not have time to prepare for such a meeting; and as a result, the first part of such a session is spent on acquiring an equal knowledge base. A last related factor is the danger of the stress test maps and visualisations giving a distorted picture if they are read incorrectly. An example is a flood map where the sewerage is not part of the map, so it appears more 'blue' than it actually is (interview, Suzanne Mesman-Snelderwaard, February 2020). This also requires the necessary explanation.

4.5 Description risk dialogue phase

The last phase in the climate adaptation process of municipalities that is focused on in this research, is the 'risk dialogue phase'. This phase consists of multiple conversations, and the foundation is laid for the implementation agenda.

4.5.1 Target

From a municipal perspective the goals of the risk dialogues can be summarized in three points. The first goal is achieving more consciousness; i.e. that parties are aware of the existence of climate risks and know what possible measures are. In the first conversations, this creating of awareness is often the main goal. A second target of the risk dialogue is retrieving input. This retrieval consists of verifying or testing the stress test, i.e. is it recognised by the parties or is something missing? In this way, an increasing complete picture of the climate vulnerabilities is obtained. In addition, the dialogues can be used to make a joint prioritization. In other words, which risks are accepted and which are not, and which risks have the highest priority. In this way, an ambition is jointly determined, and a further interpretation is given to the stress test. A last and ultimate target is composing an implementation agenda, in which parties commit to climate adaptation, and in which the course is further determined.

4.5.2 Form and content

As said, the risk dialogue has a free form, so they can vary a lot, on several aspects. A first varying aspect is the level of scale, i.e. a dialogue on regional, municipality, neighbourhood or even on street level. In addition, a dialogue can be held in an integral or a sectoral manner. The latter meaning that a dialogue is for example entirely focused on agriculture. A related aspect is whether the participants of a dialogue are members of the 'same group' or not. On the one hand, a dialogue can be organised with only residents as participants, or only entrepreneurs for instance. On the other hand, a dialogue is also conceivable in which residents or entrepreneurs participate simultaneously with other parties such as societal organisations or farmers. All in all, risk dialogues come in different shapes and sizes. However, most municipalities end up with a mix of different ones, at which it is often a quest for the right order.

4.5.3 Engaged parties in risk dialogue phase

Figure 10 shows an overview of the parties that are involved in this risk dialogue phase; and as well as in the visualisations of paragraphs 4.1.3 and 4.3.2, it also shows needed resources and involved parties, and the relationships between those two aspects.

The risk dialogue phase can be characterised as mainly an extern process, because this phase is mainly about talking to different external parties, which concerns a wide range: among others, residents and entrepreneurs, professional parties such like housing corporations, ZLTO or GGD, or other public organisations such as neighbouring municipalities, the Province or water boards. It is stimulating to include incentives to make these parties willing to participate in a dialogue, as well as a clear reason (see also the following par. 4.6.1).

An important resource in this phase, and which in many cases appears to be lacking, is having and deploying the 'right' people with certain skills and competencies. Five competencies were mentioned most: translating (technical) challenges, dealing with conflicting interests, connecting different tasks, developing a story line and conducting the dialogues themselves, which requires a particular way of dealing with stakeholders. This last competence links also to the need of a moderator for the dialogues, who often comes from the municipality itself, but in some cases also from a consultancy.

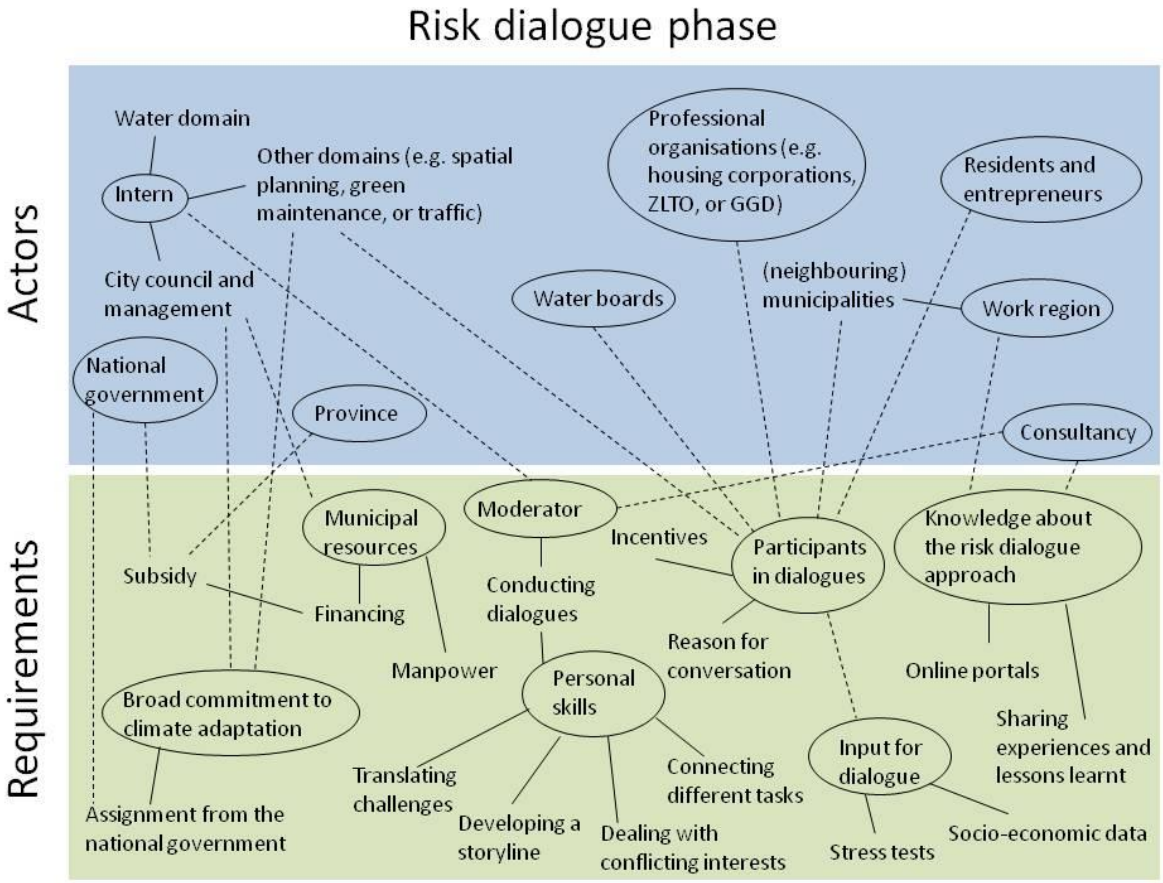

Figure 10. Visualisation risk dialogue phase

4.6 Analysis risk dialogue phase

4.6.1 Collaboration drivers in risk dialogue phase

A first identified collaboration driver in this phase has to do with the incentives parties need, to be encouraged to participate in such a dialogue. Namely, it is seen as stimulating if there is a clear motive or reason for a conversation; "*simply saying: 'shall we talk about climate adaptation?' that is quite difficult*" (interview, Nicolette Peters, January 2020). Four incentives will be elaborated upon. Firstly, having a dialogue in response to a calamity, which is an illustration of a task-oriented approach. An example is when a street runs under water, then afterwards a conversation is held with the residents (interview, Bas Hoefeijzers, February 2020). As a second incentive can be mentioned making the added value of participation transparent for parties; i.e. the positive consequential incentive. Such as expressing the potential damage in monetary terms that they can prevent. A third one is to combine this risk dialogue about climate adaptation with other topics such as the energy transition. Or as an aspect of an environmental dialogue, since these have overlapping aspects. In this way, climate adaptation forms a more concrete part of an environmental vision; as a precondition and as inspiration (interview, Peter van der Haar, March 2020). Another benefit is that by combining these two different dialogues, the risk of overburdening people is reduced (interview, Laura Meuleman, March 2020). And a last related incentive is aligning with the planning and ambitions of the external parties (see also par. 4.4.2). In other words, searching for a shared goal and trying to find the connection (interview, Arnold Wielinga, January 2020). Examples are making a combination with relocations that take place at housing associations (interview, Nicolette Peters, January 2020) or linking it to the business climate or job satisfaction of employees, which can be a motivation for entrepreneurs (interview, Bas Hoefeijzers, February 2020). These are examples of an 'energy-oriented approach'.

Another collaboration driver has to do with adaptation motivation. Whereby it appears to be important to increase the visibility and perceptibility of the problem, which also increases the sense of urgency. Weather extremes and a calamity are a stimulating factor in this regard. As turned out in Boxmeer for example, where since the extreme rainfall in 2016, a lot of attention has been paid to flooding; "*we really have had the stress test in practice*" (interview, Nicolette Peters, January 2020). So, contrarily, it can be seen as a hindering factor when a municipality has had less trouble in the past, since the climate issue is then less visible and less on top of mind. "*Then people quickly think that it is all right*" (interview, Bas Hofhuis, April 2020). If, fortunately, no calamity takes place, other ways must be found to increate the perceptibility. For example, the tangibility of the problem in region Land van Cuijk is increased by the use of so-called 'climate labels'. Hereby aspects of climate adaptation are given a label, comparable to an energy label for a refrigerator. For example, a certain neighbourhood scores a B label for flooding and a C label for heat stress. So, the technical information is translated into these labels that appeal more to people's imagination (interview, Nicolette Peters, January 2020). Other examples to increase the perceptibility are the financial calculation of climate effects, or using visualisations. Naturally, the stress test maps are an example of such visualisations; these provide a visualisation of the risks, which increases urgency. Another example is a photo of a climate-adaptive garden. Or in Gilze en Rijen a 'praatplaat' has been made of the stress test in which the technical information has been translated in a insightful and visual manner (interview, Laura Meuleman, March 2020).

4.6.2 Collaboration dynamics in risk dialogue phase

Three collaboration dynamics are identified in this phase. The first one has to do with the two-sided flow of information in the dialogue. It is considered problematic when a dialogue is only about informing parties, and not about listening. Namely, the collection of input is one of the important goals of a risk dialogue (see also par. 4.5.1). "*A dialogue works in two directions. If it is just a sort of hearing of what the government is up to, then it is not a dialogue. So there must also be room for people to bring things in*" (interview, Twan Tiebosch, January 2020). Hereby is reciprocity seen as stimulating; i.e. seeing and treating it as a joint task and looking for mutual gains. This also fits well the new Omgevingswet and a different way of working and having conversations (interview, Arnold Wielinga, January 2020). However, it can be a challenge to get out of the old way of working. And it can be frustrating for parties when nothing happens with their input.

A second collaboration dynamic is the importance of framing and connecting to the experience world or perceptions of different parties. I.e. various 'problem frames' are used and the personal interests of a certain party are steered towards. An example is politically framing climate adaptation as an action to increase the quality of life in a vulnerable neighbourhood (interview, Bas Hoefeijzers, February 2020). Another example is linking climate adaptation to increasing the work environment of a business park; which is an attractive and stimulating frame for entrepreneurs. Or framing climate adaptation as important for the future generation; which is for example an appealing frame for schools. And a final example is addressing adaptation more broadly with sustainability. "*The energy transition or sustainability are more 'on top of mind' among people than climate adaptation*" (interview, Wendalin Kolkman, March 2020).

And a last dynamic is the role that language and terminology play; also related to the different frames as described above. Namely, the terms that can be chosen best differs per target group; after all, everyone speaks a 'different language' (interview, Eric Hendrickx, January 2020). In general it can be said that it is hindering to use jargon, for example when communicating with residents. In such a case, it is experienced better to choose a term such as 'anticipating to extreme weather' instead of climate adaptation. In addition, there is a lot of resistance to the term 'risk dialogue' (interview, Peter van der Haar, March 2020; interview, Petra Mackowiak, February 2020), therefore it is sometimes called 'participation', 'dialogue' or simply a 'conversation'. But in most cases it is called 'climate dialogue', to simplify the term, and also to indicate that it is not only about talking about risks, but also about how the climate works and thus creating awareness.

4.6.3 Collective learning phase: definition

What emerges in this risk dialogue process as an issue related to 'definition' is particularly the aligned expectation of the process, and thereby the importance of expectations management. The dialogues are not finished with one conversation; it is likely that a certain party is spoken with several times. I.e. it has a cyclical character. "*One dialogue is not a dialogue; you probably have to go back again*" (interview, Lennard Stigter, February 2020). This is an expectation that must be shared by both sides, but it turns out that this is not always the case. As well as different expectations about the outcome; e.g. abstract versus concrete (interview, Laura Meuleman, March 2020). There are also sometimes different expectations about the planning of the process, both internally as externally. "*Due to all sorts of circumstances it has become later and later, until it was finally the end of December. So, people got a bit impatient here in the organisation*" (interview, Suzanne Mesman-Snelderwaard, February 2020). An example of differing expectations externally has to do with the

planning for risk dialogues from the DPRA, of which, often small, municipalities consider it an unrealistic expectation. A related aspect in this phase has to do with setting the right example. For example, the paved square in front of the city hall in Heesch, gives not a climate adaptive example for residents (interview, Tim Verhagen, January 2020). Namely, it shows a certain contradiction with the climate adaptation story told with a risk dialogue. A contradiction that can be unfavourable for a shared interpretation of the task at hand.

4.6.4 Collective learning phase: deliberation and determination

About this phase is less to analyse, as this research has focused on the run-up to the risk dialogues. However, about this phase it can be indicated that in addition to a diversity of interactions (see previous paragraph), frequent contact is also considered very important. In addition, personal contact proves to be of essential value; i.e. regular face-to-face contact, as well as one-on-one conversations. This relates to the stimulating factor of the importance of a strong network. Some see it as building a 'climate adaptation community' where people know each other and know how to find each other; i.e. 'short lines'. This can be strengthened thus by regular contact or by excursions for example. "*It is about sparring together and looking each other in the eye. This topic is about uncertainty. But in addition to that, there is the certainty of the people around me, who I know in my network, and to whom I can go to from time to time*" (interview, Peter van der Haar, March 2020).

5. Conclusion

The conclusion focuses on the main question in this research: *How do municipalities in the Province of Noord-Brabant give substance to the process of climate stress test and risk dialogue and what are stimulating and hindering factors in making the step from stress test to risk dialogue from a collaborative governance learning perspective, and how can this be improved in the future?* To answer this question, the three different phases of the climate adaptation process are examined: the stress test phase (par. 5.1), the intermediate phase (par. 5.2) and the risk dialogue phase (par. 5.3). This is done on the basis of two components. First, a picture of the phase is drawn; i.e. the characteristics of the phase are described. Second, a translation is being made to hindering and stimulating factors; i.e. respectively absent or present collaboration drivers and dynamics.

5.1 Stress test from a collaborative learning perspective

Characteristics of this phase

In this phase, a stress test is produced. The phase is characterised by the fact that it is primarily an internal process that takes place within the municipalities, often with the involvement of an external consultancy and coordinated by the work region. The stress test comes in many shapes and sizes. Yet most of them look similar; as a combination of different maps with an explanation in text form. The knowledge need consists of concrete climate information for developing the stress test. The characteristic of this information is that it is often not 'social' in nature, e.g. information like the financial calculation of risks or socio-economic information such as where vulnerable groups live, is used less. By contrast, it can mainly be described as technical; i.e. consisting of calculation models or GIS maps.

The main objective of the stress test is to gain insight into where climate vulnerabilities exist, on the four climate themes; i.e. water nuisance, heat, drought and flooding. All kinds of information is brought together; which can be seen as the added value of this stress test. In addition, the stress test is also seen as a suitable tool for putting the issue on the agenda, both at the level of the organisation as of the board. It also serves as a basis for discussion with various parties. Hereby, it is emphasised that a stress test does not have to be complete for this purpose. All in all, the overall perception of this phase is that making the stress test is a relatively 'easy' and pragmatic step.

Hindering and stimulating factors

Three hindering factors in this stress test phase are identified; i.e. absent collaboration drivers or collaboration dynamics, such as elements of capacity for joint action. First, it is striking at this phase that the water theme often predominates; heat and drought issues are still underexposed. This co-depends on the expertise of the person who has been given the task (often a 'water person'), the knowledge advantage that exists in this area, or the link with the municipal sewage plan (GRP). A second factor is that the stress test strongly depends on the available information, ambition and human resources; which is often perceived by municipalities to be inadequate. As a result, (smaller) municipalities often hire a consultancy. However, in terms of ambition, this presence is sometimes perceived as controlling. Another consequence is that the stress tests often look the same. A last hindering factor in this phase is that the stress test is often primarily readable for professionals. For example, the danger of the stress test visualisations giving a distorted picture if they are read incorrectly.

Two stimulating factors are identified in this stage, namely making a 'stress test light' as a first step. This is experienced as stimulating, because such a document is enough to start a conversation (internally) and to increase urgency. In addition, municipalities see it as a first exercise, and to learn by doing in this relatively new process. The second factor are the incentives for municipalities to start the whole climate adaptation process. Mainly these are the obligation from the national government and the possibility for subsidy from the Province which can be seen as a positive consequential incentive. On the other side, in some municipalities the negative consequential incentive of situational crises, such as extreme drought or a flooding, serves as a stronger driver.

5.2 Intermediate phase from a collaborative learning perspective

Characteristics of this phase

In this intermediate phase, following the stress test phase, the basis is laid for the dialogue phase; and therefore also for the implementation programme. The majority of municipalities is currently in this phase. Several activities are carried out. Firstly, conducting an internal dialogue. With such a dialogue, climate adaptation can be more anchored and covered within the organisation. It is considered important to first have things in order internally, e.g. developing one common story, before going public. Secondly, sometimes a stakeholder analysis is carried out to identify dialogue participants; which is often more difficult than it seems. This analysis has a link to building and maintaining relationships with external partners, which is also seen as an important aspect in this phase. The first contact can be made, and exploratory and trial dialogues can be held. Another activity is of course the preparation of the risk dialogues. However, since these are free of form, many municipalities are searching for the exact content and strategy. All in all, it can be concluded that the combination of internal dialogues and stakeholder analysis and contact with external parties, makes this phase both an internal and external process.

Hindering and stimulating factors

Four hindering factors in this intermediate phase are identified; i.e. absent collaboration drivers or collaboration dynamics, that hinder the facilitating of the step from stress test to risk dialogue. First, the biggest factor, is the lack of internal consensus, commitment and ownership. This issue is particularly evident at this stage, after the pragmatic and relatively easy step of making a stress test, and before the complex social process of conducting dialogues. Climate adaptation often ends up at the water domain in a municipality; which can be seen as the 'usual suspect'. It is considered difficult to involve other domains, such as green maintenance or traffic. However, climate adaptation covers more than water alone. It triggers discussions on where climate adaptation belongs, and the result is no organisation-wide ownership of the issue. This makes the necessary coordination between domains difficult. Second, a related factor, is the fact that the work regions in which municipalities collaborate on climate adaptation, are organised on the basis of an existing cooperation form, namely the BAW regions. These regions were initially founded to tackle water issues more efficiently. However, as a consequence, the people involved are mostly 'water people'. It raises discussions whether the right people are at the table. Furthermore, as a consequence resulting from their expertise, climate adaptation is more likely to be seen and tackled as a water issue; i.e. an one-sided problem frame. Additionally, enthusiasm for climate adaptation, time to be engaged in it, and the 'right moment' seem often to be missing within the organisation. The absence of these elements can be seen as a third hindering factor. This can be due various reasons; e.g. the climate adaptation tasks

are not concrete enough, or other concerns are given priority. There are often other issues that request attention, such as other transitions like the energy transition, a municipal re-division, or the corona crisis. A fourth and last hindering factor is the fact that the risk dialogue is free of form, which makes it a search for interpretation. Municipalities are looking for concrete answers to questions they encounter in this process, but on the one hand this is sometimes complicated by a missing overview of what is already known, or where certain information can be found. On the other hand, sometimes rather an overkill of information is experienced. In addition, the search process and execution process are intertwined, which makes the situation even more complex. On top of that, the tight time schedule from the national government and Province creates resistance among the, often smaller, municipalities. Because they feel (social) pressure and have the feeling that they are lagging behind.

Five stimulating factors are identified; i.e. present collaboration drivers or dynamics, that facilitate making the step from stress test to risk dialogue. The first factor has to do with 'short lines' between colleagues and domains, which is more common in a smaller municipality. This is advantageous because in this way, better use can be made of the information available; i.e. linking opportunities can be found. Besides, there is the importance of the 'coffee corner dialogue'; i.e. an informal dialogue on a daily basis, in which among other thing the results of the stress test can be incorporated into the organisation in an accessible way. In this way, adaptation motivation can be enlarged. A second factor is conducting a stakeholder analysis, which can be used to identify parties, and more importantly, their ambitions. It is experienced stimulating to delve into the external organisations, to be able to connect to their planning and energy. Besides, having frequent contact, having one-to-one conversations and actively approaching the parties is also experienced helpful. So, investing in a long-term relationship in which parties know and trust each other. Thirdly, sharing experiences, learning points and inspiration between municipalities proves to be an indispensable aspect of the climate adaptation process. Because it is a relatively new process that requires a search for the right strategy and approach. Municipalities all move at different speeds in this process, with some taking the lead. This causes a certain social pressure and a lot of comparison between them. However, this difference in speeds ensure that there is a lot to learn from each other. i.e. complementary knowledge, which can be brought together digitally, or with the help of the province or work region trekkers, i.e. 'vehicles of dissemination'. Certain aspects increase the willingness to share this knowledge: the feeling that everyone is working on the same task; the obligation to share results as part of a subsidy scheme; when there is a two-sided flow of information; and when knowledge is shared between similar municipalities, e.g. in size or whether there is a green board. Another factor is that use has been made of an existing cooperation structure (i.e. the BAW regions). This is hindering because of the discussions whether the right people are involved. However, at the same time it is stimulating, because it has ensured that people already know each other and therefore 'short lines' exist and trust has been built over time. A last stimulating factor is when a large (core)municipality takes naturally the lead in the region, and brings other municipalities along.

5.3 Risk dialogue from a collaborative learning perspective

Characteristics of this phase

This final dialogue phase is an external process in which dialogues are held with various parties. These include professional parties such as housing associations, ZLTO or GDD, residents, businesses and other governments such as neighbouring municipalities or the Province. The risk dialogues can serve several purposes, such as getting parties to commit to climate adaptation, or collecting input. A risk dialogue is therefore about bringing as well as retrieving. However, creating awareness is generally seen as the important first goal; i.e. there is a certain layering in the objectives.

Hindering and stimulating factors

Four hindering factors in this risk dialogue phase are identified. The first one has to do with wrong expectation management, which seems to occur frequently. Especially when it comes to the expectation that it is done with only one dialogue. However, risk dialogues are not finished with one conversation; probably a certain party will be spoken to several times. In addition, the risk dialogues are a collection of dialogues, with different stakeholders, at different times, on different topics, with different objectives and at different scales. These expectations must be shared by both sides. Another expectation where it sometimes goes wrong is when municipalities see the regional process of stress test and/or risk dialogue as sufficient. Or different expectations about the planning of the process, both internally as externally. An example of differing expectations externally has to do with the planning for risk dialogues from the DPRA, of which, often small, municipalities consider it an unrealistic expectation. A second hindering factor has to do with linguistics. For example, the use of jargon when communicating with residents can be a barrier. In addition, there is a lot of resistance to the term 'risk dialogue'; therefore it is sometimes called 'participation', 'dialogue' or simply a 'conversation'. But in most cases it is called 'climate dialogue', to simplify the term, and also to indicate that it is not only about talking about risks, but also about how the climate works and thus creating awareness. However it can be hindering that in this way, the 'risk topic' is reduced. Thirdly, because a municipality has to deal with the same parties in many projects, there is a risk of overburdening. Making use of existing consultative structures is hereby helpful. A last hindering factor are the personal competences needed for conducting the dialogues, but which are often not present among the people involved; as these are often the more technically skilled 'water people' in a municipality. Competences that can be considered here, are: translating technical challenges, dealing with conflicting interests, connecting different tasks, developing a story line and conducting the dialogues themselves, which requires a particular way of dealing with stakeholders.

Lastly, three stimulating factors are identified in this phase; i.e. present collaboration drivers or dynamics. First, is the facilitating of a two-sided flow of information; i.e. using the input of external parties. This input can be the joint setting of priorities, the joint discussion of the acceptance of risks and the decision on what action to take. But also the search for win-win situations and opportunities, and recognising, testing and improving the results of the stress test can be seen as input. It is about using the (practical) experience of various parties, including 'citizen knowledge'. Through this joint process a shared meaning can be formed. Second, it is seen as stimulating if there is a clear motive or reason for a conversation; i.e. providing an incentive for parties to participate. Examples are having a dialogue in response to a calamity, making the added value of participation transparent, combining the risk dialogue with other topics such as the energy transition, or aligning with the planning and

ambitions of the external parties. A last stimulating factor has to do with the importance of framing and connecting to the perception of different parties. Examples included framing climate adaptation as something to improve the liveability of a neighbourhood or business park, or as something that is important for the future generation; i.e. various problem frames are used and the personal interests of a certain party are steered towards. In addition, it appears to be stimulating to increase the visibility and tangibility of the problem. A calamity itself helps in that case, but also strategies like the financial calculation of climate adaptation measures or the use of visualisations. In this way, the tangibility of the problem is increased, as is adaptation motivation and the sense of urgency.

6. Discussion

This final chapter is the discussion, which is composed of several elements. First, the broader meaning of the research findings will be discussed, as well as the theoretical implications of those findings (par. 6.1). Second, the methodological limitations of the research are explained (par. 6.2). Lastly, recommendations for follow-up research and recommendations for practice are presented (par. 6.3).

6.1 Theoretical implications

In this paragraph, the broader meaning of the research findings will be discussed. The potential of the collaborative governance theory and collective learning phases applied to the process steps of stress test and risk dialogue has been found to be highly relevant. With the theoretical framework, it was possible to broadly explore how the prelude to risk dialogues progresses. I.e. the framework of Emerson et al. (2012), further complemented with elements from e.g. Grecksch (2013), Gupta et al. (2010), Gerlak and Heikkila (2011), and Tsai and Lee (2006), which resulted in an extensive model.

Although it was possible to use this framework to explore the process of stress test and risk dialogue, there is a difference in the usefulness of the two used theoretical dimensions. At the start of this research, the expectation was that the practice would already be further along; i.e. that municipalities would be carrying out risk dialogues. These dialogues were the reason for choosing the collaborative governance theory, given the focus on aspects such as building shared motivation, inclusiveness of dialogue participants, or expectation management. I.e. how to take joint action with multiple parties using dialogues. However, practice turned out to be less far than expected, which made the research focus shift towards the stress test and the prelude to the risk dialogue. For analysing these processes, collaborative governance proved less usable. By contrast, the theory of collective learning proved a suitable theoretical perspective, since it provides insights into e.g. different data sources, learning by doing, and definition activities. In other words, conditions for a situation of collaborative governance are being formed in these collective learning processes. I.e. the collective learning in stress test and intermediate phase precedes a situation of actual collaborative governance in the dialogues.

That being said, some striking insights in the collaboration and learning mechanisms of the climate adaptation process in municipalities can be described. For example, by viewing the three stages (stress test, intermediate and risk dialogue) in light of this framework, it becomes evident that in every stage another element plays a prominent role. In the stress test phase these are the collaboration drivers (lack of clarity how to solve the problem; missing adaptation belief and motivation), principled engagement (not multi-sector; and tackled as a water issue) and shared motivation (lacking commitment to the process). As a result, this internal process is not going well; making it more likely that the process in the upcoming stages is also blocked. In the intermediate phase, the definition part appears to be the main challenge; to build shared meaning and obtain a shared knowledge level. Internally as well as externally. Furthermore, in the risk dialogue phase, collaboration drivers, such as positive consequential incentives, are strongly highlighted in relation to external parties. All in all, this research has shown that it is difficult for municipalities to make the step from stress test to risk dialogue. I.e. the process steps as prescribed by the DPRA, in contrast to the expectations of some, do not necessarily lead naturally to a climate-adaptive municipality.

Finally, four improvements and additions to the conceptual model can be mentioned. First, the stress test and risk dialogue turn out to be less separate processes than expected. E.g. the stress test is made in a certain way; i.e. often technical, with a dominating water aspect, which makes it harder in the following phases to get certain parties committed. Another difference from visualised in the conceptual model, is the distribution of the collective learning phases over the DPRA phases. Namely, 'discovery' also turned out to be significant in the intermediate phase, and 'definition' also turned out to be significant in the risk dialogues. Third, the results revealed that there exists a strong emphasis on the linguistic element. This is i.e. reflected in the apparent importance of framing, use of accessible language and making a translation of the often technical stress test, to be able to use it in the rest of the process. Lastly, a contribution from the empirical results to the conceptual framework can be made by the potential addition of the importance of intermediate outcomes. So, not only the ultimate outcome of action (Emerson et al., 2012), a learning product (Gerlak & Heikkila, 2011), or an implementation agenda (Kennisportaal Ruimtelijke Adaptatie, n.d.b), is important. But also the 'small wins' are crucial. In the municipal climate adaptation process, this can take different forms. Such as in the practice of joint-fact finding, through this joint process shared meaning can be formed. Other examples of intermediate outcomes include: a stress test 'light', achieving a diversity in problem frames, or informal internal dialogues where other domains get to hear the 'climate adaptation story'. These intermediate outcomes help in building momentum and encourage a cycle of trust building and shared motivation.

6.2 Methodological limitations

In this paragraph, there will be reflected on the limitations in this research, on four different aspects. The first aspect has to do with the external validity; i.e. the generalisability of the conclusions. To begin, the generalisability of the research is limited as most of the results have been acquired using in-depth interviews. The benefit of such interviews is that it helps to uncover complex processes, but at the same time the generalisability of the outcome is limited. Consequently, one needs to be careful in stating that the findings are applicable to all municipalities in the Netherlands. Furthermore, in general, the case study design results in issues related to generalisability for the substantive research results. However, this issue is tried to overcome by the choice of the units of analysis; there is a great variety in this (see also par. 3.1.2). In addition, it can be assumed that the municipal climate adaptation process is reasonable comparable in different municipalities, since the DPRA steps of stress test and risk dialogue have been prescribed nationwide. Furthermore, the theoretical results, pointing at the importance of the intermediate phase, can in fact be applied to a broader scope. The case study serves as an instrument to demonstrate its relevance.

A second aspect relates to the internal validity, which could be ensured because the operationalisation of most theoretical concepts was taken relatively directly from the relevant theories. However, this was not possible for all concepts, so in some cases interpretation from the researcher was required. A third aspect relates to the reliability of this research. This is positively influenced by the strategy of triangulation. Several methods have been combined, including an expert interview, document analysis, semi-structured interviews, and a mind mapping method. The semi-structured interviews were conducted in two rounds: the first round with the 'trekkers' of the work regions, and the second with individual municipalities. This approach proved useful; on the basis of the first round, the respondents in the second round were determined, and results could be deepened. A limitation here is that two different perspectives had to be discussed during the

interviews with the trekkers: municipalities in the work region, and the process in the municipality itself. This was sometimes confusing for the respondent, or there was not enough time to discuss both in detail. Another remark is that unfortunately, due to covid, the final interviews could not be conducted face-to-face, which made them less easy to conduct, or less confidential.

Lastly, some remarks about the quality of research. This is not only about the criteria of validity and reliability, but also about the usability of results; which is twofold. On the one hand, the research results, translated into recommendations for practice (see par. 6.3.1), offer guidance for the Province and for municipalities. This fulfils the practical purpose of this research. On the other hand, the insights into relevant hindering and stimulating factors also provide a framework for self-reflection for the municipalities that participated in this research; they can reflect on their own processes on the basis of the findings. In addition, these findings also offer lessons for other municipalities. In order to facilitate this broader usability, efforts have been made to describe the research results as structured and clearly as possible, and to link them to the working practice. Furthermore, a separate research report has been written for this purpose (see Appendix VI); which is an example of communication of scientific findings to practice.

6.3 Recommendations

In this paragraph, recommendations will be made in two areas: recommendations for follow-up research (par. 6.3.1) and recommendations for practice (par. 6.3.2).

6.3.1 Recommendations for follow-up research

First of all, future research might focus on collaborative governance, specifically in the risk dialogues itself. Since this study had as topic the prelude to these dialogues, in which conditions for a situation of collaborative governance are being formed; i.e. the collective learning in stress test and intermediate phase precedes a situation of actual collaborative governance in the dialogues. But the actual situation of collaborative governance in the dialogues is still underexposed. This calls for research on topics like building shared motivation, inclusiveness of dialogue participants, or integrated consensus building mechanisms. Possibly by viewing the risk dialogue process from multiple perspectives, in addition to those of the municipality (as in this research). For example, from the perspective of different dialogue participants, such as residents or entrepreneurs.

Furthermore, applying different research designs could potentially contribute to the body of evidence. For example, studies could be performed in a multiple, comparative case-study setting to examine the process of stress test and risk dialogues for two or more cases. It is interesting to discover whether the results of this research will also be discovered in municipalities in other provinces (the hypothesis is that it does to a certain extent, see previous paragraph). Another possible research option is to examine the role of the work regions in particular, by comparing several of these collaborative arrangements.

A last recommendation for follow-up research relates to the fact that in this study a relatively wide range of theoretical concepts have been used; since the approach was to broadly explore this new process of stress test and risk dialogue. As a result, many relevant factors have been identified. However, many of these can be deepened. It calls for a further analysis of factors such as internal consensus, expectations management, or personal competences.

6.3.2 Recommendations for practice

All in all, it can be concluded that there is a lot involved for municipalities, and that it is not easy to make the step from stress test to risk dialogue. It is experienced as stimulating to focus from the beginning onwards on what has to be delivered: an implementation agenda. And to organise the steps leading up to this in such a way that this can be achieved. E.g. by producing a stress test that is suitable for using it in the dialogues. Climate adaptation is a relatively new subject, and a completely new process. This makes it a quest for many municipalities, and determining these steps can be difficult. But practice also shows that it helps to just get started and to recognise that the plan of approach is not cast in stone, but is subject to adjustment along the way.

The intermediate phase is due to the corona crisis prolonged, and therefore it offers room for municipalities to arrange matters internally, to seek and maintain contact with external parties and to devise a dialogue strategy. And also to exchange experiences and strengthen the contact between municipalities and work regions even more. Another recommendation for municipalities is to share the stress test widely internally, which can increase awareness and ownership within the organisation. In addition, it was found that by explaining the stress test extensively and showing what can be done with it, the risk of the stress test 'ending up in a drawer' was reduced; i.e. seeing the stress test as a tool and not just as a obligation.

There are also some recommendations to make for parties like the Province of Noord-Brabant, to support municipalities as best as possible. As mentioned, municipalities are looking for concrete answers to questions, which in some cases is hampered by a lack of overview of what is going on and what is already known. The Province can help in several ways: by granting subsidies (which also provide for pressure and starting points), by participating in the dialogues, by facilitating a platform for knowledge sharing, and by thinking along. In other words, providing a structure for help that is small, local and concrete.

Finally, it is important to reduce the 'gap' between stress test and risk dialogue. At the moment, we speak about two separate processes, with very different characteristics. The stress test is very technical in nature and mainly suitable for professionals (with a background in water), while the risk dialogues are a social process. Another contrast is that the stress test is an internal process, which takes place within the municipalities, while the risk dialogue is eminently an external process. This 'gap' can be reduced by making the stress test more an inclusive or public process. There are several options for doing this: by making the stress test more inclusive (not just technical people from the water domain); by providing a more accessible language so that it is also understandable for non-professionals (e.g. a matching storyline that provides for action perspectives); by including more social information (such as socio-economic data like where vulnerable groups live); by also looking at opportunities that the changing climate may offer; or by making use of 'citizen science' whereby residents collect data in their environment about the consequences of climate change. An additional advantage is that in this way, residents get involved earlier in the process; increasing the chance that they will commit to climate adaptation. All in all, if the focus of the stress test remains on quantifying vulnerabilities and technical detail, there is a risk of a mismatch between stress test and practice.

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Appendix I. Extensive operationalisation tables

Collaborative governance – collaboration drivers			
Element	**Indicator**	**Description**	**Data***
Interdependence	Input/resource interdependence	Actors having unique access to different resources	M
	Process interdependence	When multiple processes, functions or actors rely on each other to accomplish tasks or to deliver a product	M
	Goal interdependence	Interdependent or cooperative goals	M
	Reward/feedback interdependence	Interconnectedness among actors in terms of how performance is rewarded	M
Uncertainty	Unclear how to solve the problem	Wicked problem	IA
Leadership	Presence of an identified leader	Mobilised leadership qualities	M
	Fulfilment leadership tasks	E.g. bringing parties together; formulating visions; or facilitate communication	M
Incentives	Negative consequential incentives	E.g. situational crises; resource needs; absence of action has negative impacts	IA
	Positive consequential incentives	E.g. new funding opportunity	IA
Adaptation belief	Objective capacity	What an actor could do indicated by the availability and access to resources	IA/IC
	Subjective capacity	Perception whether an actor believes his contribution is necessary	IA/IC
Adaptation motivation	Sense of urgency	Belief that something must be done	IA/IC

Table 1. Operationalisation collaborative governance – collaboration drivers

** I = interview (ABC= part); M= mindmap; D= document*

Collaborative governance – collaboration dynamics			
Element	**Indicator**	**Description**	**Data***
Principled engagement	Inclusion	No party affected by what is going on is excluded; also unusual suspects are involved	IC
	Multi-actor	Variety of actors	M
	Multi-level	Variety of political/administrative levels	M
	Multi-sector	Variety of sectors	M
	Diversity of problem frames	Issue is not framed one-sided	IC
	Two-sided flow of information	Actors have influence; not only informing	IC
Shared motivation	Mutual trust	Feeling that there can be relied upon each other	IC
	Mutual understanding	Ability to understand and respect sometimes deviant interests of others	IC
	Internal legitimacy	The confirmation that participants in are trustworthy and credible, with compatible and interdependent interests	IC
Capacity for joint action	Structural arrangements	E.g. decentralised network structure; cross-organisational linkages; presence of formal and informal rules and sanctions; non-committal participation	IA
	Fulfilment of different leadership tasks	E.g. bringing parties together; formulating visions; or facilitate communication	M/IA
	Available resources	E.g. funding; communication and information; technology; human capital; tools	M/IA

Table 2. Operationalisation collaborative governance – collaboration dynamics

** I = interview (ABC= part); M= mindmap; D= document*

Collective learning phases – discovery			
Element	**Indicator**	**Description**	**Data***
Information acquisition	Congenital learning	Drawing on knowledge available in the organisation; i.e. inherited knowledge	IA
	Experimental learning	'Learning by doing'; i.e. knowledge is acquired through direct experience	IA
	Vicarious learning	Learning by observing others and therefore acquiring 'second-hand experience'	IA
	Grafing	Increasing an organisation's store of knowledge by acquiring new members who possess new and additional knowledge	IA
	Searching and noticing	Searching refers to focused observing of the organization's internal or external environment. Noticing refers to the unintended acquisition of information	IA
Information availability	(open) access	Access to impartial, reliable, transparent and usual information	D
	No missing information	Meets the current demand for knowledge	IC
	Information mismatch	Difference between actual information and desired or expected information	IC
Information characteristics	Variety in content	E.g. technical information, or social information such as an stakeholder analysis or about process arrangements	D/IB
	Variety in form	E.g. reports and studies; debate and dialogue; maps and visuals; experiences	D/IB
Source of information	Variety in sources	E.g. internal and external; derived from different scale levels	IA/IB/IC
	Joint knowledge production	Combination expert and local/citizen knowledge	IC
Dissemination of information	Media richness	Diverse tools for information sharing, such as meetings, e-mail and phone calls, online portals, conferences, etc.	IA/IC
	Vehicle of dissemination	E.g. via leaders, external groups, advisory bodies, etc.	IA/IC
	Use of intermediaries	E.g. boundary organisations; consultants	M
	Broad-reaching networks	Actor's social connections that promote more extensive access to external sources of knowledge	M/IA
	Probability of information sharing	Effected by: willingness to share, sharing costs, workload, frequency of sharing in the past, or rewards	IA

Table 3. Operationalisation collective learning phases – discovery

** I = interview (ABC= part); M= mindmap; D= document*

Collective learning phases – definition			
Element	**Indicator**	**Description**	**Data***
Building shared meaning	Common terminology	Agreed on concepts	IC
	Common purpose	Articulated common objectives	IC
	Common expectations	Aligned expectations of the process and of results	IC
Shared knowledge level	Comprehensibility	E.g. using visualisations or avoidance of jargon	IB
	Open access	Accessible for everyone	IA
	Internalised knowledge	'Knowledge applicative ability'; or accomplishing higher levels of knowledge such as know-how and know-why	IC
Shared knowledge interpretation	Shared understanding of the information	Information is experienced in a similar way	IC
	Information overload	Experiencing an 'information overkill'	IC
	Amount of needed unlearning	Need to adjust thinking patterns and habits	IC

Table 4. Operationalisation collective learning phases – definition

** I = interview (ABC= part); M= mindmap; D= document*

Collective learning phases – deliberation			
Element	**Indicator**	**Description**	**Data***
(Face-to-face) interactions	Diverse interactions	E.g. on different moments; via different communication channels; on different scale levels	IA/IC
	Frequent interactions	Interactions on multiple moments in time	IA/IC
Candid and reasoned communication	Skilful advocacy	Campaigning for individual and represented interests by asking and answering challenging questions	IA/IC
	Creating a safe space	Thoughtful examination of issues; listening to others	IA/IC
	Including consensus building mechanisms	E.g. creating win-win situations; cooperative mindset; creating a roadmap	IA/IC

Table 5. Operationalisation collective learning phases – deliberation

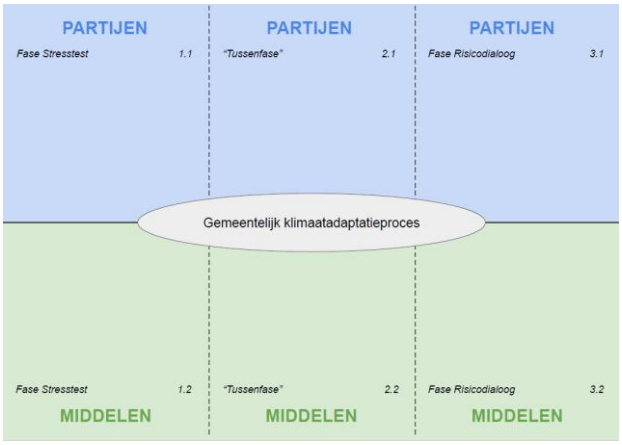
** I = interview (ABC= part); M= mindmap; D= document*

Collective learning phases – determination			
Element	**Indicator**	**Description**	**Data***
Making joint decisions	Procedural decisions	E.g. setting agendas; assigning a work group; stating follow-up actions	IA/IC
	Substantive decisions	E.g. action agreements	IA/IC
Learning products	Collective learning products	Collective learning products that emerge from the process: new shared ideas, strategies, rules or policies.	IA
Evaluation and monitoring	Incorporating feedback mechanisms	Systems that allow feedback to be delivered and included	IA
	Installing memory system	Stores information, knowledge and agreements. Keeps track of progress	IA

Table 6. Operationalisation collective learning phases –determination

** I = interview (ABC= part); M= mindmap; D= document*

Appendix II. Mind map instructions



Instructie invullen mindmap

Definitie en opbouw mindmap:

- Een **mindmap** is een diagram waarin informatie wordt weergegeven op een compacte, **visuele manier** en het legt de nadruk op relaties tussen onderwerpen.
- Één onderwerp staat centraal, in dit geval het **gemeentelijke klimaatadaptatieproces**.
- De **structuur** van de mindmap format is als volgt:
  - de bovenste helft gaat over de **partijen** of actoren die op wat voor manier dan ook bij het klimaatadaptatieproces zijn betrokken of aangehaakt, of waar contact mee bestaat. Hierbij kan gedacht worden aan zowel interne actoren (binnen de gemeente), externe partijen (zoals woningbouwcorporaties) of andere overheden (zoals de provincie of andere gemeenten).
  - de onderste helft gaat over de **benodigde middelen** in het proces. Hierbij kan aan van alles gedacht worden: kennis over inhoud of proces, geld, personen met bepaalde competenties, leiderschap, ervaring, etc.
  - de mindmap is opgedeeld in **drie fases**: de fase van het maken van de stresstest, de "tussenfase" tussen stresstest en risicodialoog (waarin bijvoorbeeld stresstest resultaten worden gedeeld, intern gesproken wordt over klimaatadaptatie, en/of de dialogen worden voorbereid) en de fase waarin de risicodialogen worden gevoerd.
- In deze structuur van partijen en middelen en de drie fasen ontstaan er **6 'sectoren'**:
  - **1.1**: de partijen die betrokken zijn (geweest) bij de stresstest
  - **1.2**: de middelen die nodig zijn (geweest) bij de stresstest
  - **2.1**: de partijen die betrokken zijn (geweest) in de 'tussenfase'
  - **2.2**: de middelen die nodig zijn (geweest) in de 'tussenfase'
  - **3.1**: de partijen die betrokken zijn (geweest) bij de risicodialoog
  - **3.2**: de middelen die nodig zijn (geweest) bij de risicodialoog

Te volgen stappen:

1. **Vul in elke sector zoveel mogelijk partijen en middelen in**, wees hierin zo compleet mogelijk.
2. **Maak verbindingen**: tussen partijen, tussen middelen, maar vooral ook tussen partijen en middelen (met andere woorden: op basis waarvan zijn de partijen nodig om aangehaakt te zijn in het proces?)
3. **Geef met rood aan als ergens een 'probleem' zit** (bijvoorbeeld als het lastig is een bepaalde partij te betrekken of als het lastig is om aan een bepaald middel te komen, bijvoorbeeld wanneer bepaalde kennis mist)

Aandachtspunten:

- Wees zo **specifiek** mogelijk
- Er bestaat complete **vrijheid** om naar eigen inzicht het format in te vullen; allerlei tekst, pijltjes, kleurtjes, etc. kan allemaal toegevoegd worden.

Appendix III. Codebook

1. Factors		
Factor_ hindering		
Factor_ stimulating		
2. Actors		
Intern	Actor_ own municipality	Intern_ city government
		Intern_ water domain
		Intern_ adaptation as sub-task
		Intern_ ownership of problem
		Intern_ clear division of roles
		Intern_ linking and aligning
Extern - government	Actor_ other municipalities	Other municipalities_ frontrunners
		Other municipalities_ small
	Actor_ province	Province_ subsidy
		Province_ facilitate and support
		Province_ participate
		Province_ online portal
	Actor_ national government	
	Actor_ water board	
	Actor_ werkregio	
Extern - non-government	Actor_ residents	
	Actor_ businesses and entrepreneurs	
	Actor_ housing associations	
	Actor_ education sector	
	Actor_ knowledge institutions	
	Actor_ GGD	
	Actor_ vulnerable groups	
	Actor_ agriculture / farmers	
	Actor_ ZLTO	
	Actor_ safety regions	
	Actor_ nature organisations	
	Actor_ environmental services	
	Actor_ drinking water companies	
	Actor_ utility parties	
	Actor_ project developers	
	Actor_ gardening companies	
	Actor_ designers	
	Actor_ consultancy / externals	Consultancy_ steering / guiding
	External actors_ risk of over-requesting	
Scale level	Scale_ neighbourhood	
	Scale_ municipal	
	Scale_ regional	
	Scale_ supraregional	
	Scale_ national	
3. Collaboration drivers		
Interdependence	Interdependence_ resource interdependence	
	Interdependence_ process interdependence	
	Interdependence_ goal interdependence	
	Interdependence_ feedback	

Uncertainty	Uncertainty_ unclear solution	
	Uncertainty_ meaning climate adaptation	
Leadership	Leadership_ fulfilment leadership tasks	
	Leadership_ identified leader	
	Leadership_ large municipality	
	Leadership_ intrinsic motivation	
Incentives	Incentive_ negative consequential incentives	
	Incentive_ positive consequential incentives	
	Incentive_ good timing	
	Incentive_ calamity	
	Incentive_ prescribed by national government	
Adaptation belief and motivation	Adaptation_ belief	Adaptation belief_ importance of framing
	Adaptation_ motivation	
4. Collaboration dynamics		
Engagement	Engagement_ inclusion	Inclusion_ only 'water people'
	Engagement_ unusual suspects	
	Engagement_ usual suspects	
	Engagement_ dependence on people	
	Engagement_ multi-sector	
	Engagement_ two-sided flow of information	
	Engagement_ diversity in problem frames	Problem frame_ water issue
Shared motivation	Shared motivation_ commitment	
	Shared motivation_ searching for energy	
	Shared motivation_ knowing each other	
	Shared motivation_ mutual trust	
	Shared motivation_ mutual understanding	
	Shared motivation_ internal legitimacy	
Capacity for joint action	Capacity_ structural arrangements	Structure_ formal rules
		Structure_ non-committal
		Structure_ transcending organizations / network
		Structure_ width
		Structure_ complexity
		Structure_ short lines of communication
		Structure_ amount of person changes
	Capacity_ leadership tasks	Leadership tasks_ giving long-term visions
		Leadership tasks_ facilitating communication
		Leadership tasks_ bringing parties together
	Capacity_ resources	Resources_ knowledge_ substantive
		Resources_ knowledge_ process
		Resources_ knowledge_ experiences / lessons learned
		Resources_ knowledge_ inspiration

		Resources_ knowledge_ knowing what is going on
		Resources_ human capital_ skills
		Resources_ human capital_ expertise
		Resources_ financing
		Resources_ manpower
		Resources_ tools
5. Discovery phase		
Information availability	Information availability_ open accessible	
	Information availability_ missing information	
	Information availability_ no missing information	
	Information availability_ meets current demand	
Information characteristics	Information characteristics_ social information	Social information_ stakeholder analysis
		Social information_ visualisations
	Information characteristics_ technical information	Technical information_ necessary translation
	Information characteristics_ variety in content	
	Information characteristics_ variety in form	
Source of information	Source_ expert knowledge	
	Source_ citizen knowledge	
	Source_ varied sources	
	Source_ open data	
	Source_ other domains municipality	
	Source_ learning by doing	
Information dissemination	Dissemination_ tools	Dissemination_ tools_ meetings
		Dissemination_ tools_ workshops / presentations / conferences
		Dissemination_ tools_ excursions
		Dissemination_ tools_ online platforms
	Dissemination_ hub	Hub_ werkregiotrekker
	Dissemination_ probability	Probability_ willingness to share
		Probability_ workload
		Probability_ frequency in the past
		Probability_ rewards
		Probability_ obligation
6. Definition phase		
Shared knowledge level	Knowledge level_ comprehensibility	
	Knowledge level_ accessibility	
	Knowledge level_ repetition	
	Knowledge level_ same starting point	
	Knowledge level_ internalised knowledge	Internalised knowledge_ know how
		Internalised knowledge_ know why
Shared knowledge interpretation	Knowledge interpretation_ cognitive maps	
	Knowledge interpretation_ information overload	
Building shared meaning	Shared meaning_ common language	
	Shared meaning_ common purpose and objectives	
	Shared meaning_ aligned expectations	
	Shared meaning_ storyline	

	Shared meaning_ recognition of information	
7. Deliberation phase		
Interaction	Interaction_ frequent interactions	
	Interaction_ face-to-face	
	Interaction_ 1 on 1	
Reasoned communication	Communication_ barriers	
	Communication_ advocacy	
	Communication_ consensus building	Consensus_ win-win situations
		Consensus_ joint road map
8. Determination phase		
Making joint decisions	Decisions_ procedural	Procedural decisions_ assigning work group
		Procedural decisions_ stating follow-up actions
	Decisions_ substantive	Substantive decisions_ action agreement
Learning products	Learning products_ vision and strategy	
	Learning products_ concrete actions	
	Learning products_ rules and policies	
Monitoring	Monitoring_ feedback mechanisms	
	Monitoring_ memory system	
	Monitoring_ track progress	
9. DPRA phases		
Stresstest	Stresstest_ varied forms	
	Stresstest_ purpose	
	Stresstest_ level of detail	
	Stresstest_ gradation	Stresstest gradation_ light
		Stresstest gradation_ in-depth
	Stresstest_ scale	Stresstest scale_ local
		Stresstest scale_ regional
Intermediate phase	Intermediate phase_ link stresstest and risk dialogue	
	Intermediate phase_ internal dialogues	
	Intermediate phase_ preparing external dialogues	
	Intermediate phase_ maintaining contact external parties	
	Intermediate phase_ searching energy	
Risk dialogue	Risk dialogue_ varied forms	
	Risk dialogue_ purpose	
	Risk dialogue_ scale	Risk dialogue scale_ local
		Risk dialogue scale_ regional
		Risk dialogue scale_ supraregional
		Risk dialogue scale_ provincial
	Risk dialogue_ expectations	Dialogue expectation_ nothing new
		Dialogue expectation_ terminology
		Dialogue expectation_ not just one conversation
10. Other codes		
Other	Other_ state of affairs	
	Other_ goal oriented	
	Other_ energy oriented	
	Other_ integration	

	Other_ coordination
	Other_ municipal course
	Other_ means versus target
	Other_ Bestuursakkoord Water
	Other_ Omgevingswet
	Other_ social pressure
	Other_ cold feet
	Other_ quest
	Other_ customisation
	Other_ conversation trigger

Appendix IV. Interview guide trekkers werkregio's

Aandachtspunten voorafgaand interview:

- Interviewguide mee geprint + pennen mee
- Kaart werkregio's + voorbeeld Klimaatwarenhuis + conceptueel model mee
- Voldoende geheugen en batterij om opname te kunnen maken
- Vliegtuigstand inschakelen
- Inlezen in persoon & zijn/haar organisatie

Introductie:

- Bedanken voor hun tijd
- Mijzelf en mijn onderzoek introduceren (*"Hoe geven Brabantse gemeenten invulling aan het proces van stresstest en risicodialoog, en wat zijn stimulerende en hinderende factoren in het maken van de stap van deze stresstest naar dialoog?"* → ik wil dus inzicht geven in het gemeentelijke proces van stresstest en risicodialoog)
- Vertellen hoe lang ik verwacht dat het interview zal duren (ong. 60 minuten)
- Naam gebruiken of anoniem blijven?
- Toestemming vragen om opname te maken
- Zeggen dat er vertrouwelijk met de data om zal worden gegaan
- Structuur van het interview uitleggen (introducerende vragen - 15 min, vragen over stresstest - 15 min, vragen over risicodialoog - 20 min, vragen over rol provincie - 10 min)
- Tot hoe laat hebben we uiterlijk de tijd?
- Vragen voordat we beginnen?

A. Introducerende vragen: (20 minuten)

- In het kort: Wat verstaat u onder klimaatadaptatie?
- Hoe is klimaatadaptatie georganiseerd binnen gemeenten in uw werkregio?
  → *is er één iemand verantwoordelijk voor klimaatadaptatie? Is dit ook de projectleider? Van welke afdeling?*
  → *betrokkenheid van andere afdelingen? (bijv. RO)*
  → *hoe is verantwoordelijkheid klimaatadaptatie binnen colleges geregeld?*
  → *wordt er bij bestuurders urgentie gevoeld voor het onderwerp?*
- Wat was bij gemeenten in de regio een aanleiding om het klimaatadaptatieproces te starten? (e.g. volgen van proces en planning Rijk; intrinsieke motivatie; omdat het verplicht is; n.a.v. calamiteit)
  → *werkte deze reden stimulerend of hinderend om partijen te laten aanhaken?*
  → *hoe ziet dit proces eruit?*
  → *huidige status? (i.e. voorbereiden, voeren of afronden)*
  → *wat is de vervolgstap na de dialogen richting uitvoering?*
- Bestaat de werkregio uit de goede partijen en mensen?
- Welke samenwerkingsverbanden bestaan er in de werkregio?
  → *welk schaalniveau?*
  → *op basis waarop bestaat deze samenwerking?*
  → *ambtelijk of bestuurlijk?*

→ werkregio brede samenwerking → wat zijn hier de voordelen van?
→ gericht op water? → of aansluiting bij andere trajecten (zoals energie; omgevingsvisie en omgevingsplan)

- Hoe ziet kennisdeling binnen de werkregio eruit?
  → behoefte hieraan?
  → is er in de werkregio iets georganiseerd om informatie uit gemeentes te delen?
  → wordt bepaalde kennis openbaar gemaakt?
  → zijn resultaten stresstesten gedeeld binnen de regio? Open toegankelijk?
  → wordt er veel informatie gedeeld tussen gemeenten onderling?
  → zo ja, waarover? (e.g. over kwetsbaarheden en kansen; over mogelijke maatregelen; over communicatiemiddelen; over inrichting proces). Of delen van ervaringen en opdoen van inspiratie?
  → zo nee, wat hindert de kennisdeling?
  → is er bij gemeenten een bereidheid om kennis te delen? (ondanks dat er zelf in is geïnvesteerd)

B. Vragen over proces uitvoeren stresstest: (15 minuten)

- Wat is het doel van de stresstest voor gemeenten binnen de werkregio?
  → bereikt?
- Hoe zien stresstesten van gemeenten in de regio over het algemeen eruit?
  → vorm: kaarten, visuals, tekst
  → uitgebreid of klein van scope?
  → op welk schaalniveau?
  → thema's (water, hitte, droogte)
  → sociale aspecten (e.g. stakeholderanalyse; sociaaleconomische data) → aansluiting andere disciplines?

- Welke partijen waren bij het stresstest proces betrokken?
  → op basis waarvan waren deze betrokken bij dit proces? (e.g. kennis inbrengen; delen resultaten; feedback) → verschillen tussen partijen?
  → externe partijen? → waarom wel/niet?
  → waarom waren andere partijen niet betrokken?
- Welke informatie was nodig voor het maken van de stresstesten?
  → primaire informatiebron?
  → lastig om de benodigde informatie te verkrijgen?
  → mist er bepaalde informatie?
  → ook gebruik gemaakt van informatie van bewoners/maatschappelijke organisaties? Zo ja, hoe is deze informatie vergaard? (e.g. open gesprek, forum, enquête)

- Hoe worden resultaten van stresstesten over het algemeen meegenomen in de dialogen? (i.e. hoe zijn stresstest en risicodialoog verbonden?)

C. Vragen over proces risicodialoog: (20 minuten)

- Wordt er in veel gevallen een interne dialoog gevoerd binnen de gemeente?
  → *waarom wel/niet?*
  → *timing (voor, na of tijdens externe dialoog)?*
- Wat is het doel van de externe risicodialoog voor gemeenten binnen de werkregio? (i.e. verwachting/ hoop wat het gaat opleveren)
- Welke vorm hebben de dialogen? (of: verwachting/hoop)
  → *schaalniveau van de dialoog (lokaal/regionaal/beide)→ waarom hiervoor gekozen?*
  → *worden er meerdere risicodialogen gevoerd? Frequentie?*

- Welke partijen worden bij deze (externe) dialogen betrokken?
  → *op basis waarvan zijn deze betrokken bij dit proces? → verschillen tussen partijen?*
  → *op welke manier? (e.g. open gesprek, forum, enquête, bijeenkomst)*
  → *betrekken van onverwachte partijen (i.e.'unusual suspects')*
  → *hoe wordt geprobeerd deze partijen te betrekken? (i.e. incentives)*
  → *lastig om bepaalde partijen te betrekken? (e.g. hebben ze door dat ze een rol kunnen spelen en willen ze dit ook?) & missende partijen?*
  → *is participatie voor partijen vrijblijvend of niet?*
  → *hoe is de betrokkenheid/enthousiasme? Urgentiebesef?*
  → *gelijke inspraak/invloed? Sprake van tweerichtingsverkeer?*
  → *hebben partijen gelijke verwachtingen van het proces? En gelijke doelen?*

- Speelt een verschil in kennisniveau en expertise van verschillende partijen een rol?
  → *sprake van een groot kennisverschil tussen partijen? Verminderen?*
  → *technische informatie? / jargon? / ingenieursdenken?*
  → *voor iedereen begrijpbaar en toegankelijk?*
  → *leren partijen ook om de kennis zelf toe te passen? En is het belangrijk dat ze precies weten hoe het systeem in elkaar zit? → Vervult de gemeente hierbij nog een rol? (belang voor gemeente om te volgen wat ermee gebeurt)*
- Welke informatie is nodig om risicodialoog te kunnen voeren? (e.g. informatie over kwetsbaarheden; over maatregelen; over proces zelf)
  → *is informatie uit stresstest voldoende?*
  → *van wie is de informatie afkomstig? (e.g. waterschap, domeinen gemeente, kennisinstellingen, bewoners, externe partijen). Wat is primaire informatiebron?*
  → *ook gebruik gemaakt van informatie van bewoners/maatschappelijke organisaties? (e.g. wat zij belangrijk vinden; waar zij behoefte aan hebben en tegenaan lopen)*
  → *gebruik informatieplatforms? (e.g. Routekaart Risicodialoog of Klimaatportaal van de provincie)*
  → *gebruikte middelen voor het delen van informatie (e.g. bijeenkomsten, face-to-face gesprekken, internet, workshops, conferenties)*
  → *wie heeft grote rol gespeeld bij het bijeenbrengen van de benodigde informatie?*
- Mist er bepaalde informatie? / bepaalde informatie lastig vindbaar? / partijen die niet bereid zijn bepaalde informatie te delen?

- Welke randvoorwaarden zijn er naast kennis nodig voor voeren risicodialoog?
  → *personen met bepaalde competenties of expertise (bijv. voor vertalen technische*

informatie of faciliteren/modereren dialoog)
→ financiële middelen
→ capaciteit
→ inzet bestuurder; autoriteit
→ leiderschap
→ (frequente) face-to-face interacties

- Zit bij gemeenten over het algemeen de goede expertise voor het voeren van de dialoog?
  → wat is die expertise? (e.g. voor 'vertalen' resultaten stresstest)

- Afsluitend: wat zijn hinderende factoren voor gemeenten in dit proces van stresstest naar risicodialoog (e.g. grote meningsverschillen tussen partijen; te weinig informatie beschikbaar)
- Afsluitend: wat zijn stimulerende factoren voor gemeenten in dit proces van stresstest naar risicodialoog?

D. Vragen over rol provincie (10 minuten)

- Wat is volgens u de rol van de provincie in dit proces? (i.e. verwachting)
- Wat heeft provincie tot nu toe bijgedragen in de werkregio?
  → financiële middelen, bepaalde kennis en inhoud, schakelfunctie (verbinding tussen verschillende partijen)
- Wordt de provincie in het gemeentelijke proces betrokken?
  → zo ja, hoe? (i.e. aanwezig zijn bij de dialogen)
  → zo nee, waarom niet?
- *Ziet u de komende jaren een verandering hierin?*

Afsluiting:

- Heeft u nog toevoegingen? Bepaalde zaken die nog niet aan bod zijn gekomen?
- Zijn er personen van gemeenten die ik volgens u nog moet spreken in het kader van mijn onderzoek? (bijv. iemand van een gemeente die een interessante aanpak heeft; of een gemeente die al verder is in het proces (i.e. dialoog al heeft uitgevoerd); of een gemeente die nog niet zo ver is)
- Kan ik resultaten van een stresstest ontvangen/inzien? + andere documentatie?
- Nogmaals bedanken

Appendix V. Interview guide gemeenten

Aandachtspunten voorafgaand interview:

- Interviewguide+ kaart werkregio's + spiekbriefje geprint mee + pennen
- Mindmap + blanco A3 vel mee + pennen en markeerstiften in verschillende kleuren
- Voldoende geheugen en batterij om opname te kunnen maken
- Vliegtuigstand inschakelen
- Inlezen in persoon & zijn/haar organisatie

Introductie:

- Bedanken voor hun tijd
- Mijzelf en mijn onderzoek introduceren
- Vertellen hoe lang ik verwacht dat het interview zal duren (+/- 60 minuten)
- Mag ik uw naam gebruiken of wilt u liever anoniem blijven?
- Toestemming vragen om opname te maken
- Zeggen dat er vertrouwelijk met de data om zal worden gegaan
- Structuur van het interview uitleggen (introducerende vragen - 20 min, vragen over stresstest - 15 min, vragen over risicodialoog - 15 min, vragen over rol provincie - 10 min)
- Uitleg geven over invullen mindmap
- Tot hoe laat hebben we uiterlijk de tijd?
- Vragen voordat we beginnen?

A. Introducerende vragen: (20 minuten)

1. Zou u uzelf kort kunnen voorstellen?

2. Hoe is klimaatadaptatie georganiseerd binnen de gemeente?
→ *hoeveel mensen zijn er binnen de gemeente met het thema klimaatadaptatie bezig?*
→ *is er één iemand verantwoordelijk voor klimaatadaptatie? Is dit ook de projectleider? Van welke afdeling?*
→ *betrokkenheid van andere afdelingen? (bijv. RO)*
→ *hoe is verantwoordelijkheid klimaatadaptatie binnen het college geregeld?*
→ *wordt er bij bestuurders urgentie gevoeld voor het onderwerp?*

3. Wat was de aanleiding om het klimaatadaptatieproces te starten?
→ *hoe ziet dit proces eruit?*
→ *huidige status?*
→ *wat is de vervolgstap na de dialogen richting uitvoering?*

4. Wordt er aangesloten bij andere trajecten? (zoals energie; omgevingsvisie en omgevingsplan)
→ *waarom wel/niet?*
→ *binnen gemeenten (lokaal) of regionaal?*

B. Vragen over proces uitvoeren stresstest: (15 minuten)

1. Wat was het doel van de stresstest?
→ *tevreden met uitkomsten? Waarom wel/niet?*

2. Hoe ziet deze stresstest eruit?
→ *vorm: kaarten, visuals, tekst*
→ *op welk schaalniveau?*
→ *thema's (water, hitte, droogte, overstroming)* → *detailniveau?*
→ *sociale aspecten (e.g. stakeholderanalyse; sociaaleconomische data)* → *aansluiting andere disciplines?*

3. Welke partijen waren bij dit proces betrokken? = 1.1 (mindmap)
→ *op basis waarvan waren deze partijen betrokken?* (i.e. welke middelen brengen ze =1.2 → koppeling maken)
→ *externe partijen?*
→ *waarom waren andere partijen niet betrokken?*
→ *hoe was de betrokkenheid/enthousiasme onder partijen?*

4. Welke informatie was nodig voor het maken van de stresstest? =1.2
→ *primaire informatiebron?*
→ *ook gebruik gemaakt van informatie van bewoners/maatschappelijke organisaties? Zo ja, hoe is deze informatie vergaard? (e.g. forum, enquête)*
→ *lastig om de benodigde informatie te verkrijgen? En mist er bepaalde informatie?*

5. Hoe worden uitkomsten stresstest gedeeld?
→ *met welke partijen?*
→ *open toegankelijk? Waarom wel/niet?*

6. Wat zijn reacties van verschillende partijen op de resultaten van de stresstest?
→ *intern & extern*
→ *riep het bij alle partijen een gevoel van urgentie op?*
→ *zorgde het voor andere percepties?*

7. Hoe worden de resultaten meegenomen in de risicodialoog? (i.e. hoe zijn stresstest en risicodialoog verbonden?)
→ *welke partijen zijn in deze 'tussenfase'/ voorbereiden van de dialoog betrokken?* =2.1
→ *en op basis waarop?* =2.2
→ *contact met andere gemeenten? Samenwerkingsverbanden?*
→ *energie versus opgavengerichte werkwijze?*

C. Vragen over proces risicodialoog: (15 minuten)

1. Wordt er een interne dialoog gevoerd binnen de gemeente?
→ *wat is het doel van deze dialoog?*
→ *timing (voor, na of tijdens externe dialoog)?*
→ *ook op bestuurlijk niveau gevoerd?*

2. Wat is het doel van de externe risicodialoog? (i.e. verwachting/ hoop wat het gaat opleveren)

3. Welke vorm heeft de risicodialoog?
→ *schaalniveau van de dialoog (lokaal/regionaal/beide)*
→ *worden er meerdere risicodialogen gevoerd? Frequentie?*

4. Welke partijen worden bij deze (externe) dialoog betrokken? =3.1
→ *op basis waarvan zijn deze betrokken? (i.e. welke middelen brengen ze =3.2 → koppeling maken)*
→ *betrekken van onverwachte partijen (i.e. 'unusual suspects')*
→ *hoe wordt geprobeerd deze partijen te betrekken? (i.e. incentives)*
→ *lastig om bepaalde partijen te betrekken? (e.g. hebben ze door dat ze een rol kunnen spelen en willen ze dit ook?) & missende partijen =rood*
→ *hoe is de betrokkenheid/enthousiasme? Urgentiebesef?*
→ *hebben partijen gelijke verwachtingen van het proces? En gelijke doelen?*
→ *is er sprake van wederzijds begrip en vertrouwen?*

5. Welke informatie is nodig om risicodialoog te kunnen voeren? =3.2
→ *is informatie uit stresstest voldoende?*
→ *van wie is deze informatie afkomstig?*
→ *ook gebruik gemaakt van informatie van bewoners/maatschappelijke organisaties?*
→ *gebruik informatieplatforms? (Klimaatportaal?)*
→ *gebruikte middelen voor het delen van informatie (e.g. bijeenkomsten, face-to-face gesprekken, internet, workshops, conferenties)*
→ Mist er bepaalde informatie? / bepaalde informatie lastig vindbaar? / partijen die niet bereid zijn bepaalde informatie te delen? =rood

6. Wat is er naast kennis nodig voor voeren risicodialoog (i.e. randvoorwaarden)? =3.2
→ *personen met bepaalde competenties of expertise (bijv. voor vertalen technische informatie of faciliteren/modereren dialoog)*
→ *financiële middelen*
→ *capaciteit*
→ *inzet bestuurder*
→ *leiderschap*
→ *(frequente) face-to-face interacties*

7. Speelt een verschil in kennisniveau en expertise van verschillende partijen een rol?
→ *sprake van een groot kennisverschil tussen partijen? Verminderen?*
→ *technische informatie? /vakjargon? → voor iedereen begrijpbaar en toegankelijk?*
→ *iemand aanwezig die stresstest heeft gemaakt? (i.e. expert / 'vertalen' resultaten)*
→ *leren partijen ook om de kennis zelf toe te passen? En is het belangrijk dat ze precies weten hoe het systeem in elkaar zit?*

D. Vragen over rol provincie (10 minuten)

1. Wat is volgens u de rol van de provincie in dit proces? (i.e. verwachting)

2. Wat heeft provincie tot nu toe bijgedragen in de gemeente?
→ *financiële middelen, bepaalde kennis en inhoud, schakelfunctie (verbinding tussen verschillende partijen)*

3. Wordt de provincie in het gemeentelijke proces betrokken?
→ *zo ja, hoe? (i.e. aanwezig zijn bij de dialogen)*
→ *zo nee, waarom niet?*
→ *ziet u de komende jaren een verandering hierin?*

Afsluiting:

- Heeft u nog toevoegingen? Bepaalde zaken die nog niet aan bod zijn gekomen?
- Kan ik resultaten van een stresstest ontvangen/inzien? + andere documentatie?
- Nogmaals bedanken

Appendix VI. Research report for Province of Noord-Brabant

De gemeentelijke zoektocht van stresstest naar dialoog

In Brabantse gemeenten

Roos van Aartsen

Juni 2020

Radboud University

Provincie Noord-Brabant

Inleiding

Aan de hand van twee visualisaties laat dit rapport het resultaat zien van een onderzoek naar het klimaatadaptatieproces in Brabantse gemeenten, waarbij het 'DPRA pad' bewandeld wordt. De volgende onderzoeksvraag stond in dit onderzoek centraal:

Hoe geven Brabantse gemeenten invulling aan het proces van stresstest en risicodialoog, en wat zijn stimulerende en hinderende factoren in het maken van de stap van deze stresstest naar dialoog?

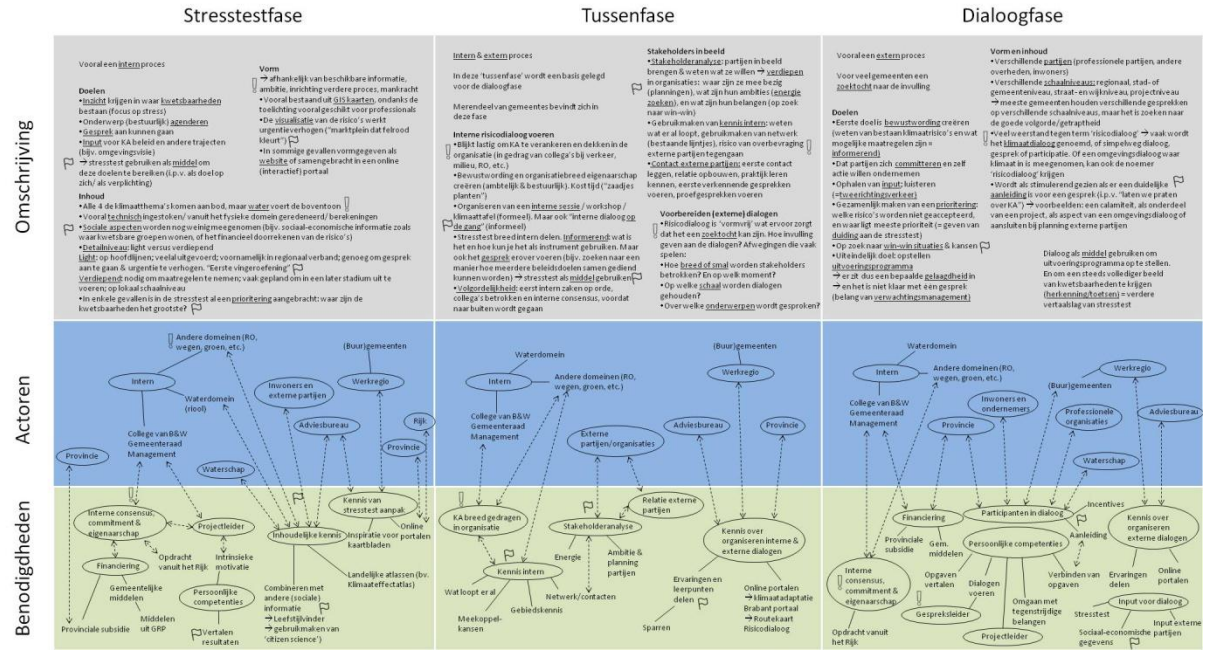
Om dit te onderzoeken, is een ronde gemaakt langs de negen Brabantse DPRA werkregio's en is gesproken met de regiotrekkers over het proces in de betreffende gemeenten in de regio. Daarnaast zijn nog enkele personen van individuele gemeenten gesproken, waarbij ook gebruik is gemaakt van een zogenoemde 'mindmapping' methode. In de interviews is ingegaan op zaken omtrent het maken van de stresstest, de opmaat naar de dialogen en samenwerking.

Dit rapport bestaat uit twee delen, met begeleidende visualisaties die schematisch weergeven en inzicht geven in hoe invulling wordt gegeven door gemeenten aan het proces rondom klimaatadaptatie. Deel A geeft een toelichting op het 'fasen-canvas' en Deel B geeft een toelichting op zes 'sleutelaspecten' in het gemeentelijke klimaatadaptatieproces.

Deel A. Fasen-canvas

Het fasen-canvas verbeeldt de drie fasen die een gemeente doorloopt op weg naar een uitvoeringsprogramma: de stresstestfase en de dialoogfase, met daartussenin een 'tussenfase', waarin bijvoorbeeld stresstestresultaten worden gedeeld, intern gesproken wordt over klimaatadaptatie en/of externe dialogen worden voorbereid. Het is een fase waarin het merendeel van de gemeenten zich op dit moment bevindt. Het canvas is gevuld met wat vaak terugkwam in de gevoerde gesprekken en wat gedachtes en percepties zijn die leven. Met een uitroepteken wordt aangegeven wat voorkomende obstakels en knelpunten zijn, en met een vlaggetje waar kansen liggen.

In het canvas wordt ingegaan op drie onderdelen. Ten eerste de omschrijving van de fase, dus wat definieert een specifieke fase en wat zijn gedachtes en percepties die hierbij spelen? Ten tweede betrokken actoren: partijen die aangehaakt zijn in een bepaalde fase. Immers, gemeenten hebben andere partijen nodig om het klimaatadaptatieproces te doorlopen en vorm te geven. Ten derde de benodigdheden van gemeenten in de breedste zin van het woord: wat hebben gemeenten nodig in een fase qua middelen, financiering, kennis, personen, etc. Verschillende partijen kunnen in deze behoeften van gemeenten voorzien, wat een link legt tussen deze twee onderdelen in het canvas (d.w.z. op basis waarvan zijn bepaalde partijen o.a. nodig om aangehaakt te zijn in het proces?).



Stresstestfase

In deze fase wordt een stresstest gemaakt en opgeleverd. De fase karakteriseert zich doordat het voornamelijk een **intern proces** is dat zich vooral binnen de gemeenten afspeelt, veelal wel met betrokkenheid van een extern adviesbureau en gecoördineerd door de werkregio. De stresstest heeft voornamelijk als doel om inzicht te krijgen in waar **klimaatkwetsbaarheden** bestaan in het gemeentelijke grondgebied, op het gebied van de vier klimaatthema's (wateroverlast, hitte, droogte en overstromingen). Hierbij valt op dat **wateroverlast** nog vaak de boventoon voert, mede afhankelijk van de expertise op dit vlak van de verantwoordelijke ambtenaar, de kennisvoorsprong of de koppeling met het GRP.

"Het verhaal van wateroverlast is natuurlijk al een bestaand verhaal wat al jaren speelt, dus de urgentie is vaak gevoed vanuit de watertak." (Tim Verhagen)

Van droogte, maar voornamelijk van hitte, wordt aangeven dat het nog meer en sterker terug zou mogen komen. Ook valt het op dat de focus op '**stress**' ligt, naar kansen die het veranderende klimaat en klimaatadaptatie kan bieden, wordt nog niet vaak gekeken. Naast de kwetsbaarheden in beeld brengen, wordt de stresstest ook gezien als een geschikt middel om het onderwerp klimaatadaptatie te **agenderen** (zowel ambtelijk als bestuurlijk). De visualisatie van de risico's werkt hierbij urgentieverhogend; als een straat bijvoorbeeld geheel blauw kleurt of een marktplein knalrood. Een gevaar dat hier echter in schuilt, is dat de kaarten een vertekend beeld kunnen geven wanneer ze verkeerd worden gelezen. Een voorbeeld is een overstromingskaart waar de riolering niet onder zit, dus wat blauwer wordt weergegeven dan het in werkelijkheid is. Dit vergt de nodigde toelichting.

"Een stresstest maken is niet zozeer het doel, maar een middel om een doel te behalen." (Arnold Wielinga)

Naast de agendering dient een stresstest om het **gesprek** te kunnen voeren met verschillende partijen (zowel intern als extern). Er wordt benadrukt dat een stresstest hiervoor niet 'af' of compleet hoeft te zijn; een light variant zonder een hoog detailniveau biedt ook voldoende gesprekssstof en inzichten om ogen te openen. De vraag die dan speelt, is: 'wat doen/willen we ermee?'. Zo'n **light versie** van de stresstest is veelal uitgevoerd, voornamelijk in regionaal verband. Door sommigen wordt het gezien als een 'eerste vingeroefening' en als een eerste stap ('gewoon beginnen'). Een **verdiepende stresstest** wordt gezien als nodig om detailafspraken te maken of maatregelen te nemen, en is vaak gepland om in een later stadium pas uit te voeren, op een meer lokaal schaalniveau.

Een stresstest komt in vele soorten en maten voor, toch zien de meeste er ongeveer hetzelfde uit; als een combinatie van verschillende GIS kaarten met een toelichting in tekstvorm. Sommige zijn in rapportvorm, andere hebben er een online (interactief) portaal omheen gebouwd. Daarnaast bestaan er verschillen in kaarten/lagen die aan de stresstest toegevoegd worden. Zo is er in onder andere Hart van Brabant een '**klimaatonderlegger**' gemaakt, die laat zien hoe de regio in elkaar zit qua klimaat. Deze onderlegger kan gebruikt worden om te verklaren waarom

de stress, die uit de stresstest blijkt, ontstaat. Op die manier geeft het extra inzicht en duiding. Een ander voorbeeld is wanneer met de stresstest al een stapje verder wordt gekeken door een **prioritering** aan te brengen: waar zijn de kwetsbaarheden het grootste? Zoals in Klimaatkring De Baronie, waar gepoogd wordt om door dit oordeel aan de stresstest toe te voegen, al een stap dichter bij een uitvoeringsagenda te komen.

"Per wijk of dorpskern is er een subkaart gemaakt, waarbij ook een oordeel geveld is van hoe goed of hoe slecht die dorpskern of wijk scoort op de verschillende thema's, met daarin dus al een doorkijk naar wat een soort prioritering kan worden voor het aanpakken van de verschillende wijken." (Bas Hoefeijzers)

Interne consensus, **commitment** en **eigenaarschap** blijkt onmisbaar, maar toch nog vaak missend bij gemeenten, zowel ambtelijk als bestuurlijk gezien. Het wordt lastig gevonden om naast water en riolering (waar klimaatadaptatie vaak 'op het bordje ligt') **andere domeinen** bij klimaatadaptatie te betrekken (zoals RO, wegen of groen). Ook houdt dit organisatiebrede eigenaarschap voor klimaatadaptatie verband met een betrokken college, een (mogelijke) bestuurlijke opdracht, beschikbaar stellen van gemeentelijke middelen voor klimaatadaptatie (naast GRP), en een verantwoordelijke ambtenaar. De meest genoemde aspecten waar in sommige gemeenten een pijnpunt zit. Ook zit er een verband met het **capaciteitstekort** wat overal in Brabant blijkt te spelen.

Een andere benodigdheid die vaak genoemd werd, zijn **persoonlijke competenties**; bijvoorbeeld iemand met een intrinsieke motivatie die eraan trekt zodat een beweging op gang wordt gebracht, of iemand die de toch vaak wat technische kaarten (merendeels geschikt voor professionals) kan vertalen.

Kennis is daarnaast een (logische) behoefte, zowel **kennis over de stresstest aanpak** (vaak afkomstig van een adviesbureau) als **inhoudelijke kennis** voor het 'vullen' van de stresstest. Deze informatie is vaak afkomstig uit landelijke atlassen (zoals de Klimaateffectatlas) en vanuit de gemeente zelf. Ondanks dat wordt aangegeven dat de benodigde informatie veelal wel beschikbaar en bekend is, blijkt het ook een '**puzzel**' te zijn om alle informatie afkomstig van verschillende informatiebronnen te combineren. Doordat de informatie verspreid is, kan het veel tijd en energie kosten om alles bij elkaar te brengen.

Een kans is het meenemen van **'sociale' informatie**, om op die manier al meer een stap richting de dialogen te maken. Stresstesten worden vooral technisch ingestoken, met rekenmodellen, GIS kaarten en vanuit het fysieke domein geredeneerd. Sociale aspecten worden nog weinig meegenomen, zoals sociaal-economische informatie als waar kwetsbare groepen wonen. Een ander voorbeeld hiervan is de **Leefstijlvinder** meenemen, waarin verschillende doelgroepen worden onderscheiden met verschillende leefstijlen en attitude richting klimaat, waarop ingespeeld kan worden. Of gebruikmaken van '**citizen science**', waarbij inwoners data verzamelen in hun leefomgeving over de gevolgen van klimaatverandering. Een bijkomend voordeel hierbij is dat op deze manier inwoners eerder in het proces betrokken raken, en de kans groter wordt dat ze zich committeren aan klimaatadaptatie door een vergroot bewustzijn en urgentiegevoel.

Tussenfase

De fase die volgt op het opleveren van de stresstest is de 'tussenfase', waarin de basis wordt gelegd voor de dialoogfase (en daarmee het uitvoeringsprogramma) en waarvan het belang dus groot is. Het **merendeel van de gemeenten** bevindt zich momenteel in deze fase, waarin verschillende activiteiten uitgevoerd worden of kunnen worden.

Een eerste activiteit waaraan gedacht kan worden, is het voeren van een **interne dialoog**. Met zo'n dialoog kan klimaatadaptatie meer verankerd en gedekt worden binnen de gemeentelijke organisatie. Het wordt als belangrijk gezien om eerst intern zaken op orde te hebben (neuzen ongeveer dezelfde kant op hebben en één gezamenlijk verhaal ontwikkelen), voordat naar buiten wordt gegaan. Hier zit dus een bepaalde **volgordelijkheid** in. Dit organisatiebrede bewustzijn en eigenaarschap creëren is echter iets dat tijd kost.

"Dan ben je intern voorbereid als organisatie op het moment dat je je stresstest hebt gedaan, en je wilt met de straat, met de wijk, met het industrieterrein, het gesprek aan. Dan is het handig dat men intern op én ambtelijk én op bestuurlijk niveau is voorbereid." (Peter van der Haar)

Het intern **breed delen van de stresstest** kan bewustwording en organisatiebreed eigenaarschap creëren. Daarnaast wordt ondervonden dat door intern de stresstest uitgebreid toe te lichten en te laten zien wat ermee gedaan kan worden, het risico dat de stresstest 'in een la belandt' verminderd wordt. Dit heeft ook weer een link met de stresstest zien als een middel en niet enkel als verplichting. De stresstest wordt in sommige gevallen gekoppeld of vormt input voor andere trajecten in de gemeente, zoals het opstellen van een omgevingsvisie of energiestrategie.

Het intern delen van de stresstest wordt onder andere gedaan via georganiseerde sessies, workshops of lunchlezingen. Maar ook het belang van een '**dialoog op de gang**' (dus informeel, op dagelijkse basis) moet niet onderschat worden en kan resultaat opleveren. Dit is vaak makkelijker in een kleine gemeente, omdat collega's hier elkaar eerder tegenkomen en de lijnen intern over het algemeen wat korter zijn.

"Dat was een kleine gemeente, dus daar zat je veel dichter bij elkaar, en had je die dialoog misschien wel dagelijks." (Suzanne Mesman-Snelderwaard)

Dat klimaatadaptatie breed wordt gedragen in de gemeente, is niet alleen belangrijk voor de kennis die collega's kunnen brengen, maar ook om te **weten wat er al loopt** binnen de gemeente, zodat daarop aangehaakt kan worden en **meekoppelkansen** gezocht kunnen worden. Bijvoorbeeld een wijk vergroenen, zodat gelijktijdig leefbaarheidproblemen in een kwetsbare wijk aangepakt worden. Daarnaast blijkt dit van belang om gebruik te maken van het netwerk ('bestaande lijnen') die met externe partijen bestaan.

"Er lopen al zó veel lijntjes en initiatieven, en het is eigenlijk de kunst om geen enkel nieuw lijntje te bouwen, tenzij je er zeker van bent dat dat lijntje nog niet bestaat. Want die overleggen met woningbouwcorporaties, daar lopen er vanuit de energietransitie ook al vijf. Of wijkmanagers die al hele dagen met de actieve bewoners rond de tafel zitten." (Bas Hoefeijzers)

Gebruikmaken van de gesprekken en relaties die al bestaan, is niet alleen handig om efficiënt te werken en een betere grip te krijgen op de praktijk,

maar ook om het **risico van overbevraging** van externe partijen tegen te gaan. Een gemeente heeft immers vaak te maken met dezelfde partijen voor verschillende beleidsvelden. Als gemeente wil je bijvoorbeeld met inwoners in gesprek over allerlei onderwerpen, maar je wilt ook niet elke week op de stoep staan. Daarom is het zaak om slimme combinaties te maken.

"Duurzaamheid, energietransitie en klimaat hebben toch redelijk wat met elkaar te maken. Vooral bij mensen in hun hoofd. Van o dat hoort bij elkaar. Dus om mensen niet teveel te overvragen, wordt gekeken hoe kunnen we dan mensen gelijktijdig over twee onderwerpen bevragen." (Laura Meuleman)

Gebruikmaken van de bestaande lijnen heeft ook een link met een **stakeholderanalyse** die in deze fase door sommige gemeenten uitgevoerd wordt. Met zo'n analyse kunnen gesprekspartners in beeld worden gebracht, wat soms lastiger is dan het lijkt.

"Verzin maar eens wie is er bij BrabantWonen als woningvereniging; met wie moet je in gesprek? Het duurt even voor de gesprekspartners in beeld zijn; de namen en rugnummers." (Arnold Wielinga)

Naast de gesprekspartners in beeld brengen, kan zo'n stakeholderanalyse ook dienen om te ontdekken wat de planningen, ambities en belangen van de verschillende partijen zijn; zodat op deze **energie** mogelijk aangesloten kan worden. Dit kan zorgen voor meer bereidheid en minder tegenstand bij de partijen. Voorbeelden zijn een straat die op de schop gaat of verhuizingen bij woningbouwcorporaties. Het kan echter wel een uitdaging zijn om deze energie te vinden, en het vergt kennis van wat er allemaal speelt.

Een **relatie opbouwen en onderhouden** met externe partners wordt ook als een belangrijk punt gezien. In deze fase kan het eerste contact gelegd worden, en verkennende en 'proefgesprekken' kunnen gevoerd worden. Ook blijken frequent contact, partijen actief benaderen (bijvoorbeeld opbellen i.p.v. mailen) en 1-op-1 gesprekken stimulerend te werken. Met andere woorden, **investeren in een langdurige relatie** waarin men elkaar kent en vertrouwen bestaat.

Een andere activiteit in deze fase is natuurlijk het **voorbereiden van de externe dialogen**. Doordat deze vormvrij zijn, is het voor veel gemeenten een **zoektocht** naar de precieze invulling ervan en naar een passende strategie. Vragen die veelal voorbij kwamen, zijn bijvoorbeeld: hoe breed betrek je stakeholders, wie spreek je waarover het eerst, en op welk schaalniveau wil je de dialoog houden? Kennis over de dialoogaanpak halen gemeenten voornamelijk uit het aansluiten van een adviesbureau, sparren en overleggen in de werkregio en online portalen (zoals het Klimaatadaptatie Brabant portaal van de provincie of de Routekaart risicodialoog). Daarnaast blijkt het erg behulpzaam om ervaringen en leerpunten te delen tussen gemeenten onderling; doordat elke gemeente een andere snelheid en speerpunten heeft, valt er altijd wel iets van elkaar te leren (de **kennis en ervaringen zijn complementair**). Ook het **samen sparren** werd regelmatig genoemd. Iedere gemeente, maar ook bijvoorbeeld de provincie of waterschappen, hebben immers eenzelfde doel voor ogen en worstelen met dezelfde dingen.

De combinatie van interne dialogen die in deze fase gevoerd (kunnen) worden en een stakeholderanalyse en contact met externe partijen, maakt de tussenfase **zowel een intern als extern proces**.

Dialoogfase

De laatste fase in dit canvas is de dialoogfase, een **extern proces** waarin het gesprek aan wordt gegaan met verschillende partijen (o.a. professionele partijen zoals woningcorporaties, ZLTO of de GGD, inwoners, bedrijven, en andere overheden zoals buurgemeenten of de provincie).

Risicodialogen kunnen verschillende doelen dienen, zoals om partijen zich te laten **committeren** aan klimaatadaptatie en om **input** op te halen (een dialoog gaat dus om brengen én halen). Maar **bewustzijn creëren** wordt over het algemeen als een belangrijk eerste doel gezien (er zit een bepaalde gelaagdheid in de doelen).

"Je moet partijen gewoon mee gaan nemen: 'we gaan het niet alleen doen, we kunnen het ook niet alleen doen, daar hebben we jullie bij nodig'. En daar is een eerste stapje naar bewustzijn voor nodig." (Ralph Maes)

"Een dialoog werkt twee richtingen op. Als het alleen een soort aanhoren is van wat de overheid van plan is, dan is het geen dialoog. Dus er moet ook ruimte zijn voor mensen om dingen in te brengen." (Twan Tiebosch)

De input kan zijn het gezamenlijk maken van een **prioritering**; gezamenlijk de acceptatie van risico's bespreken en besluiten waar actie op gezet moet worden. Met andere woorden, gezamenlijk duiding geven aan de stresstest. Maar ook het zoeken naar **win-win situaties** en kansen, en het **herkennen, toetsen en vollediger maken** van de stresstest kan gezien worden als input. Dit laatste vormt als het ware een extra (vertaal)slag over de stresstest. Het gaat over het gebruiken van de (praktijk)ervaring van verschillende partijen (onder andere 'citizen knowledge') en over het ontdekken van knelpunten. Door dit gezamenlijke proces wordt een gedeelde betekenis gevormd.

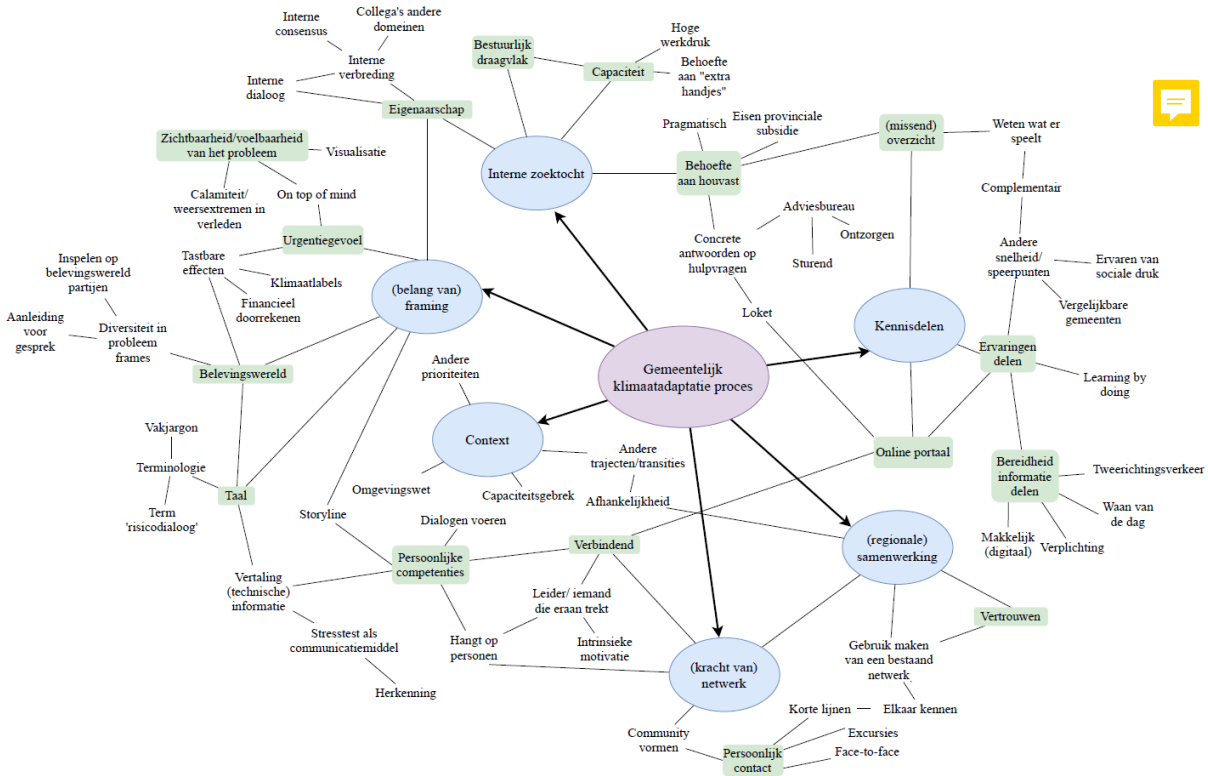
Het wordt als stimulerend ervaren als er een duidelijke **aanleiding** is voor het gesprek. Bijvoorbeeld naar aanleiding van een calamiteit, als onderdeel van een project, in combinatie met andere onderwerpen of als aspect van een omgevingsdialoog. Het werkt bevorderend om een '**incentive**' te bieden voor partijen om aan te sluiten; een positieve consequentie van participeren in een dialoog. Een voorbeeld hiervan is de meerwaarde voor de desbetreffende partij inzichtelijk maken (bijv. de mogelijke schade in geld uitdrukken die ze kunnen voorkomen).

"Gewoonweg zeggen: 'Zullen we het eens even hebben over klimaatadaptatie?' Dat is best lastig." (Nicolette Peters)

Voldoende mankracht is een andere benodigdheid in deze fase. Er moet voldoende capaciteit beschikbaar zijn om de dialogen voor te bereiden en te voeren. Hier gaat namelijk veel tijd en energie in zitten. Iets wat nog niet in alle gemeenten in voldoende mate aanwezig is. Naast mankracht gaat het ook om het hebben en inzetten van de juiste mensen die nodig zijn en bepaalde **competenties** bezitten. Hierbij werden competenties genoemd als het vertalen van (technische) opgaven, omgaan met tegenstrijdige belangen, het verbinden van verschillende opgaven en natuurlijk het voeren van de dialogen zelf wat vergt om een bepaalde omgang met stakeholders.

Tot slot het belang van **verwachtingenmanagement** in deze fase. De dialogen zijn niet met één gesprek klaar, waarschijnlijk wordt met een bepaalde partij meerdere keren gesproken. Deze verwachting moet door beide kanten gedeeld worden. Daarnaast zijn de risicodialogen in de meeste gevallen een **verzameling aan dialogen**, met verschillende stakeholders, op verschillende momenten over verschillende thema's, en op verschillende schaalniveaus. Hoe dit precies vormgegeven wordt, is voor de meeste gemeenten en werkregio's nog een zoektocht, maar het besef dat het met één gesprek niet klaar is en dat het een **cyclisch karakter** heeft, begint steeds meer wijdverspreid te raken.

"Één dialoog is geen dialoog, waarschijnlijk moet je nog een keertje terug. Dat is gewoon een fulltime job op een gegeven moment. Het is geen hobby die je er even in de marge bij doet." (Lennard Stigter)



Deel B. Sleutelaspecten

Deze visualisatie laat zes 'sleutelaspecten' in het gemeentelijke klimaatadaptatieproces zien (weergegeven met de blauwe cirkels). Met andere woorden, aspecten die in een groot aantal van de gesprekken terugkwamen en wat dus speelt bij gemeenten.

Kennis delen

Een eerste sleutelaspect is kennis delen. Zoals hiervoor al aangegeven, is het **delen van ervaringen, leerpunten en inspiratie** een onmisbaar aspect bij klimaatadaptatie, aangezien het een relatief nieuw proces is wat voor iedereen zoeken is wat een juiste strategie en aanpak is. Gemeenten hebben hierin allemaal een verschillende snelheid; bepaalde gemeenten lopen voorop. Dit zorgt ervoor dat bij een deel van de gemeenten een bepaalde **sociale druk** wordt ervaren en dat er onderling veel wordt vergeleken. Echter zorgen dit **verschil in snelheid en in speerpunten** ervoor dat er veel van elkaar valt te leren en nieuwe inzichten kunnen ontstaan. Mensen of organisaties met '**voelsprieten**' op verschillende plekken, zitten in de positie ervaringen te delen en partijen te koppelen (het zijn zogenaamde 'hubs'); zoals de provincie of de werkregiotrekkers. Daarnaast is het een kwestie van '**learning by doing**'; zodra gemeenten ermee aan de slag gaan, niet bang zijn om fouten te maken en leerpunten delen, wordt er gezamenlijk vooruit gegaan.

Wat ook naar voren kwam, is dat er een **grote bereidheid** bestaat om ervaring, informatie en (zelfontwikkelde) producten met elkaar te delen. Hierbij spelen meerdere factoren een rol. Om te beginnen heeft het te maken met het gevoel dat iedereen '**in hetzelfde schuitje**' zit en eenzelfde doel voor ogen heeft (namelijk een klimaatadaptieve gemeente worden). Daarnaast ontstaan er steeds meer **structuren** waarin gemakkelijk informatie (digitaal) gedeeld kan worden; hoe makkelijker het is, hoe eerder men ertoe geneigd is. Dit heeft ook relatie met het feit dat door de **waan van de dag** die domineert en de druk op agenda's die vaak bestaat, kennis delen en anderen helpen niet het eerste is waaraan toe wordt gekomen en wat blijft liggen. Een andere factor die stimulerend werkt, is als het is opgenomen als **verplichting** om resultaten te delen (bijvoorbeeld de voorwaarde bij de provinciale subsidie voor stresstesten om het product te delen). En als laatste wordt een '**tweerichtingsverkeer**' bij kennis delen gewaardeerd (niet alleen iets komen brengen, maar zelf er ook iets uit kunt halen/leren). Hierbij helpt het als informatie tussen **vergelijkbare gemeenten** wordt gedeeld (qua grootte, stad/ plattelandgemeente, of met een groen college); het valt op dat deze gemeenten eerder naar elkaar kijken.

Verschillende structuren worden gebruikt om kennis uit te wisselen. Dit gebeurt voornamelijk veel in **werkregioverband**. Maar ook online is veel te vinden. Deze **online portalen**, zoals het Klimaatadaptatie Brabant portaal van de provincie, kunnen op die manier ook een **verbindende schakel** vormen en partijen met elkaar in contact brengen. Aandachtspunten hierbij zijn dat bepaalde portalen 'in de vergetelheid' kunnen raken, niet voldoende up-to-date worden gehouden, of gebouwd worden aan de voorkant terwijl er wellicht geen behoefte voor bestaat.

Sterk netwerk

Een tweede aspect is het belang van een krachtig netwerk. Waarbij **persoonlijk contact** van essentiële waarde blijkt te zijn (met regelmatig

face-to-face en 1-op-1 contact). Sommigen zien het als het bouwen van een 'klimaatadaptatie **community**' (zoals de werkregio's of het Platform Klimaatadaptatie Zuid-Nederland) waarbij men elkaar kent en weet te vinden ('korte lijnen') en wat versterkt kan worden door regelmatig contact en bijvoorbeeld een excursie. Dit laat ook zien dat het erg **hangt op personen**. Mensen met bepaalde visies, ambities en competenties (zoals verbindend of visionair).

"We hebben een regionaal klimaatteam ingericht, waar de DPRA coördinatoren inzitten, zodat je de 'linking pins' hebt met de organisaties." (Albert Scheerhoorn)

"Het is samen sparren, elkaar eens even in de ogen kijken van hoe gaan we nou verder? Dat is voor een deel ook het interessante aan het onderwerp. Niet alles is voorgekauwd, er zitten altijd onzekerheden in. Maar daarnaast is er wel de zekerheid van de mensen om me heen, die ik ken in mijn netwerk, waar ik af en toe eens ten rade kan." (Peter van der Haar)

Samenwerking

Het (regionale of provinciale) netwerk is niet alleen belangrijk voor informatie-uitwisseling, maar ook voor samenwerking. **Projecten** worden gezamenlijk opgepakt (zoals een stresstest uitvoeren), meerdere doelen kunnen gelijktijdig gediend worden en er kan gezamenlijk een plan van aanpak bedacht worden. Het scheelt tijd, geld en andere middelen als wordt samengewerkt, en daarnaast wordt het product er in veel gevallen beter van. Daarnaast zorgt een samenwerkingsverband er duidelijk voor dat gemeenten zich aan elkaar op kunnen trekken. Het wordt hierbij in sommige gevallen als stimulerend ondervonden wanneer een **grote (kern)gemeente** op een natuurlijke wijze de lead neemt in de regio en daarmee andere gemeenten meeneemt.

Een kernelement bij samenwerking is natuurlijk **vertrouwen** en wederzijds begrip. Hierbij kan het als stimulerend worden ervaren wanneer er gebruik wordt gemaakt van een **bestaande samenwerkingsstructuur**. Dit zorgt er namelijk voor dat mensen elkaar al kennen en er daardoor korte onderlinge banden en vertrouwen is opgebouwd door de tijd heen. Het vormt een goede basis voor samenwerking. Doordat de DPRA werkregio's van oudsher zijn ontstaan vanuit het Bestuursakkoord water is dit in veel van de regio's het geval. Vragen die hierbij wel naar boven komen zijn: zitten de juiste mensen aan tafel? En zijn de werkregio's wel goed georganiseerd?

Een ander aspect bij samenwerking is **afhankelijkheid**. Een gemeente is in haar proces en uitvoering van meerdere partijen afhankelijk. Er is een noodzaak voor de betrokkenheid en medewerking van verscheidende externe partijen, (buur)gemeenten of de provincie. Maar ook is er een noodzakelijke afstemming met andere domeinen en transities ('strijd om m²'). Naast afstemmen wordt er in enkele gevallen ook gekozen voor het **gezamenlijk optrekken** met andere trajecten. Een voorbeeld hiervan is de REKS (Regionale energie- en klimaatstrategie) in Hart van Brabant.

"Ik denk dat het voor ons in de regio in ieder geval een toegevoegde waarde heeft dat we hier gewoon samen in optrekken. En wat ons zeker helpt, is dat wij die klimaatadaptatie onder de REKS hebben gebracht, nu heb je echt een bestuurlijke opdracht. Dus dat helpt gewoon." (Petra Mackowiak)

Interne zoektocht

Een vierde aspect is de interne zoektocht die in veel gemeenten plaatsvindt. Een zoektocht naar onder andere het vinden en verzekeren van **organisatiebreed eigenaarschap**. Zoals ook in het fasen-canvas wordt aangegeven, is het een belangrijke voorwaarde dat klimaatadaptatie breed gedragen en verankerd is in de gemeentelijke organisatie. Het betrekken van collega's uit andere domeinen blijkt echter vaak een uitdaging.

"De wisselwerking van het college en management, een verantwoordelijke ambtenaar en een duidelijke consensus en opdracht binnen de organisatie, is waar het nog vaak spaak loopt binnen een gemeente." (Bas Hofhuis)

Het **capaciteitstekort** blijkt de dagelijkse realiteit voor veel gemeenten, en een lastig te overwinnen obstakel met een link met **bestuurlijk draagvlak** en urgentiegevoel. Er wordt een hoge werkdruk ervaren en er bestaat een behoefte aan 'extra handjes'. Maar naast voldoende mankracht, blijkt ook belangrijk dat de juiste mensen eraan werken. Klimaatadaptatie komt vaak terecht bij de '**watermensen**' in een gemeente, terwijl het een onderwerp is dat veel meer beslaat dan dat. Het roept discussies op waar klimaatadaptatie bij thuis hoort. Daarnaast wordt het ook als stimulerend gezien als voornamelijk '**eigen mensen**' eraan werken, en het proces minder afhankelijk is van inhuur. Op die manier zit de kennis en ervaring meer verankerd in de organisatie. Dit is ook gerelateerd aan de hinderende factor van veel interne wisselingen. Het laat weer zien dat het erg hangt op personen.

"Dat is denk ik één van de grootste struikelblokken waar we op dit moment tegenaan lopen; dat het 'aapje' van klimaatadaptatie, of je het nou regionaal of per gemeente bekijkt, vaak op niemands schouder zit binnen een organisatie, of juist op heel veel verschillende schouders, en dan eigenlijk ook weer nergens." (Eric Hendrickx)

Ook laat de interne zoektocht een **behoefte aan houvast** en aan een **pragmatisch stappenplan** zien. Stimulerend hierbij zijn bijvoorbeeld de eisen van de provinciale subsidie die handvaten bieden. Of het Deltaprogramma wat een stok achter de deur vormt, maar soms ook 'ver-van-mijn-bed' kan zijn.

Gemeenten zoeken dus naar concrete antwoorden op hulpvragen, wat in sommige gevallen bemoeilijkt wordt door een **missend overzicht** van wat er allemaal speelt en al bekend is. Er wordt soms een 'overkill' aan informatie ervaren. Een **adviesbureau** kan een gemeente hierin ontzorgen, maar wat wel resulteert in dat een gemeente afhankelijk wordt van het bureau, wat soms als 'sturend' wordt ervaren. Als stimulerend daarentegen wordt gezien wanneer een adviesbureau in een gehele regio actief is, met als voordeel dat het een bekende omgeving is en eenzelfde basis en aanpak wordt gebruikt die gemakkelijker te combineren valt.

Belang van framing

Een vijfde sleutelaspect is het belang van framing en het aansluiten op de **belevingswereld** van verschillende partijen. Voorbeelden hiervan zijn klimaatadaptatie '**framen**' als iets om de leefbaarheid van een wijk of het vestigingsklimaat van een bedrijventerrein te vergroten, of als van belang voor de toekomstige generatie. Hierbij wordt er gebruik gemaakt van

verschillende 'problem frames' en wordt er gestuurd op het persoonlijke belang van een bepaalde partij (zoals inwoners, bedrijven of scholen). Een ander voorbeeld is klimaatadaptatie meer in de breedte benoemen met duurzaamheid.

"De energietransitie of duurzaamheid zijn meer 'on top of mind' bij mensen dan klimaatadaptatie." (Wendalin Kolkman)

Het is van belang om de **zichtbaarheid en voelbaarheid** van het probleem te vergroten, wat daarmee het urgentiegevoel ook verhoogt. Weersextremen en een calamiteit helpen hier natuurlijk bij, maar mensen hebben geen langetermijngeheugen waardoor al snel een calamiteit wordt vergeten.

"Wij hebben de stresstest echt in de praktijk gehad. Het stond helemaal blank hier." (Nicolette Peters)

Als er (gelukkig) geen straat onderloopt, moet er gezocht worden naar andere manieren om de voelbaarheid te vergroten. Zo wordt bijvoorbeeld de **tastbaarheid** van het probleem vergroot door het gebruik van 'klimaatlabels' in Land van Cuijk. Een ander voorbeeld is het financieel doorrekenen van klimaateffecten of het gebruik van visualisaties. Zoals een foto van een klimaatadaptieve tuin of een praatplaat van de stresstest (waarin technische informatie op inzichtelijke wijze is vertaald). Klimaatadaptatie is immers lastige materie om over te communiceren.

Taal en terminologie spelen daarom ook een belangrijke rol. Zo is het hinderend om vakjargon te gebruiken als bijvoorbeeld richting inwoners wordt gecommuniceerd, en kan beter in plaats van 'klimaatadaptatie' voor een term als 'inspelen op extreem weer' gekozen worden. Welke termen het beste gekozen kunnen worden, verschilt per doelgroep (iedereen spreekt immers een 'verschillende taal'). Daarnaast bestaat er veel weerstand tegen de term 'risicodialoog', daarom wordt het in de meeste gevallen klimaatdialoog, participatie of gewoonweg dialoog genoemd.

Bredere context

Een laatste aspect is de bredere context waar gemeenten hoe dan ook mee te maken hebben. Hieronder valt bijvoorbeeld de komst van de **Omgevingswet**, **andere transities** die doorgemaakt moeten worden zoals de energietransitie (wat soms een 'strijd om m²' kan opleveren), en andere zaken die gewoonweg **voorrang** krijgen. Zoals een gemeentelijke herindeling, waardoor sommige dingen even stil komen te liggen. Of het stikstofdebat waardoor gesprekken met boeren uitgesteld werden. En op dit moment natuurlijk de coronacrisis als duidelijk voorbeeld.

Afsluiting

Al met al kan geconcludeerd worden dat er voor gemeenten veel bij komt kijken, en dat het niet gemakkelijk is om de **stap van stresstest naar risicodialoog** te zetten. Het wordt als stimulerend ervaren om van begin af aan te focussen op datgene wat opgeleverd moet worden: een uitvoeringsagenda. Om de stappen die gezet worden daarnaar te laten leiden. Klimaatadaptatie is een relatief nieuw onderwerp, en voor iedere gemeente min of meer een compleet nieuw proces. Dit zorgt ervoor dat het voor veel gemeenten een **zoektocht** is, en deze stappen bepalen kan dus lastig zijn en loopt soms door de uitvoering heen. Het kan een zoektocht zijn naar de juiste inrichting van de dialogen; naar een balans tussen een opgavegerichte en energiegerichte aanpak; naar een goede aanleiding voor een gesprek; naar intern de zaken op orde krijgen; of naar wat lokaal en wat regionaal opgepakt moet worden; etc. Maar ook laat de praktijk zien dat het helpt om gewoon te beginnen en te onderkennen dat het plan van aanpak van te voren niet in beton is gegoten en gaandeweg aan aanpassing onderhevig is (het is een **cyclisch en iteratief proces**).

Het merendeel van de Brabantse gemeenten bevindt zich momenteel in de 'tussenfase' tussen het maken van de stresstest en het voeren van dialogen. Het is een fase van terugblikken op resultaten uit de stresstest en vooruitkijken naar het organiseren van de dialogen. Nu door de coronacrisis deze tussenfase als het ware wordt verlengt, biedt dat ruimte voor gemeenten om intern zaken te regelen, contact te zoeken én behouden met externe partijen, een dialoogstrategie uit te denken en om ervaringen uit te wisselen en het contact tussen gemeenten en werkregio's nog meer te versterken. Met andere woorden, **de verlengde tussenfase benutten**. Zodat optimaal gewerkt wordt aan een klimaatadaptief en waterrobuust Brabant in 2050!

Dankwoord

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Colofon

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