

Filling the Kasteelgracht with a stream of tacit knowledge

Finding solutions for a complex water problem by using
tacit knowledge of people in a Working place



Master thesis

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Preface

This master thesis finishes the master Civil Engineering and Management (CEM), with specialization in Water Engineering and Management (WEM) at the University of Twente. The research was initiated by engineering agency Tauw in Deventer, in cooperation with Geldof c.s. Tauw was interested in a research into the effects of the Working place or in Dutch (Werkplaatsen), which is a working method to find solutions for complex water problems. Rijkswaterstaat was also interested in the effects of the Working place and invested and contributed in several cases. These cases were organised by Geldof c.s. and I was able to observe the whole process.

The research started with organizing exploratory conversations with multiple municipalities. The goal of these conversations was to find a suitable case for the research. The intention was to find a case around the subject of climate adaptation. During the exploratory conversations the municipalities showed interest in the Working place and climate adaptation, but it was a difficult and a slow process. The municipalities did not want to cooperate, because they had a limited budget and the potential projects did not have a high priority. Therefore, the focus shifted from climate adaptation and municipalities, to complex water problems and water authorities. With support of Geldof c.s. two cases were found. One in the municipality of Apeldoorn and one with Rijkswaterstaat. The case at the municipality Apeldoorn was about surface and groundwater problems in the pond “Kasteelgracht” in the residential area “Woudhuis”. The second case was started at Rijkswaterstaat and was about possible groundwater problems due to drainage during the construction of a deepened highway.

A meeting was organized with both authorities to discuss the design of the Working place. In this meeting, the actors were identified and a planning was made. The actors for both cases were invited, but during this process the case at Rijkswaterstaat was cancelled due to much internal resistance. However, experiencing the start-up phase of a Working place gave also interesting insights in the Working place.

The case at the municipality Apeldoorn around the problems of “Kasteelgracht” continued and was analysed in detail. The involved actors were members of the following organisations: Water board Vallei and Veluwe, municipality Apeldoorn and residential council “Woudhuis-Osseveld”. All actors were prepared for the interviews and they completed the survey before and after the Working place. I would like to thank all these actors for their time and openness in this process.

The preparation phase started in September 2015, which resulted in a literature review and research plan. The research itself was conducted from January till September 2016. This research provides useful information for Geldof c.s., Tauw, municipality Apeldoorn, Water board Vallei and Veluwe and Rijkswaterstaat.

I would like to thank my supervisors Denie Augustijn, Maya van den Berg, Roel Valkman and Claude Roovers for their guidance during my graduation project. I would also thank Govert Geldof for his assistance. All the feedback, advice and suggestions provided during the entire process were much appreciated.

Abstract

The Dutch water authorities, consisting of water boards, municipalities and Rijkswaterstaat experience increasing problems due to a lack of people with experience and experiential knowledge. In addition, experiences and tacit knowledge are hardly combined or transferred to less experienced personnel (Cath et al, 2010). Tacit knowledge will be obtained by working for a longer time at the same company or location and it is difficult to transfer to others. Forms of tacit knowledge are acts, intuition and routines. By having a lack on tacit knowledge, organizations will have less power to act and problems will be detected and addressed slower (DeLong, 2010). The problems at the water authorities are caused due to budget cuts and loss of experienced persons because of retirements. Due to the budget cuts, the water authorities were forced to reorganize and to scale up. The goal of this was to create more efficient and cost effective governments (Castenmiller & Peters, 2013). However, it also leads to larger organizations with more tasks and new requirements. In addition, the specific knowledge about the area decreases and the connection between the water authorities and other parties declined (de Vries, 2013). In order to address these problems, a new working method was developed; the Working place. In a Working place, complex water problems will be addressed by using tacit knowledge different people. In the past, several Working places were organized, but the effects were still unknown. The goal of this research was to determine the effects of the Working place in order to find solutions for complex water problems. This research was based to determine the effects of the Working place around the problems of the “Kasteelgracht”.

Chapter 2 provides the background of the case and clarifies which actors should be involved. The “Kasteelgracht” is a moat around “Het Kasteel”, which is part of the residential area “Osseveld-Woudhuis” in the city Apeldoorn. During periods of drought, problems occur in the “Kasteelgracht” due to low water. If the water level decreases, the soil and plants dry out and this looks dirty and it leads to a bad smell. In addition, two exotic plants came into the “Kasteelgracht” spontaneously, which lead to a lack of visibility in the water. Furthermore, the weirs between different water levels are leaking and there will be some problems during heavy rain events. Due to a lack of the capacity in the sewerage will cause water to discharge via an overflow to the “Kasteelgracht”. When this happens parking spaces and sheds were flooded. All these problems are very annoying for the residents of the residential area. They had hindrance for 13 years and the water board Vallei and Veluwe and municipality Apeldoorn did never found the final solution for the problems. The problems were still not solved, because the involved actors had different perceptions about the problems and responsibilities. In addition, there was not enough budget and only a select group of persons within the water board and the municipality was involved in finding solutions. In order to find a solution for these problems a Working place was organized. In the Working place, all persons who had specific knowledge and experiences about the problem were invited. Finally, the Working place consisted of several persons of water board, the municipality and the residential council.

Chapter 3 provides a description about the execution of the Working place. In the first session the actors introduce themselves and share their knowledge and experiences of the problems. The actors wanted to find a solution together, but the they had many different perceptions about how the problems should be solved. There arose a fierce discussion and the process came to a standstill (moment of effort). However, the actors solved the problems and the mood became positive. They decided to create two scenarios and these were elaborated in the second session. The third session did not take place yet, but in this session the scenarios will be presented to the daily board of the water board, representative of the municipality and finally to the residents. These persons were not being present during the Working place, but they were important for finding and for implementing the solutions. The residents did not want to join, because they first wanted that their input, which had

given in the past was taken seriously and acted upon. The daily board and the representatives of the water board had other appointments during the sessions.

In Chapter 4, the effects of the Working place were determined by analyzing the process of the Working place. In addition, the actors were interviewed and completed a survey before and after two session of the Working place. This survey was based on the 22 factors of the Adaptive Capacity Wheel (ACW). This is a tool, which can be used to determine the weak and strong point of persons, organizations and approaches. By comparing the results before and after two session of the Working place, the effect of the Working place became clear. Almost all scores of the factors increased due to the Working place. However, the residents, board members of the water board and a representative of the municipality were not being present in the Working place. This lead to lower scores of the factors ability to improve and multi actor, level & sector. The scores remained the same of the factors: Entrepreneurial (incite people to act), single loop learning (improving routine) and double loop learning (when social actors challenge norms and basic assumptions). Despite that some scores became lower or remained the same value, almost all scores increased. The actors were positive about the process. The problem was urgent enough for everyone and they were willing to find a solution together. The relationship between the actors improved and they were willing to share their tacit knowledge. Furthermore, due to the documentation (the growing narrative) and many reflections during the process, the understanding toward each other increased. It made the actors more conscious of their behaviour and they could learn from their experiences.

Based on the improved results of the survey after two session, in combination with the positive developments of the process of the case around the “Kasteelgracht”, can be concluded that the Working place has a positive effect on finding solutions for complex water problems.

Samenvatting (Dutch)

De Nederlandse water autoriteiten, bestaande uit waterschappen, gemeenten en Rijkswaterstaat ervaren steeds meer problemen door een gebrek aan mensen met ervaringskennis. Daarnaast, worden ervaringen en kennis nauwelijks gecombineerd of overgedragen aan minder ervaren personeel (Cath et al, 2010). Ervaringskennis wordt verkregen door een langere tijd ergens werkzaam in te zijn en is moeilijk over te brengen aan anderen. Vormen van ervaringskennis zijn handelingen, intuïtie en routines. Bij gebrek hieraan ontstaan minder daadkrachtige organisaties en worden problemen minder snel herkend of aangepakt (DeLong, 2010). De problemen zijn ontstaan door bezuinigingen en het verlies van ervaren personen ten gevolge van veroudering. Door de bezuinigingen werden de water autoriteiten gedwongen om te reorganiseren en op te schalen. Dit had als doel om efficiëntere en kosteneffectievere overheden te krijgen (Castenmiller & Peters, 2013). Echter, het resulteerde ook in grotere organisaties met meer taken en nieuwe eisen. Daarnaast leidde het tot een vermindering van specifieke kennis over het werkgebied en de connectie tussen de verschillende water autoriteiten en andere externe partijen ging achteruit (de Vries, 2013). Om deze problemen aan te pakken is er een nieuwe werkwijze ontwikkeld; de Werkplaats. In een Werkplaats worden complexe water problemen aangepakt met behulp van ervaringskennis verschillende mensen. In het verleden zijn er meerdere Werkplaatsen uitgevoerd, alleen waren de effecten nog onbekend. Het doel van dit onderzoek was om de effecten te bepalen van de Werkplaats met betrekking tot het vinden van oplossingen voor complexe water problemen. Dit onderzoek was gebaseerd om de effecten te bepalen van de Werkplaats rondom de problemen van de “Kasteelgracht”.

Hoofdstuk 2 geeft de achtergrond van de case en maakt duidelijk welke actoren betrokken waren. De “Kasteelgracht” is een gracht rondom “Het Kasteel”, wat een deel is van de woonwijk “Osseveld-Woudhuis” in de stad Apeldoorn. Tijdens droge perioden ontstaan er problemen in de “Kasteelgracht” door lage waterstanden. Als het waterpeil daalt drogen de bodem en planten uit en dit ziet er vies uit en het leidt tot stank. Daarnaast zijn er twee exotische waterplanten in de “Kasteelgracht” gekomen waardoor het water bijna niet zichtbaar is. Verder zijn de stuwen tussen de verschillende waterpeilen lek en zijn er problemen tijdens heftige regenval. Het riool heeft niet voldoende capaciteit om het water af te voeren, waardoor het via een overstort in de “Kasteelgracht” komt. Als dit gebeurt stromen parkeerplaatsen en schuurtjes over. Al deze problemen zijn vervelend voor de bewoners van de woonwijk. Ze hebben er al 13 jaar last van en het waterschap Vallei en Veluwe en de gemeente Apeldoorn hebben nog geen definitieve oplossing gevonden voor de problemen. De problemen zijn nooit opgelost, want de betrokken personen hadden verschillende percepties over de problemen en verantwoordelijkheden. Daarnaast was er niet genoeg budget en was alleen een selecte groep personen binnen het waterschap en de gemeente betrokken bij het vinden van oplossingen. Om oplossingen te vinden voor deze problemen werd er een Werkplaats georganiseerd. In de Werkplaats werden personen uitgenodigd op basis van hun kennis en ervaringen over de problemen. Uiteindelijk bestond de Werkplaats uit een aantal personen van het waterschap, de gemeente en de wijkraad.

Hoofdstuk 3 geeft een omschrijving over de uitvoering van de Werkplaats. In de eerste sessie stelden de actoren zich aan elkaar voor en deelden ze hun kennis en ervaringen over de problemen. De actoren wilden graag samen een oplossing vinden, maar ze hadden veel verschillende percepties over hoe het opgelost moest worden. Er ontstond een velle discussie en het proces kwam tot stilstand (moment van de moeite). Echter, de actoren losten de problemen op en er kwam weer een positieve stemming. Ze besloten om twee scenario's te maken en deze werden uitgewerkt in de tweede sessie. De derde sessie heeft nog niet plaatsgevonden, maar in deze sessie worden de scenario's gepresenteerd aan het dagelijks bestuur van het waterschap, wethouders van de gemeente en uiteindelijk ook aan de bewoners. Deze personen waren niet aanwezig tijdens de Werkplaats, maar

zijn wel belangrijk voor het vinden en om de oplossingen te implementeren. De bewoners wilden niet aansluiten bij de Werkplaats, want zij wilden eerst dat hun input wat ze hadden gegeven in het verleden serieus werd genomen en dat het werd opgevolgd. Het dagelijks bestuur en de wethouders hadden andere afspraken tijdens de sessies.

In hoofdstuk 4, de effecten van de Werkplaats werden bepaald door het hele proces van de Werkplaats te analyseren. Daarnaast zijn alle actoren geïnterviewd en hebben ze een enquête ingevuld voor en na twee sessies van de Werkplaats. Deze enquête was gebaseerd op de 22 factoren van het adaptatiewiel. Dit is een instrument dat gebruikt kan worden om de zwakke en sterke punten van personen, organisaties en methoden te bepalen. Door de resultaten voor en na twee sessies van de Werkplaats te vergelijken werd het effect van de Werkplaats duidelijk. Bijna alle scores van factoren namen toe. Echter, de bewoners, bestuursleden van het waterschap en wethouders van de gemeente waren niet aanwezig in de Werkplaats. Dit leidde tot lagere scores voor de factoren: improvisatievermogen en multi-actor, multi-level en multi-sector benadering. De scores bleven gelijk van de factoren: Ondernemend leiderschap (mensen aanzetten tot handelen), eerste orde leren (verbeteren van routines) en tweede orde leren (herinterpreteren van routines). Ondanks dat een aantal scores lager was of gelijk bleef, namen de waarden van meeste scores toe. De actoren waren positief over het proces. De problemen waren urgent genoeg voor iedereen en ze waren bereid om met elkaar te zoeken naar oplossingen. De relatie tussen de actoren verbeterde en ze waren bereid om hun ervaringskennis te delen. Verder zorgde de documentatie (growing narrative) en de vele reflecties ervoor dat het begrip voor elkaar toenam. Het maakte de actoren meer bewust van hun gedrag en ze konden leren van hun ervaringen.

Gebaseerd op de verbeterde resultaten van de enquête na twee sessies, in combinatie met de positieve ontwikkelingen in het proces in casus rondom de “Kasteelgracht”, kan worden geconcludeerd dat de Werkplaats een positief effect heeft voor het vinden van oplossingen voor complexe water problemen.

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Glossary

Adaptive capacity wheel (ACW): A tool to analyse persons, organisations and approaches on strengths and weaknesses. The tool consists of 22 factors, divided over the following 6 dimensions: Resources, leadership, room for autonomous change, learning capacity, variety and fair governance.

Experience: The knowledge or skill acquired by a period of practical experience of something, especially that gained in a particular profession.

First ring: Group of the most important persons who participates in the Working place.

Growing narrative: A growing narrative is the most important document of the Working place. The document contains all stories/narratives of the actors and are structured on subject. After each session the growing narrative will be sent to all actors to assure transparency of the process. It helps to obtain a clear overview of the developments of the process. It shows the interaction between actors, which problems occurs and how they find solutions.

Second ring: People who have a significant role to bring the result of the Working place to a higher level, but do not participate in all sessions of the Working place. The second ring should do something with the results of the Working place. As example: Arranging the financing.

Speech act: Common story, based on experiences from the Working place and includes the intentions, plans and ideas. It is a common story with the promise that the problem really should be solved.

Sphere: A cohesive group of people with similar experiences, values and ways of thinking. In a sphere will be shared implicit and explicit knowledge. Between different spheres only explicit knowledge will be shared.

Tacit knowledge: A form of individual knowledge, which is hard to transfer to others. It consists of experiences, values and attitudes and can be transferred by interaction. It can be obtained by doing and telling stories (narratives).

Moment of effort: This is a moment in the Working place with fierce discussion. It is the heart of the problem, which should be solved. Mostly the process become to a standstill and there is much negative energy.

Narrative interview: A form of interviewing, where the emphasis is on telling narratives (stories).

Narrative scan: The narrative scan is the base of the grow narrative. It contains all data of the narrative interviews and the tensions will be clarified. By starting the sessions of the Working place the document grows into "Growing narrative".

Working place: A Working method to find solutions for complex water problems by using tacit knowledge and experiences of different actors. These actors will be invited for the Working place, because of their tacit knowledge and experience of these problems.

Chapter 1. Introduction

1.1. Motive

The Dutch water authorities, which consists of water boards, municipalities and Rijkswaterstaat, experience an increasing amount of problems due to a lack of personnel with experience and tacit knowledge. In addition, if the water authorities dispose of personnel with experience and tacit knowledge, it will not be combined and it will not be transferred to less experienced persons (Cath et al., 2010). Due a lack of experience and routine the authorities have less ability to act to solve problems, especially at complex water problems (Insch, 2010). Persons need more time to detect or address problems (DeLong, 2004). Experience is the knowledge or skill acquired by a period of practical experience of something, especially gained in a particular profession. Tacit knowledge is implicit knowledge; which people gain when they are active for a long time in their trade or profession. Tacit knowledge is divided over various actors, both within an organisation as well as over other parties (Cath et al., 2011).

The problems with transferring experiences and tacit knowledge are, amongst others, caused by upscaling of the water sector and loss of experienced people due to retirements (Cath et al., 2010). The water sector was forced to upscale and to reorganize, with the aim to be more efficient and cost effective, due to cost cutting by the government (Castenmiller & Peters, 2013). Hence, many water boards and municipalities were merged and suffered from major reorganizations in the last decade, including Rijkswaterstaat, which is the Dutch ministry of infrastructure and the environment. This resulted in organizations becoming responsible for larger working areas. They had to deal with larger organization structures, more tasks and new requirements. Also, it resulted in a decrease of specific knowledge about these working areas and the connection between water boards, municipalities and civilians deteriorated (de Vries, 2013).

As example: Rijkswaterstaat had to make savings, so they introduced a new vision, which was named “The market, unless” or in Dutch “De markt tenzij”. The goal of this vision was to create a more effective and efficient organization. Many tasks of Rijkswaterstaat were transferred to suppliers, which created more room for market parties to innovate. Rijkswaterstaat adopted the role of project manager and fewer employees were needed (van den Brink, 2009). This resulted in a loss of experienced people and Rijkswaterstaat became technically dependent on the market. Previously, Rijkswaterstaat had much knowledge about costs and they could check the prices, of these parties. However, without experienced people with knowledge about costs, it was difficult to check the parties on fair prices.

To transfer tacit knowledge and experiences, it is important to have an integrated and adaptive approach (Pahl-Wostl et al., 2007). This approach includes combining experience and knowledge of different actors, so they can learn from each other (Swart et al., 2013; Cloutier et al., 2014). Furthermore, it improves the knowledge base for decision making, strengthen public support and increases the effectiveness of governance (e.g. Newig and Fritsch, 2009; Paavola et al., 2009; Pellizzoni, 2003).

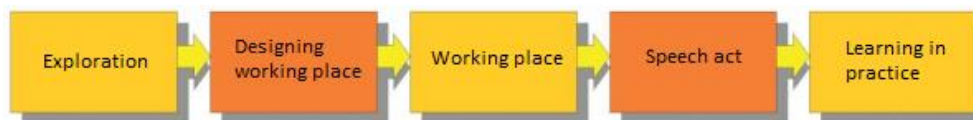
Due to the described problems of the water authorities, they require a method, which can be used for transferring tacit knowledge and experiences. In 2011 a new method was developed by Cath et al. named ‘Working place’ or in Dutch “Werkplaats”. This method helps to work with an integrated and adaptive approach. The goal of a Working place is to find solutions for complex water problems by using tacit knowledge and experiences of people. Rijkswaterstaat saw potential in this method and reserved budget to create and enable a number of Working places. The engineering and consultancy company Tauw and Geldof c.s. offered to organize several Working places. These parties were interested in the operation and effects of the Working place.

In the past, Geldof c.s. organized several Working places. The participants of these Working places were rather positive about the process, however the effects are still unclear, since it was never investigated. This thesis describes the process of the Working place, related effects and if it contributes to finding solutions for complex water problems.

1.2. Working places

The Working place is a method to find solutions for complex water problems by using tacit knowledge and experiences of different actors. The assumption is that all explicit and implicit knowledge is available to the involved persons for solving the problems. The actors will be invited because of their experience and tacit knowledge of the problem. If important tacit knowledge or experience is missing, new actors will be invited who do possess this knowledge and experience. The five phases of the Working place are displayed below. Next, the characteristics are listed and will be explained subsequently.

Five phases



Characteristics of the Working place

- Use of experiences and tacit knowledge of people
- Narrative approach
- Small, local, specific problem
- First and a second ring
- Five spheres
- Multiple session (3-5) in several months
- Moment of effort
- Speech act

Transferring tacit knowledge is difficult, because it is hard to put into words. It is stored and shown in behaviour, in the way people act and in workmanship. Tacit knowledge is embedded in stories/narratives, anecdotes and conversations (Geldof, 2010).

Tacit knowledge and experience of people can be revealed by using a narrative approach (Cath et al., 2011). A narrative approach consists of writing and telling stories and engaging dialogues. Telling narratives is a rich and diverse method to obtain a good view of the situation and the perception of people. In the Working place, a narrative approach will be used in order to share knowledge, experiences and to learn from each other (Cath et al., 2010).

Furthermore, to transfer tacit knowledge, the Working place focuses on local and specific problems. It is difficult to transfer tacit knowledge and experience by working on complex problems, such as solving water problems in a city. More participation is needed and more actors should be involved. The integration of actors is important, because it results in deliberate choices. However, all actors have their own knowledge and experiences, which makes the integration complex.

The complexity of a problem is dependent on the size of the problem and the interaction with the environment. Specific and local problems can also be complex, but the size is smaller and this made it is easier to involve all important actors (Cath et al., 2011). Furthermore, solving the water problems in practice should be easier with a specified and less complex problem. More theory about complexity and the narrative approach is provided in Annex I.

The obtained knowledge and experiences during the process makes it easier to solve similar problems elsewhere. Furthermore, the Working place consists of a first ring and a second ring. The first ring are all persons, who participate in the Working place. The second ring consists of people who have a significant role to bring the result of the Working place to a higher level and do not participate in the Working place. The second ring will be invited on request of the first ring and they should do something with the results of the Working place. As example: Arranging the financing.

The Working place consists of multiple spheres, which all have their own tacit knowledge and experiences. A sphere is a cohesive group of people with similar experiences, values and ways of thinking. The people in different spheres will be selected based on their knowledge and experiences. The participant of the Working place can be classified in the next five spheres (Figure 1).

- **Governance and political sphere:** This sphere is responsible for the organizational policy and has the capacity to decide. For example: executive committee, municipal council
- **Management and control sphere:** Persons, who are responsible for the organisation and have much influence in forming the organization. For example: managers and controllers
- **Rationalising sphere:** This sphere consists of specialists with technical knowledge (example: engineers or ecologists)
- **Rooted sphere:** The rooted sphere consists of people who are rooted in the organization. Their knowledge can be derived from years of experience.
- **Connecting sphere:** People in the connecting sphere are explicitly concerned with applying integrated approaches and maintaining relationships. For example: policy makers and communication officers

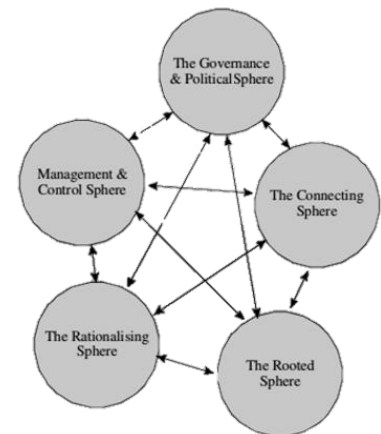


Figure 1: The five spheres

The spheres are not per definition the same in each Working place. It is possible that spheres will be changed or classified in a different way. It does not really matter which spheres are represented, because it is mainly important that the different spheres will be in dialogue (Geldof, 2014). It is a kind of checklist if all forms of tacit knowledge to solve the problem are available. However, at least four of the five spheres should be present, otherwise the process of the Working place proceeds difficultly. When all spheres are represented the Working place is more decisive.

The Working place consists of several sessions of half a day and the amount of sessions can differ between three to five. This depends on the development of the process and whether all actors are satisfied about the results (Cath, 2011). In these sessions the actors work together on a common plan to solve the problems, which calls a “speech act”. However, the speech act is more than a common plan. It is a kind of promise that the problem really should be solved. As example: The Working place will give a presentation of their common plan to the management of the water board and the municipality council.

1.3. Adaptive capacity wheel

For analysing the effects of the Working place the Adaptive Capacity Wheel (ACW) was used. The ACW is a tool, which can be used to analyse persons, organisations and approaches on strengths and weaknesses (Gupta et al., 2010). In the past the ACW was used to analyse various policy documents and some examples are shown in Table 1. The tool was developed by the Dutch National research programme climate changes and spatial planning (KvR, 2011). Based on literature, the ACW identifies six dimensions (inner circle, figure 2) and 22 factors as indicators of those dimensions (outer circle, figure 2). Figure 3 is an example of an applied ACW for the municipality Zaandam. The meaning of all dimensions and factors are given in Annex II.

In this research, the ACW was used to analyse the effects of the Working place and if it contributes to finding solutions for the problems of the case. Before and after the Working place, all involved actors were interviewed and completed a survey. This survey consists of 22 questions, which corresponds to the 22 factors of the ACW. The actors could give a score from -2 (very bad) to 2 (very good), which is shown in Table 2. The individual scores were averaged to obtain the scores of the authorities.

During the Working place the same factors were analysed. The results of the interviews, survey and analysis gave a clear overview of the developments of the process and the effects of the Working place. The research consists of a qualitative and a quantitative factor. The quantitative factor is the difference in score of the ACW before and after the Working place. The qualitative factor is based on the explanation of the actors. A higher score after the Working place than before means a positive effect of the Working place. When the score is lower than before, the Working place has a negative effect on finding solutions.

Table 1: Examples of documents where the ACW is used

	Spatial planning	Water	Agriculture	Nature
Main policy documents in the Netherlands	National Spatial Strategy, Spatial Planning Act, Strategic Environmental Assessment	National Water Plan, Water Act, Water Assessment,	Agenda for a Living Countryside, Rural Areas Development Act	Nature Protection Law, Flora and Fauna Law, National Ecological Network
In-depth case studies and sub-cases	Climate-Proof spatial planning in the Zuidplaspolder	Local water management in Delft	Land consolidation in the agricultural polder De Wijde Wormer	Nature management in the Wadden Sea area

Table 2: Effect on the factors of the ACW

Effect	Score	Aggregated scores
Very good / very much	2	1.01 to 2.00
Good / much	1	0.01 to 1.00
Normal / neutral	0	0.00
Bad / little	-1	-0.01 to -1.00
Very bad / very little	-2	-1.01 to -2.00



Figure 2: Factors of adaptive capacity wheel (Gupta et al., 2010)



Figure 3: Example of applied adaptive capacity wheel, municipality Zaandam (Gupta et al., 2010)

1.4. Research objective and questions

The objective of this research is to evaluate the effects of Working places as an approach for different actors to find solutions for complex water problems, by monitoring the process and outcome in a case study.

Key question: Which effects have Working places in finding solutions for complex water problems where different actors are involved?

- **Sub-question 1:** What is the background of the problems and which actors are involved to solve these problems?
- **Sub-question 2:** How is the Working place executed in the case study and which effects does it have on finding solutions
- **Sub-question 3:** Does the Working place contribute to finding solutions for the problems around the “Kasteelgracht” and which factors does it affect?

1.5. Research methodology

In this section, the methodology to reach the research goals are given. The research is split into three phases. The development of the process and choices will be briefly described here.

Phase 1: Exploration Working places

To obtain more background information concerning the case, narrative interviews and a survey were used. Narrative interviewing is a form of interviewing, where the emphasis is on telling narratives (stories). During these interviews, the actors told narratives about their experiences with the “Kasteelgracht”. Their narratives described the occurrence of the problems, which measures were executed and why the problems not were solved already. The narrative interviews were recorded and transcribed into the “Narrative scan”. The narrative scan contains all data of the interviews and gave a clear overview of the problems, perceptions, knowledge and experiences.

In addition, all actors completed a survey, which was based on the 22 factors of the Adaptive Capacity Wheel (ACW). The actors gave a score to each factor from -2 to 2. Besides the scores, the actors gave an explanation of the given scores. This resulted in understanding why the actors gave a certain score. The data from the survey and interviews resulted in a clear overview of the weak and strong point of the conventional working methods of the municipality and the water board. It became clear how the authorities handled with the problems around the “Kasteelgracht” before the Working place. This first phase was also a preparation for the third phase. In the third phase, the actors completed the same survey for the second time and the differences in scores determined the effect of the Working place.

The survey was based on the 22 factors of the ACW. To use these factors correctly, the developers of the ACW were approached to check the survey which they have done. Furthermore, the actors of the Working place were classified in spheres and there was determined which persons were in the first ring and second ring. The classification of the spheres was based on the role of the actors and their knowledge and experiences.

Phase 2: Working places and speech act

The Working place consisted of three sessions and was organized on location. In this way, the case area could be visited, so everyone could see the problems in reality. During the visit, knowledge and experiences about the “Kasteelgracht” and problems could be exchanged, which creates more understanding.

The sessions result into a “Speech Act” which is a presentation to the second ring at the end of the last session. The second ring are the persons who should do something with the results of the Working place. A “Speech act” is a common story, based on experiences from the Working place and includes the intentions, plans and ideas. It is a common story with the promise that the problems would be solved.

All sessions of the Working places were recorded and worked out into the growing narrative. The growing narrative is a document, which contains the experiences and tacit knowledge of all actors. The stories were transcribed and structured on subject. It shows the developments, interaction between actors, which problems occurred and how they find solutions. After each session the growing narrative was sent to all actors to assure transparency of the process. Although the growing narrative was of substantial size, all actors read the document, because they were interested what they had said exactly. The growing narrative is not added to this report due to privacy reasons.

Phase 3: Comparing and reflection

After two sessions, the actors completed the survey for the second time and gave an explanation again. The scores of the survey before and after two sessions of the Working place were compared. If the scores were higher than before means that the Working place contributed to finding solutions for the problems around the “Kasteelgracht”. If the score of a factor had not changed, the Working place did not affect that factor and if the score decreased, the Working place had a negative influence on finding solutions. The explanation why they gave a certain score, clarified differences and equities in scores per factor per authority. In addition, the Working place and how the factors changed was observed. This observation and the conclusion why a factor changed is given per factor per authority.

1.6. Report outline

The background of the problems and which actors should be involved to solve these problems (sub-question: 1) is described in Chapter 2. In Chapter 3 is described how is the Working place is executed in the case study. Next, the results of the survey before and after two sessions of the Working place are given and in Chapter 4. These results and the methodology of the research would be discussed in Chapter 5. The report ended with making conclusions and recommendations, which are given in Chapter 6.

Chapter 2. Description of the case

2.1. Introduction

This chapter gives a description of the case the “Kasteelgracht” and gives an answer to sub-question 1: What is the background of the problems and which actors are involved to solve these problems? The background of the case will be explained in paragraph 2.2. The actors who were involved in the case are described in paragraph 2.3. The description of the case is based on the obtained information of the narrative interviews.

2.2. Background of the problems

The “Kasteelgracht” is a moat around “het Kasteel”, which is a part of the district Osseveld-Woudhuis in the city Apeldoorn in the Netherlands (figure 4 and 5). There are several problems around the “Kasteelgracht” and a solution is not found, because all involved parties have a different perception about the problems and responsibility. In addition, only a select group of persons was involved in trying to find a solution for the problems.

In this case two authorities are partly responsible for the maintenance of the “Kasteelgracht”. The water board Vallei and Veluwe is primarily responsible for the wet section (“Kasteelgracht”) and the municipality Apeldoorn for the dry section (banks).



Figure 4: Location of Apeldoorn



Figure 5: Overview of “het Kasteel” and the “Kasteelgracht”

“Het Kasteel” was built in 1995 and initially the residents were satisfied about the “Kasteelgracht”. The constructed residential area looks almost the same as the design (figure 7a, b and 8a, b). However, in the design the water was coloured blue (figure 7a, b), but in reality it is rust-brown (figure 9a, b, c, d). The water quality is good, but the visual aspect is very important for the residents. Until 2002 this was the only complaint of the residents and further they did not experience any other problem.

The other problems occurred in the dry summer of 2003 and after that period, the problems pursued. The “Kasteelgracht” should be filled with groundwater, but during the dry summer the water level dropped with 20 to 30 cm. The bottom of the pond and organic material became visible and dried up. This was not a nice view and the organic material started to smell. The gardens and terraces are next to the water, so the residents suffer from it directly.

The water system of the “Kasteelgracht” consists of three different water levels. Three weirs regulate these water levels at different locations of the “Kasteelgracht”, which is shown in figure 6. The southern and western part-off the residential area have a high water level and this is difficult to maintain. It is not linked to the ground water system and there is no other water supply than rainfall. Also the weirs are porous, so the water level drops slowly. This problem occurred because in the design was little attention for the subsoil and there was no attention for a possible decrease of the water level.

The low water level in the north can be regulated properly by the supply of ground water during the whole year. By increasing the low water level, also the high water level can be regulated better, however, this is undesirable. An increase of the low water level leads to problems at the “Kasteeltoren”. The parking areas and sheds next to the “Kasteeltoren” were built almost on the same height as the water level (figure 9c), so an increase of the water level would lead to an overflow. This already happens during heavy rainfall, several times a year. Another problem is the overflow of the sewer system, which is built next to the “Kasteeltoren”. When the low water level becomes too high, the overflow starts to work and the parking places and sheds will be inundated.

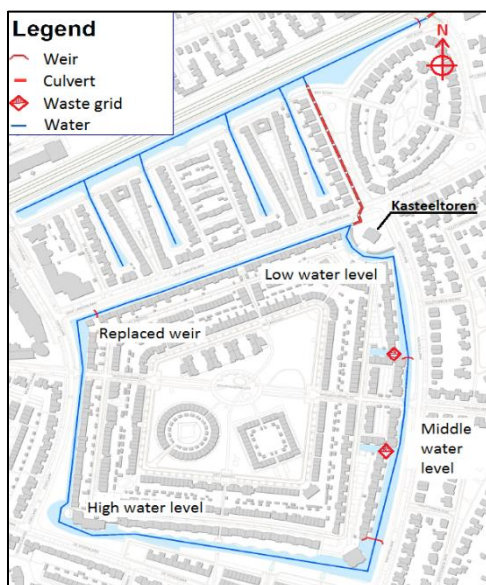


Figure 6: Overview of the different water levels and other waterways

Furthermore, there are problems with reed and two exotic plants, which grow in the water and on the banks. Reed and the exotic plants “Ongelijkbladig vederkruid” (*Myriophyllum heterophyllum*) and “Watercrassula” (*Crassula helmsii*) were not planted in the construction phase. After a few years at request of the residents reed was planted by the water board. Now, many residents do not like it, because it grew very fast and it has expanded around the whole “Kasteelgracht”. However, the opinions about the reed are different. The exotic plants came into the water spontaneously and lead to a green layer over the water, especially in summer (figure 9b, c, d). The municipality and water board tried to find solutions for it, but did not remove the plants. Removing exotic plants is hard and by doing it improperly the plants grow back very fast. The risk of growing back was large, so they did not invest.

In 2005, the residents had much hindrance of a bad smell, so the municipality Apeldoorn and water board Vallei and Veluwe decided to remove the banquetts. Banquettes give strength at the banks and are located behind the timbering of the “Kasteelgracht”. It is made of rubble and it should be below water level. At a low water level, the banquetts became visible and the organic material dried up. This looks dirty and it can be perceived as smelly. The water board removed the banquetts and created a more natural bank, which was an expensive measure. There was less smell, but the water level was still too low. For this problem the residents consulted an engineering agency. This agency did investigations and wrote a rapport, nevertheless they could not find proper solutions for all the problems. After this investigation, both authorities did maintenance. However, they ceased finding new solutions, because of a lack of budget. In 2011, the residential council bundled all the complaints of the residents and asked for a better cooperation with the municipality and the water board. Citizen participation is very important for the authorities and they understood the complaints. They made a budget to solve the problems and executed some technical measures. First, an overview was made of the ground water levels by the placement of monitoring wells. The water board replaced the weir between the high and low water level (figure 6) and around this weir loam was put on the bottom to avoid underflow.

The measures had effect, but not all above problems were solved. The current problems are insufficient water supply and the fast extension of exotic plants and reed. Furthermore, the maintenance costs are very high. Each year a fifth of the total maintenance budget of the water board for Apeldoorn will be spent on the “Kasteelgracht”. Also, the municipality has costs for the maintenance of the banks.

The first problems occurred in 2003 and after thirteen years the problems are still not solved. The municipality and water board want to find a final solution in the Working place. They want to solve the complaints of the residents and reduce maintenance costs. A solution can only be found by involving all layers of both authorities, together with external parties, such as the residential council and inhabitants. All knowledge and experiences are available, only the right actors should be combined.



Figure 7: Images in brochure



Figure 8: "Kasteelgracht" after construction



Figure 9: Current situation of the "Kasteelgracht"

2.3. Involved actors

Actors will be invited to the Working place, based on their tacit knowledge and experiences with the problem. In this case the municipality Apeldoorn and the water board Vallei and Veluwe have much knowledge and experience about the “Kasteelgracht”. The departments Operation and Maintenance, Plan Development of the water board and some policy makers were involved with the problems of the “Kasteelgracht”.

Before starting the Working place, a meeting was organised with the members of the involved departments. Both authorities were present at this meeting with two persons and Geldof c.s. had a role as facilitator. The functions of these persons are given in Table 3. In this meeting the problems were specified, the actors for the first ring were chosen and the first session of the Working place was planned. In order to have all different forms of tacit knowledge and experiences in the Working place, the actors were classified in a sphere. If all spheres are present in the Working place, it improves transferring the knowledge and experiences. In addition, the spheres correspond with the different layers of the organizations and combining different layers improves the decisiveness. After the meeting the first ring was invited. All actors of the first ring and which sphere they represented are shown in Table 4.

Table 3: Actors, which were present in the exploratory conversations

Organization	Function
Water board Vallei and Veluwe	Advisor operation and maintenance
Water board Vallei and Veluwe	Policy advisor plan development / account manager south-east Veluwe
Municipality Apeldoorn	Strategic policy advisor – surroundings services Veluwe IJssel
Municipality Apeldoorn	Program manager water & sewer systems
Geldof c.s.	Facilitator Working place and representative Rijkswaterstaat

Table 4: Actors of the first ring (Working place)

Organization	Function	Sphere
Water board Vallei and Veluwe	Project executor operation and maintenance	Rooted sphere
Water board Vallei and Veluwe	Advisor operation and maintenance	Rooted sphere
Water board Vallei and Veluwe	Policy advisor plan forming	Management and control sphere
Water board Vallei and Veluwe	Policy advisor plan forming / account manager south-east Veluwe	Management and control sphere
Water board Vallei and Veluwe	Policy collaborator maintenance water systems / ecologist	Rationalising sphere
Municipality Apeldoorn	Program manager water and sewer systems	Rationalising sphere
Municipality Apeldoorn	Strategic policy advisor: surroundings services Veluwe IJssel	Rationalising sphere
Municipality Apeldoorn	Director public space Apeldoorn	Connecting sphere
Municipality Apeldoorn	District administrator maintenance	Rooted sphere
Neighbourhood Council Osseveld-Woudhuis	Board Member, responsible for traffic, public space, environment and zoning	Rooted sphere
Geldof c.s.	Facilitator, representative of Rijkswaterstaat and consultant environment and complexity	Connecting sphere

Four out of five spheres were present in the Working place, but important actors were missing. The governance and political sphere and the inhabitants were not present. Daily board members of the water board and two representatives of the municipality were invited, but other appointments during the Working place. However, they were interested in the outcome and wanted to be informed.

Three weeks before the start of the Working place, the inhabitants had a field inspection together with the municipality and water board. During this field inspection the inhabitants gave a lot of input. However, they did not want to join the Working place, because they first wanted to see that their input was taken seriously and acted upon. Despite the absence of the residents and the governance and political sphere, they were all informed about the developments in the Working place. Furthermore, if they wanted to join next sessions of the Working place this was possible.

During the Working place it was decided that the final speech act would be presented to the second ring. To involve the governance and political sphere more, specific actors were invited to join the second ring. The invited actors for the second ring are given in Table 5. The process of the Working place and the developments are described in the next Chapter.

Table 5: Actors of the second ring

Organization	Function	Sphere
Water board Vallei and Veluwe	Board member	Governance and political sphere
Municipality Apeldoorn	Representative/alderman, portfolio: environment, sustainability, green, water	Governance and political sphere
Municipality Apeldoorn	Representative/alderman, portfolio: urban area north east (including Osseveld-Woudhuis)	Governance and political sphere
Municipality Apeldoorn	Landscape architect	Rooted sphere

Chapter 3. Execution of the Working place

3.1. Introduction

This chapter describes how the Working place was executed and which effect it had on finding solutions (sub-question 2), based on the case study. Before the start of the Working place, narrative interviews with all actors were planned. The actors shared their knowledge and experiences regarding the problems around the Kasteelgracht. This clarified the role of the actors and it resulted in a clear overview of their perceptions.

During the meeting with several actors, it was determined that the Working place consisted of three sessions of half a day. The first two sessions are described next. The third/final session could not be joined, because it was planned too late for the research. In the third/final session, the plans would be presented to the second ring (speech act).

3.2. Development of the process

3.2.1. First session of the Working place

The first session of the Working place was organized next to the “Kasteelgracht” on 17 June 2016. If something was unclear, the location could be visited, which gave a better perception of the problems. The session started with an explanation about the Working place by the Geldof c.s. (facilitator). The goals of the Working place were clarified and examples of previous Working places were given. Furthermore, all actors gave permission for recording the conversations, so the session could be transcribed into a growing narrative. After the session, the growing narrative was sent to all actors, so everything could be read back.

Next, all actors introduced themselves, according to the experiences they had with the problems. Every actor told about their role and which actions they had taken, in order to find solutions for the problems. The roles and responsibilities were different, so the knowledge and experiences about the problems were also different. During the introduction, other actors could respond and comments could be given, which resulted in a dialogue. The actors shared their knowledge, experiences and perceptions, which resulted in more understanding towards each other.

Occasionally, the facilitator gave a reflection of the developments, in order to maintain the overview and to clarify the problems. In addition, the different perceptions in the Working place lead to tensions between actors. By giving a reflection of the developments and situation, the understanding improved.

Inside the spheres, the actors were on the same line, but between the spheres there were different point of views. Spheres are cohesive groups of people with similar experiences, values and ways of thinking. The residential council represented the point of view of the residents. The residents had the most hindrance of the problems around the “Kasteelgracht”, so their presence in the Working place was important. However, they did not want to join the Working place, they were represented by the residential council.

The water board is responsible for water supply, quality and safety. In this case, it deals with aesthetic aspects and how the residents experienced the “Kasteelgracht”. They were responsible to solve the problems, but they did not feel responsible. Furthermore, they had already invested much time and money last years. The water board wants to satisfy the residents, but they did not want to invest again.

The municipality was not directly responsible for the water problems. However, they are responsible for public space and did maintenance on the banks around the “Kasteelgracht”. The municipality was willing to invest, because they wanted to improve the residential area. Besides the problems of the “Kasteelgracht”, the municipality also knew other problems in the residential area. Both authorities have the resources to invest and are responsible to create a liveable environment, but possible measures were not budgeted. In the past, the authorities tried multiple technical measures, but it did not solve the problems, which lead to frustration at the residents. During the introduction the tensions between actors increased. The residential council indicated that the problems occurred for thirteen years and a final solution was not found. If the water board and municipality did not take measures to solve the problems, the residential council would leave the Working place. The process came to a standstill and a negative atmosphere arose.

Residential council: *“Only the first five years, the “Kasteelgracht” worked well and was nice to see, but now there are many complaints and these are rightly. The budget to solve the problems is low and the executed measures in the past did not have any effect. We can execute many measures like that, but then the residents do not get the original design of the “Kasteelgracht”. For 13 years, it is papering over the cracks. Let the residents know, that they not get the “Kasteelgracht”, how it was designed 20 years ago. I understand, this is not a nice message, but it has to be told. The bottom line is that something should change if the water board and municipality want to find the final solution for the problems.”*

This moment in the Working place is called the “Moment of effort”. The residential council mentioned the heart of the problem, which should be solved. In this phase of the Working place the connecting sphere was very important. They appointed the problem and suggested to create different scenarios.

In this case, the connecting sphere was important for the moment of effort, because they reduced the tensions between the actors and suggest to make different scenarios. After the moment of effort, the mood was positive and they wanted to find a solution together. To compare these scenarios, it was needed to create a good overview of the effects and costs. The first scenario was implementing all measures to keep the “Kasteelgracht”. Scenario two was a new design of the “Kasteelgracht”, based on the perceptions and wishes of the residents. During the first session only ideas for these scenarios were made and the most important factors of the new design were determined. It would be worked out in the second session. The scenarios should fit with the interests of the residents. Other factors were the investment and maintenance costs.

The first session took two hours, but this was too short, because not everyone could introduce themselves and the location was not visited. However, the most important perceptions and experiences were shared. At the end of the session, the mood was positive and everyone wanted to find a solution together. In addition, the opinion was that all knowledge and experiences were available, and therefore the second session was planned.

3.2.2. Second session of the Working place

The second session was organized 1.5 week after the first session on 27 June 2016. In the meantime, the first session was worked out into the growing narrative and was sent to all involved actors. The second session started with a short summary of the developments. Furthermore, the previous session and the growing narrative were discussed. Despite of the many pages, all actors had read the growing narrative. The actors did not know exactly what they had said in the previous session, so reading it back was confrontational. In addition, it was also useful to understand better what was said and if someone was not present in a previous session, they picked up new information. After the reflection of the previous session and the growing narrative, two scenarios were worked out together.

Scenario one

This scenario was based on the original design of the “Kasteelgracht”. All improvements, which were needed to solve the problems, were based on the experiences and tacit knowledge of all actors. The next measures were needed: supply and storage of water and removing of reed and exotic plants. There was also much attention for maintenance, because the situation in the future should be the same as after the implementation of the measures. The problems of the residential area were dealt with sequentially. First the “Kasteelgracht” was divided into three parts, with all a different water level (figure 6). Each part had different problems and some problems were related to the whole “Kasteelgracht”.

The parts of the residential area with a middle and high water level had problems with water supply and storage. The water supply of “Kasteelgracht” was small and the weirs were leaking. During periods of drought, the bottom and organic material dried up and started to smell. Besides that, the mowing boat cannot be used at a water depth lower than thirty centimetres. The actors gave three possible solutions for this problem. The first option was to create water supply from an upstream area or by using rain water. The second option was to build a ground water pump, but this is not a sustainable solution. Furthermore, pumping a large amount of water is not permitted by legislation. The third option was deepening the “Kasteelgracht”, which increases the supply of groundwater. By dredging the exotic plants can also be removed. In addition, the weirs should be replaced to improve the water storage. Furthermore, the wall before the “Kasteeltoren” should be higher to prevent the parking areas and sheds against an overflow.

For removing reed and exotic plants two technical measures were suggested. The first option was dredging the “Kasteelgracht”. The second option was using the “Hydro Venturi” technique. This is a boat with a spray head that loosens the plants from the bottom. After implementing these measures, the roots have to be removed completely, otherwise the risk of growing back is very high.

Both measures were technical, there was not thought of natural measures. The ecologist mentioned that exotic plants could be removed by adding a natural enemy to the water, however the natural enemy was not known.

Scenario two

Initially, the idea for this scenario was to remove the whole “Kasteelgracht” and make a complete new design. This idea came from the residential council, because they wanted an effective measure and by removing the water, all problems were solved. However, the part with lower water level had to be maintained. During a heavy rain event the water of the sewer system should be able to overflow into this part of the “Kasteelgracht”. Besides that, reed and the exotic plants have to be removed in this part. The parts with a middle and high water level could be removed, because they are not necessary for the overflow. However, it should be figured out how much water storage is needed to determine the size of the remaining “Kasteelgracht”.

Furthermore, the residents were attached to water, so the actors decided to keep some characteristics of the “Kasteelgracht”. The bridges on each side of the “Kasteel” (figure 8) would be retained. In addition, the residents wanted to live next to the water, so the actors made the option to replace the “Kasteelgracht” for a narrowed water flow. The current water course would be narrowed to 2.5 meter and the water should be circulated by using a pump, which works on solar energy. However, this was an option and they would ask the residents first if they want a narrowed water course or if they prefer something else.

This scenario was expected to have less maintenance and costs. Which measures would be implemented was not decided in this session, because first the effects and costs should be researched. Before the third session all information about the effects and costs should be sent to all actors. Also a sketch of the cross sections would be made before this session to get an overview of the water systems. The second session ended with dividing tasks and responsibilities. The second ring should be invited for the third session and the effects, feasibility and costs should be determined.

3.2.3. Third/final session and speech act

The third session did not take place yet and is scheduled on 21 September 2016. In this session the final scenarios will be finished and presented to the second ring. First, the scenarios will be elaborated with all obtained information from the homework. Subsequently, the first ring will present the scenarios to the second ring (speech act). Together they decide the final scenarios. After this session the scenarios will be presented to the residents and they will decide which scenario will be implemented.

Chapter 4. Effectivity of the Working place

4.1. Introduction

This section provides answers to sub-question 3: Does the Working place contribute to finding solutions for the problems around the “Kasteelgracht” and which factors does it affect? To answer this question, the development of the Working place was analyzed with the use of interviews and a survey. The survey consisted of 22 questions, which correspond to the 22 factors of the adaptive capacity wheel (ACW).

The Working place was represented by five persons of the water board and four persons of municipality Apeldoorn. They were operating within different levels of the authorities. It was important to collect data from different levels to create a good overview on the opinions throughout the authorities. These actors completed the survey before the Working place and after two sessions of the Working place. The actors completed the survey individually and this resulted in a score from -2 to 2 for each factor. Subsequently, these scores were averaged per factor per authority. These scores correspond with a colour (from green to red), which is shown in the colour scheme below. So, if the average score is between 1.01 and 2.00, the factor is coloured dark green in the ACW.

Effect	Score	Aggregated scores
Very good / very much	2	1.01 to 2.00
Good / much	1	0.01 to 1.00
Normal / neutral	0	0.00
Bad / little	-1	-0.01 to -1.00
Very bad / very little	-2	-1.01 to -2.00

Next to the figures of the ACW, the scores before and after the Working place are given in Table 6, 7 and 8. The scores after the Working place have a colour and the meaning of it is shown below.

Higher than before
Same as before
Lower than before

Besides the scores, the actors gave also an explanation of the given scores. This resulted in more understanding why the actors gave a certain score. The data from the survey and interviews resulted in a clear overview of the conventional working methods of the municipality and the water board. It became clear how the authorities handled with the problems around the “Kasteelgracht” and why no solutions were found in the past 14 years.

After two sessions, the actors completed the survey for the second time. This data showed the results of the Working place and the changes of the factors became clear. To compare these scores, the process and the 22 factors were observed during the Working place. Also the facilitator of the Working place and the board member of the residential Council “Osseveld-Woudhuis” also completed the survey. These persons were independent and completed the survey with a different perception than the persons of the different authorities.

The scores of the water board and municipality are provided in the next two paragraphs. Furthermore, the ACW before and after is shown in Figures 10 to 15. Next, the questions and the results of survey are given per factor per authority. The data of the survey before and after the Working place is given in Annex III to Annex VI.

4.2. Changes in the factors before and after the Working place

This section describes the largest changes of the 22 factors due to the Working place. The changes are visualized in Figures 10 to 15 followed by a more detailed description per factor. In general, the Working place had a positive effect on finding solutions, but a few factors had a lower score than before. The score of ability to improve for external parties decreased. The residents had much room to search for solutions for the problems around the “Kasteelgracht”. However, the residents were not present in the Working place. Before the Working place, the actors of the municipality and water board were convinced that the residents should be present the Working place. However, they did not want to join and this led to lower scores. Also, the factor multi actor, level & sector decreased. Besides the absence of the residents, managers of the water board or a representative of the municipality were also not present. Only the municipality, water board and the residential council were involved in finding solutions, but the other parties were also important for finding solutions.

In addition, the scores of the factors entrepreneurial, single loop learning (improving routine) and double loop learning (when social actors challenge norms and basic assumptions) did not change. Despite, the residents not being present in the Working place, the capability and intension of the authorities to activate them did not change (entrepreneurial). Furthermore, the monitoring of the achievement of the policy goals did not change, because the Working place was not finished yet (single loop learning). The time period of two sessions was too short to improve the routines and procedures of the actors and authorities (double loop learning).

Furthermore, many factors improved due to the Working place. In the Working place, actors from different authorities were combined and this resulted in a good collaboration. Everyone shared their knowledge and experiences and other actors learned from it. All the problems became clear and different solutions were conceived. They made scenarios, which would be presented to the second ring and finally also to the residents. All improvements due to the Working place were categorized into the six dimensions.

Resources

The resources to solve the problems of the “Kasteelgracht” increased due to the Working place. The municipality and water board decided to combine their budgets, but there still was not much money available. In the Working place, the actors created different scenarios, which should reduce the maintenance costs. The potential savings on maintenance could be invested in the new design. Furthermore, all actors with different knowledge and experiences were combined and this resulted in an effective collaboration. The actors worked together, which led to more mandate and influence to find solutions.

Leadership

The dimension leadership increases a little. The factor entrepreneurial is discussed before and did not change. The collaboration between the actors and authorities became better. The actors shared their knowledge and experiences, which resulted in more understanding in each other. Also the factor visionary improved, because the attention for long term solutions increased due the Working place.

Room for autonomous change

The dimension room for autonomous change was affected by the factor ability to improve. The score of this factor decreased due to the absence of the residents in the Working place. The residents did not want to join the Working place, because the authorities did little with the input of the residents in the past. They were represented by the residential council, but could not give suggestions or possible solutions by themselves. If the residents were involved in the process, the support would be likely to

increase. They could also come with creative new ideas, which might have resulted in the final solution. However, they were not present and this resulted in a decrease in the score of the municipality. The score of the water board increased only a little. Despite the absence of the residents, the actors made a plan for solving the problems. However, this was not finished and there was still no budget after two sessions. Furthermore, the most actual information was not available for everyone. The residents could ask for it, but the authorities were not willing to share all information.

Learning capacity

The learning capacity of the authorities increased a little due to the Working place. The actors had trust and respect in each other and they were willing to share their tacit knowledge. This resulted also in a small increase in the score of the water board. Also, the institutional memory of the water board increased a little. The attention for documentation and sharing knowledge and experiences was low, but all interviews and sessions of the Working place were worked out and sent to the actors. This improved the institutional memory of the water board and municipality. Furthermore, before the Working place only a small group of persons was involved by finding solutions for the “Kasteelgracht”. Due to the Working place, more persons from different departments and organizations were involved by finding solutions. This resulted in more discussions about the problems and uncertainties, which lead to higher scores of the factor discuss doubt.

Variety

Before the Working place, there was only a select group of actors involved with finding solutions for the problems around the “Kasteelgracht”. In the Working place, more persons with different experiences and knowledge were involved, which resulted in a higher score of the factor diversity. The actors came with new ideas and a divers amount of possible solutions became available. Also, the variation in opinions and perceptions for finding solutions increased, which resulted in higher scores of the factor problem frames and solutions for both authorities. Furthermore, before the Working place, the actors did not have a plan for solving the problems. In the Working place, the actors created different possible solutions, which could be used as back-up and this resulted in a small increase of the factor redundancy.

Fair governance

The dimension fair governance improved due to the Working place. Before the Working place, extern parties had little insight in the procedures and processes of the authorities. In the Working place, a report was made, which shows the development of the process. This was sent to all actors of the Working place and also externals could view it. Furthermore, reducing the maintenance costs was an important factor for the new design. This lead to more influence for the department Operation and Maintenance in finding solutions. However, the political and financial resources were divided more equal over both authorities and this lead to an increasing score of the factor equity.

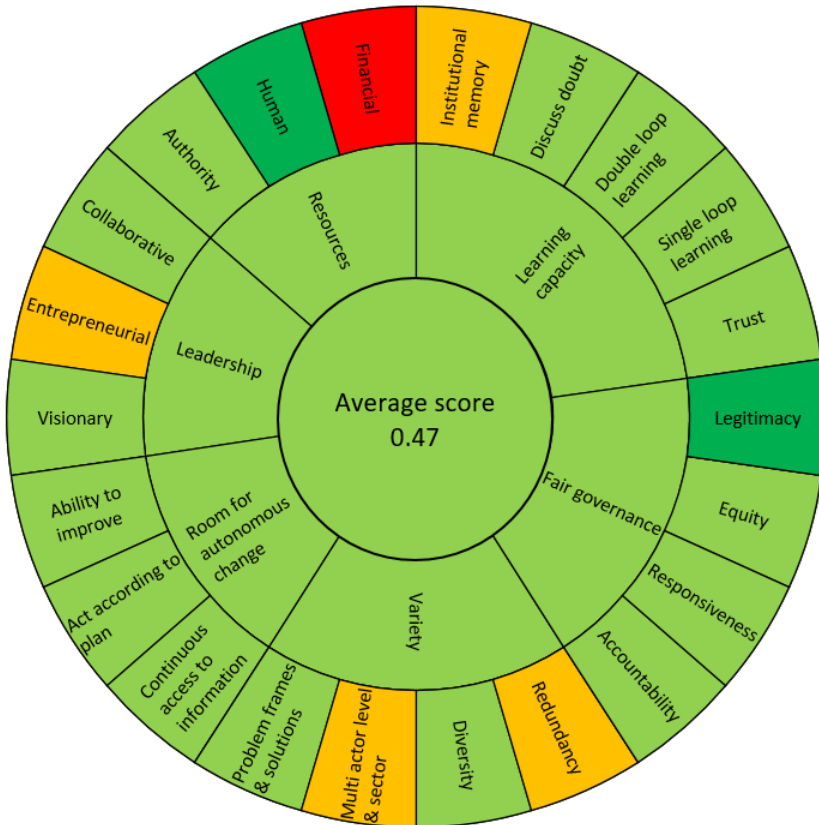


Figure 10: Adaptive capacity wheel water board (before)

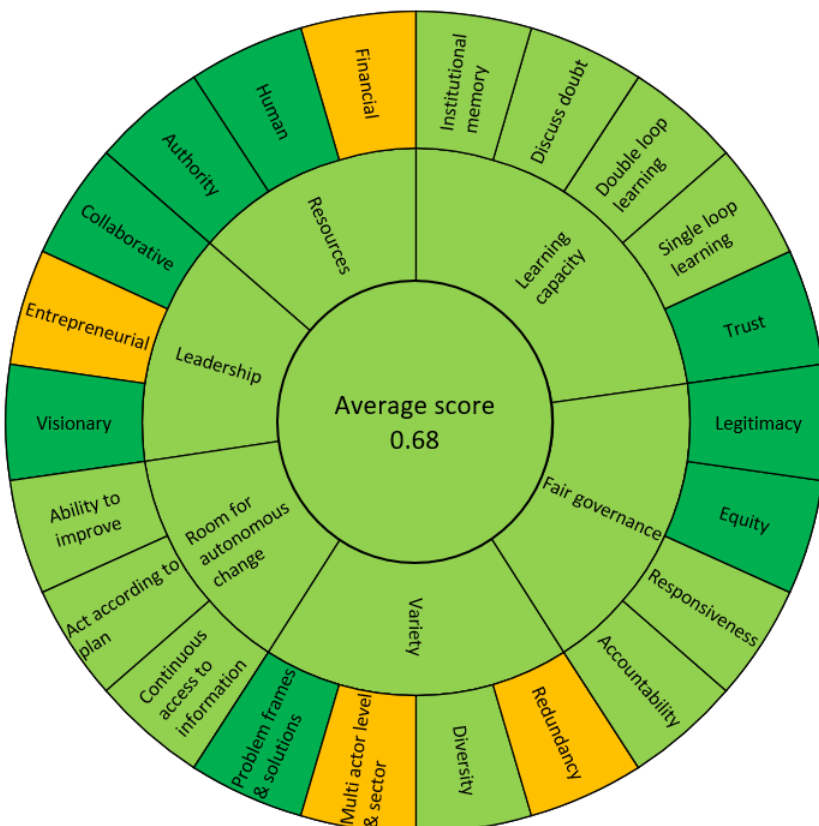


Figure 11: Adaptive capacity wheel water board (after)

Table 6: Scores survey before and after (water board)

Factors	Score before	Score after
Financial	-1.20	-0.60
Human	1.20	1.40
Authority	0.80	1.20
Resources	0.27	0.67
Collaborative	1.00	1.20
Entrepreneurial	-0.20	-0.20
Visionary	1.00	1.20
Leadership	0.60	0.73
Ability to improve	0.67	0.60
Act according to plan	0.80	1.00
Continuous access to information	0.60	1.00
Room for autonomous change	0.69	0.87
Trust	1.00	1.20
Single loop learning	0.20	0.20
Double loop learning	0.20	0.20
Discuss doubt	0.60	0.80
Institutional memory	-0.20	0.60
Learning capacity	0.36	0.60
Problem frames & solutions	0.80	1.25
Multi actor level & sector	-0.20	-0.40
Diversity	0.60	0.80
Redundancy	-0.80	-0.60
Variety	0.10	0.26
Accountability	0.20	0.20
Responsiveness	0.60	0.80
Equity	0.80	1.20
Legitimacy	1.80	1.80
Fair governance	0.85	1.00
Average score	0.47	0.68
Change (%)		20.82%

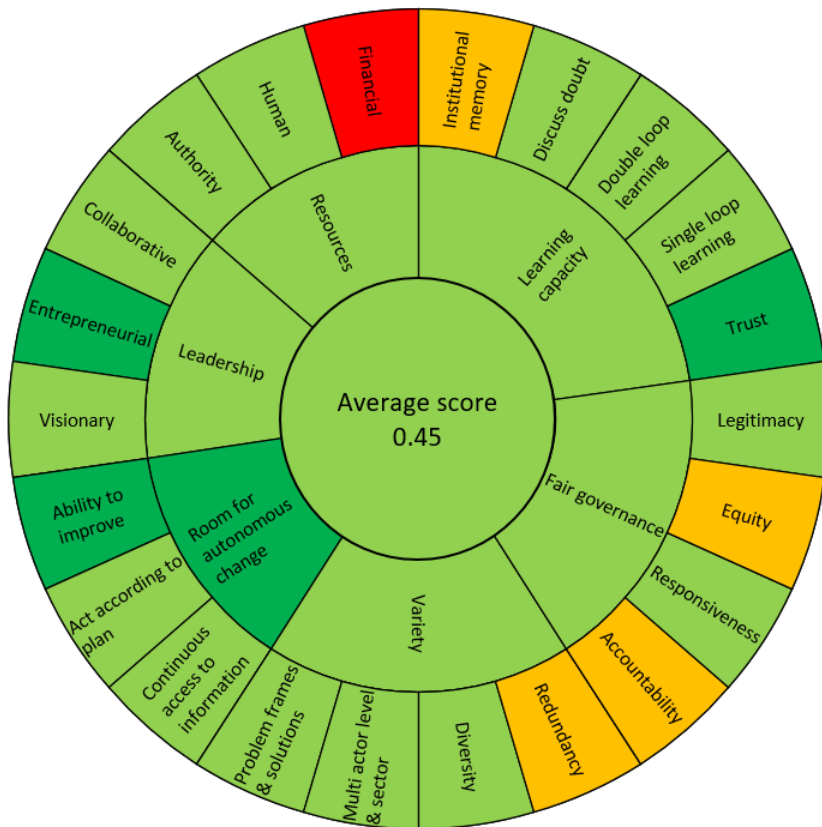


Figure 12: Adaptive capacity wheel municipality (before)

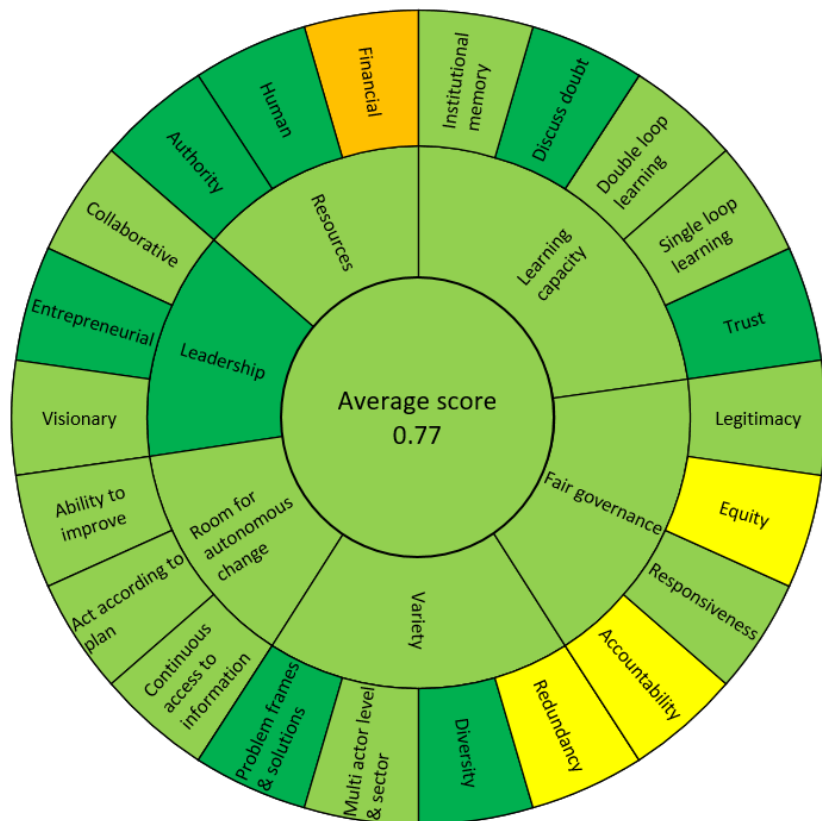


Figure 13: Adaptive capacity wheel municipality (after)

Table 7: Scores survey before and after (municipality)

Factors	Score before	Score after
Financial	-1.25	-0.75
Human	0.50	1.25
Authority	1.00	1.50
Resources	0.08	0.67
Collaborative	0.50	0.75
Entrepreneurial	1.50	1.50
Visionary	0.25	1.00
Leadership	0.75	1.08
Ability to improve	1.33	0.75
Act according to plan	1.00	1.00
Continuous access to information	0.75	1.00
Room for autonomous change	1.03	0.92
Trust	1.25	1.25
Single loop learning	0.25	0.25
Double loop learning	0.25	0.25
Discuss doubt	1.00	1.50
Institutional memory	-0.50	0.75
Learning capacity	0.45	0.80
Problem frames & solutions	1.00	1.25
Multi actor level & sector	0.75	0.50
Diversity	0.75	1.25
Redundancy	-0.75	0.00
Variety	0.44	0.75
Accountability	-0.75	0.00
Responsiveness	1.00	1.00
Equity	-0.75	0.00
Legitimacy	0.75	1.00
Fair governance	0.06	0.50
Average score	0.45	0.77
Change (%)		32.59%

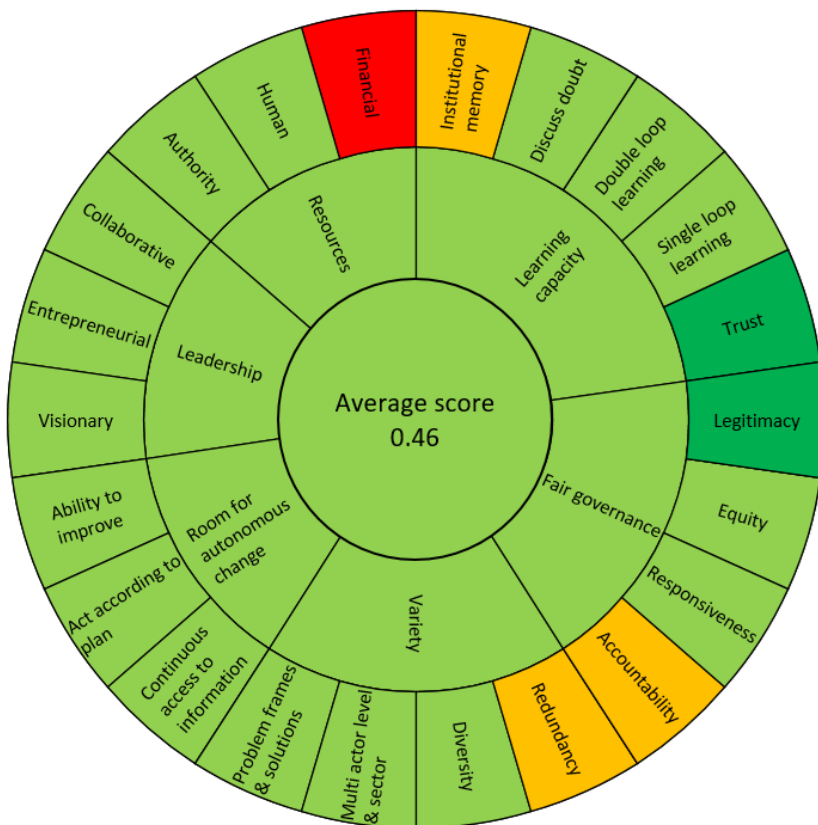


Figure 14: Adaptive capacity wheel both authorities (before)

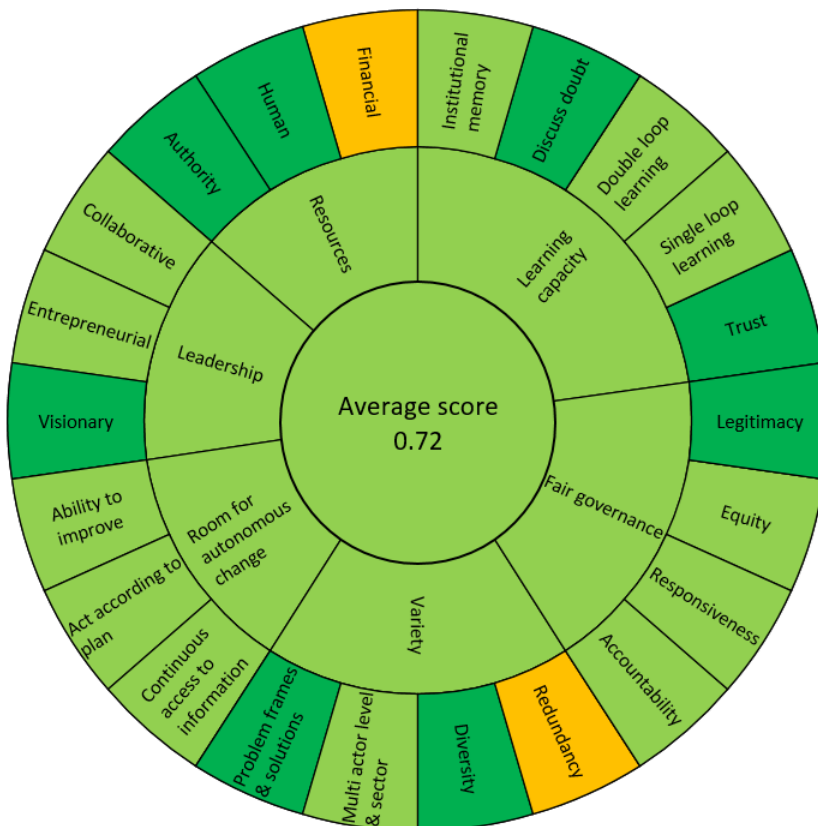


Figure 15: Adaptive capacity wheel both authorities (after)

Table 8: Scores survey before and after (both authorities)

Factors	Score before	Score after
Financial	-1.23	-0.68
Human	0.85	1.33
Authority	0.90	1.35
Resources	0.18	0.67
Collaborative	0.85	0.98
Entrepreneurial	0.65	0.65
Visionary	0.63	1.10
Leadership	0.71	0.91
Ability to improve	1.00	0.68
Act according to plan	0.90	1.00
Continuous access to information	0.68	1.00
Room for autonomous change	0.86	0.89
Trust	1.13	1.23
Single loop learning	0.23	0.23
Double loop learning	0.23	0.23
Discuss doubt	0.80	1.15
Institutional memory	-0.35	0.68
Learning capacity	0.41	0.70
Problem frames & solutions	0.90	1.25
Multi actor level & sector	0.28	0.05
Diversity	0.68	1.03
Redundancy	-0.78	-0.30
Variety	0.27	0.51
Accountability	-0.28	0.10
Responsiveness	0.80	0.90
Equity	0.03	0.60
Legitimacy	1.28	1.40
Fair governance	0.46	0.75
Average score	0.46	0.72
Change (%)		26.25%

4.3. The effects of the Working place per factor

In this section, the effects of the Working place will be discussed, based on the 22 factors of the ACW. The definitions of the factors and references to literature is provided in Annex II. The actors of both authorities gave scores to the factors by completing a survey before and after the Working place. In addition, the actors could give an explanation why they gave a certain score. To create a clear overview of the effects of the Working place, the scores and explanations of all actors from both authorities are given per factor. The explanations before and after the Working place are merged and summarized and the scores are averaged. The expectation was that the scores correspond with the explanations, however the score of some factors differ with the explanation. The reason for this is that the actors not always understood the questions correctly. Furthermore, each factor is observed during the whole process of the Working place and this is sometimes different with the results of the actors. The scores of some factors are higher before than after the Working place, but this appears not in the observation. The observation is provided next to the question, explanation and score. In addition, the differences between the observation and the results of the actors will also be discussed.

4.3.1. Resources

Financial

How much financial resources are available at the municipality/water board to develop and implement measures for solving the problems around the “Kasteelgracht”?

The water board and municipality had budget for maintenance, but not for solving the problems of the “Kasteelgracht”. The water board is responsible for the wet section and the municipality for the dry section. The problems are especially in the wet section, so the water board had high maintenance costs (1/5 of the total maintenance budget for Apeldoorn). A new design could solve the problems and also reduce the maintenance costs. In the Working place, the municipality stated that it was a common problem, so the investments should be divided equally. Both authorities decided to solve the problems by combining the budgets and investing in a new design. However, to invest in a new design, permission is needed of board members of the water board and representatives of the municipality. These persons were informed during the process of the Working place and they were invited for the speech act in the third session. If the problems would be solved and if it resulted in savings is not clear. However, the process developed positive and the actors are convinced that budget will be reserved. The scores of both authorities before the Working place and after two sessions are given in Table 9.1.

Table 9.1: Scores of the factor financial

Adaptive capacity	Score before	Score after
Water board	-1.20	-0.60
Municipality	-1.25	-0.75
Average	-1.23	-0.68

Observation and conclusion: The municipality and water board did not have much budget to solve the problems of the “Kasteelgracht”. In addition, the costs of maintaining the current design are high for both authorities. In the Working place, both authorities decided to combine their budgets and a new design was created to reduce the maintenance costs. This resulted in higher scores of the factor financial, but the values were still negative. However, the actors had much confidence in finding a solution, so the expectation is that budgets become available.

Human

How many persons are involved with experience and knowledge to find solutions for the “Kasteelgracht”?

Six persons of the water board and four persons of the municipality were involved in the Working place. Both authorities had different knowledge and experiences about the “Kasteelgracht”. There was much technical knowledge available and they had also much experiences with maintenance. Furthermore, other departments and layers of both authorities were involved, such as policy makers, communicators and an ecologist. Before the Working place, all expertise was available to find a solution, but it was separated. In the Working place all actors were connected and different knowledge and experiences were combined. Despite the final solution was not found after two sessions, the actors had shared their knowledge and experiences, which resulted in more understanding and problems became clear.

Table 9.2: Scores of the factor human

Adaptive capacity	Score before	Score after
Water board	1.20	1.40
Municipality	0.50	1.25
Average	0.85	1.33

Observation and conclusion: Many persons with experience and knowledge were involved with the problems around the “Kasteelgracht”, but they worked separately. These persons were combined in the Working place, which resulted in an effective collaboration. The amount of persons with knowledge and experience about the problems did not increase, but involved persons worked more effective. This resulted in a higher score of the factor human.

Authority

How much influence and mandate had the municipality/water board to take decisions and to implement measures?

Before the Working place, the perception of the water board was that they had more responsibility, influence and mandate with respect to the municipality. However, the municipality also had an important role and much influence in the process. Despite the problems of the “Kasteelgracht”, the municipality was involved in more problems in the residential area, which was important for the process. All actors had different knowledge and experience of the problems around the “Kasteelgracht”, which make them all important for finding solutions. The only problem in the process was the absence of persons with mandate. To make decisions about the scenarios and budgets, it was needed to involve persons with mandate. Board members and representatives had mandate, so during the process they were informed and invited for the last session (speech act). Due to the involvement of the board members and representative of the municipality at a later stage, the score became higher.

Table 9.3: Scores of the factor authority

Adaptive capacity	Score before	Score after
Water board	0.80	1.20
Municipality	1.00	1.50
Average	0.90	1.35

Observation and conclusion: The actors as individual did not have much influence or mandate to take decisions or to implement measures. Combining the actors in the Working place resulted in an increase of the influence and mandate. However, the opinion of the residents about possible solutions was also important, but they were not present in the Working place. Despite their absence, they had indirect influence in the Working place, because the authorities should find a new solution if they not agree with the final design. In short, the influence and mandate of municipality and water board increased, but it would be better as if the residents had more influence in the process.

4.3.2. Leadership

Collaborative

How did the municipality, water board and other actors work together to find solutions for the “Kasteelgracht”?

The collaboration between the water board and municipality is good, especially in maintenance. Furthermore, there is much contact with the residential council. However, during the Working place the actors realized that the collaboration was not optimal. They relation was good, but in 14 years the final solution was not found. They tried to find a solution together, but it was not successful. Due to the visit on location the collaboration between the municipality and water board became better. The perceptions of both authorities and residents were shared and this improved the mutual understanding. However, the collaboration was not very strong. Both authorities were involved in the Working place, but they should work more together to find a solution. The Working place had a positive effect. Both authorities recognize the problems, were willing to find a solution together and took responsibility.

Table 9.4: Scores of the factor collaborative

Adaptive capacity	Score before	Score after
Water board	1.20	1.20
Municipality	0.50	0.75
Average	0.85	0.98

Observation and conclusion: The municipality and water board worked together before the Working place, but the collaboration was not effective. The problems occurred 14 years ago and in this period the final solution was not found. The perceptions about possible solutions were different, which led to tensions and this was not good for the collaboration. In the Working place, the actors shared their knowledge and experiences with each other, which led to more understanding. In addition, the actors came into line and created different scenarios. So, the collaboration improved and this resulted in higher scores of both authorities.

Entrepreneurial

How capable are the municipality and water board to activate other organizations/residents, such that plans actually will be implemented into practice?

The water board did not have much experience with activating residents, because they mainly operate in rural area. It was relatively new to operate in urban area, so this was difficult for the water board. In general, they focused more on the internal organization and were not good in activating other persons or organizations. Activating residents and citizen participation was more common for the municipality.

Table 9.5: Scores of the factor entrepreneurial

Adaptive capacity	Score before	Score after
Water board	-0.20	-0.20
Municipality	1.50	1.50
Average	0.65	0.65

Observation and conclusion: The municipality was capable to activate other organizations and residents, especially in urban area. For the water board this was difficult, so they could learn from the municipality in the Working place. However, both authorities did not succeed to activate the residents to join the Working place. For this reason, the water board and municipality made a plan and different scenarios by themselves. Despite the residents were not present in the Working place, the capability and intension to activate them did not change. In this case the score of entrepreneurial remain same, but for the authorities it was still important that other organizations/residents support the implementation of the plans.

Visionary

How much attention did the municipality/water board have for the future, in order to find solutions?

There was attention for the future, otherwise they did not start the case. However, the water board and municipality did not have a specific vision for the future. Mainly at policy level there was attention for the future, but the current working method of the water board was just based on the complaints of residents. They try to solve the complaints, but mostly this was only a part of the problem. The focus was on maintaining the current design and on technical solutions. As example, the municipality built a pipeline for water transportation to the “Kasteelgracht” and the water board replaced a weir to store the water. Both measures were implemented with attention for the future, but were not very effective. In the Working place, both authorities mentioned different possible solutions for the problems and possible changes for the future were taken into account.

Table 9.6: Scores of the factor visionary

Adaptive capacity	Score before	Score after
Water board	1.00	1.20
Municipality	0.50	1.00
Average	0.75	1.10

Observation and conclusion: The authorities had much attention for the future, but the focus was too much on solving the complaints with technical measures. In the Working place, the focus of the actors shifted from solving the complaints to finding solutions for the cause of the complaints. As example, they did not want to reduce the smell, but they wanted more water in the “Kasteelgracht” to prevent drying of the soil and plants. Furthermore, in the Working place all actors had different tacit knowledge and this led to different solutions. There was more attention for long term solutions and this resulted in higher scores of both authorities.

4.3.3. Room for autonomous change

Ability to improve

How much room did residents and external organizations have to search for solutions for the problems around the “Kasteelgracht”?

The residents had room for own initiative, but the water board and municipality did only a little with these inputs. They experienced this as difficult, because some persons were dominant in the process and they should beware of that. However, the residents had arranged an external engineering company, which made a report with possible solutions. The authorities were critical and wanted to find out if the recommend measures of the report were functional. Finally, they did not implement the measures, because the costs were high and the effectiveness was unclear.

The residents gave new inputs during the visit of the location before the Working place, but the authorities did not guarantee that they will implement new measures. The residents were disappointed and did not join the Working place. They were invited, but did not join the Working place, so they also had no influence during the process. In the Working place the authorities mentioned that they were interested in the inputs of the residents. They recognized that they should be open for new ideas from externals, because this improves public support.

Table 9.7: Scores of the factor ability to improve

Adaptive capacity	Score before	Score after
Water board	0.67	0.60
Municipality	1.33	0.75
Average	1.00	0.68

Observation and conclusion: The residents and external organizations had room to search for solutions and their initiative was appreciated by the authorities. However, the authorities did less with the inputs of the residents and because of that, they did not want to join the Working place. They were represented by the residential council, but they could not suggest possible solutions by themselves. By completing the survey for the first time, the actors were convinced that the residents would be present in the Working place. However, the residents were not present and that had negative influence on the ability to improve. Despite they were represented by the residential council the scores decreased after the Working place.

Act according plan

How much capacity did the water board/municipality have to implement measures according to plan at possible problems or chances?

Before the Working place, no plans were available to solve the problems. However, the water board and municipality had much confidence in finding a solution for the “Kasteelgracht”. By completing the survey for the first time, the actors mentioned that they were capable to implement measures for solving important problems. Furthermore, they had much influence in the process, had experience and were creative to find solutions. However, they did not have much budget to solve the problems around the “Kasteelgracht”. To obtain budget and approval to implement measures, it was needed to have support of the board members and a representative of the municipality (second ring). The actors started creating a plan, which will be finished and presented in the third session to the second ring. The goal of the presentation was to convince the second ring that budget is needed and that measures have to be implemented.

Table 9.8: Scores of the factor act according plan

Adaptive capacity	Score before	Score after
Water board	0.80	1.00
Municipality	1.00	1.00
Average	0.90	1.00

Observation and conclusion: If there were problems or chances, the water board and municipality could not act according plan, because there was no plan or procedure. Before the Working place, the actors were convinced that they would find solutions for the “Kasteelgracht”, because they had much experience and knowledge. However, in the Working place, the actors did not know how to begin with finding solutions. In addition, they did not have budget to take measures, so the problems could not be solved. The actors started to create a plan for solving the problems and this improves the score of the water board. However, by completing the survey for the second time, the plan was not finished and there was still no budget. Because the plan was not finished, the score of the municipality did not change.

Continuous access to information

To which extent is the actual information available at the municipality/water board about the problems and possible solutions?

All persons in the Working place knew the problems, but nobody did know the possible solutions. All information was available, but it was divided over multiple persons of the municipality and water board. Most information about the problems and solutions would be shared between a few persons of these authorities. In the Working place, all actors shared information about the “Kasteelgracht” and possible solutions. However, the residents only had information about the problems and were not informed about the developments in the Working place. Furthermore, most measures to solve the problems were technical and there was less information available about non-technical solutions. Also, the access to information, concerning the subsoil and ecosystems, should be improved to improve integral working between water management in relation with other departments.

Table 9.9: Scores of the factor continuous access to information

Adaptive capacity	Score before	Score after
Water board	0.60	1.00
Municipality	0.75	1.00
Average	0.68	1.00

Observation and conclusion: Before the Working place, almost all information about the problems was available, but the possible solutions were unknown. Furthermore, the available information was divided over multiple actors. In the Working place, the actors shared their knowledge and experiences with each other. All actors obtained new information and this made it easier to find solutions. Due to the Working place, the available information about the problems and solutions increased and this resulted in higher scores.

4.3.4. Learning capacity

Trust

How much respect and trust in each other did the actors have in the Working place?

The water board and municipality mentioned that they worked separate a few years ago. There was also little respect and trust, but this was improved in the last years. Before the Working place, they had respect and trust in each other. The actors knew each other from their daily work, which contributes to a better relation. The actors could say everything and information was shared.

Table 9.10: Scores of the factor trust

Adaptive capacity	Score before	Score after
Water board	1.00	1.20
Municipality	1.25	1.25
Average	1.13	1.23

Observation and conclusion: The actors in the Working place had respect and trust in each other. The Working place did not have much effect on this factor. However, it was important that the actors had respect and trust in each other, otherwise they did not want share all information. The trust of the water board in the municipality increases a bit, because the municipality confirmed that they also want invest money to solve the problems.

Single loop learning

To which extent will the achievement of the policy goals of the municipality/water board be monitored?

Single loop learning is the ability of institutional patterns to learn from past experiences and improve their routines (Olson et al, 2004). The institutional patterns will be determined by the policy goals of an organization. By monitoring the policy goals, processes and procedures can be changed and this can improve the routines. In this case, the achievement of the policy goals was monitored, only it should be done better. Most actors in the Working place did not know the policy goals well, but they were critical on their manner of working. In general, the actors checked if the goals correspond with the realization, but there was little time for evaluating. The measures in the past to solve the problems of the “Kasteelgracht” were less effective than previously thought. By making a new design, the actors did not want similar solutions. Both authorities had learned from the past experiences, so the new possible solution were considered well.

Table 9.11: Scores of the factor single loop learning

Adaptive capacity	Score before	Score after
Water board	0.20	0.20
Municipality	0.25	0.25
Average	0.23	0.23

Observation and conclusion: The actors were critical on their way of working, but most actors did not know the policy goals, so it was difficult to monitor the achievement of the policy goals. Furthermore, for the actors it was not usual to reflect and evaluate much. However, in the Working place were much reflections and they learned from past experiences. This resulted in better consideration of the possible solutions for the different scenarios. Despite these improvements, the score of both authorities did not change. Monitoring the policy goals can improve the routines, but this is difficult and takes much time. The time period of two sessions was too short to obtain changes.

Double loop learning

To which extent will these policy goals be discussed and adapted?

In double loop learning, the policy goals, plans, methods and procedures will be discussed and be adapted if needed. In this case, the actors could always discuss and adjust the policy goals. In addition, the actors mentioned that discussion was essential to change conventional methods. The conventional method of the municipality and water board was to listen to the complaints of the residents, but they did not solve the problems. The municipality and water board are responsible for the problems of the “Kasteelgracht” and they wanted find solutions. However, with the conventional method they did not find the final solution, so it was needed to change their working method. This resulted into the Working place. During the Working place, the actors created a new plan and they had much confidence that the problems will be solved. However, the authorities did not know if they wanted to use the Working place in other projects, because the final solution was still unclear after two sessions.

Table 9.12: Scores of the factor double loop learning

Adaptive capacity	Score before	Score after
Water board	0.20	0.20
Municipality	0.25	0.25
Average	0.23	0.23

Observation and conclusion: The Working place did not have influence on the discussion and adaption of the policy goals. The policy goals, plans, methods and procedures were discussed before the Working place. The actors of both authorities recognized that the conventional method not resulted in the final solution. They adapt their working method to a Working place and this resulted into a new plan and they created much confidence in finding the final solution. The actors were also positive about the process, but the final solution was still not clear.

Discuss doubt

How much did the municipality/water board talk intern the organization about the problems and uncertainties around the “Kasteelgracht”?

Within the municipality and water board, the problems and uncertainties were discussed with a small group of people. Beside this group there is less overview inside the organizations of the problems. The conversations between the authorities were good, but the conversations with the residential council were not always transparent. In the Working place all organizations shared their knowledge and experiences with each other. The discussions were transparent and it was a good process. All actors were positive about the approach of the Working place and the discussion about doubt increases.

Table 9.13: Scores of the factor discuss doubt

Adaptive capacity	Score before	Score after
Water board	0.60	0.80
Municipality	1.00	1.50
Average	0.80	1.15

Observation and conclusion: Before the Working place, the problems and uncertainties around the “Kasteelgracht” were discussed within the authorities. However, the discussions were only with a small group of people and limited departments were involved. In the Working place were different persons involved from different departments and organizations. This resulted in more discussions about the problems and uncertainties around the “Kasteelgracht”. Also, intern the organizations the actors talked more about it, which lead to higher scores.

Institutional memory

To which extent will knowledge and experiences be documented and made available for others?

The knowledge and experiences were not documented very well. Everything should be archived and available for external parties, but the registration was not organized well. Many conversations and appointments were not documented and specific information about the “Kasteelgracht” was not directly visible. Furthermore, knowledge and experiences were only shared sectoral. It could be shared with extern parties, only they should ask for it. In the Working place, everything was recorded and shared with all actors. This was not usual for the actors, but they experienced the documentation as positive.

Table 9.14: Scores of the factor institutional memory

Adaptive capacity	Score before	Score after
Water board	-0.20	0.60
Municipality	-0.50	0.75
Average	-0.35	0.68

Observation and conclusion: The municipality and water board did not document their knowledge and experiences well. In addition, the information was not made available for others, except if they asked for it. In the Working place, all knowledge and experiences were documented and shared with the actors (growing narrative). Finally, the knowledge, experiences and also the development of the Working place will be shared with the residents. This become available by sending a report and it would be shared during the presentation of the scenarios. This resulted in an increase of the scores from the municipality and water board.

4.3.5. Variety

Problem frames and solution

How much variation is there between the opinions and perceptions in the Working place by creating solutions?

In the Working place was much different knowledge and experiences available. The actors had also different roles and perceptions. On the other hand, the opinions and views of the water board and the municipality were often the same. They had the same mind-set and were quickly in agreement. Both parties understood that the problems should be solved, but they had different approaches to deal with these problems. The municipality focused mainly on the residents and the water board was more practically oriented.

Table 9.15: Scores of the factor problem frames and solutions

Adaptive capacity	Score before	Score after
Water board	0.80	1.25
Municipality	1.00	1.25
Average	0.90	1.25

Observation and conclusion: Before the Working place, there was much variation between the opinions and perceptions of the actors. However, there was mainly variation between the different departments of the authorities. In the Working place, both authorities and the different departments created solutions for the problems together. The variation in opinions and perceptions resulted in more insights in how the problems could be solved. This resulted in higher scores of both authorities.

Multi actor, level and sector

To which extent will various parties be involved in finding solutions for the problems around the "Kasteelgracht"?

In this case the most important parties were involved, but the residents were not present in the Working place. However, they were represented by the residential counsel. The municipality and water board could solve the problems, but mentioned that they were thinking too much in their own context by finding solutions. The Working place started with a select group of people with the intention to invite more persons if needed. Finally, the board members and a representative were invited for the last session, but the residents were never present in the Working place.

Table 9.16: Scores of the factor multi actor, level and sector

Adaptive capacity	Score before	Score after
Water board	-0.20	-0.40
Municipality	0.75	0.50
Average	0.28	0.05

Observation and conclusion: Before the Working place, the actors expected that the residents would be present in the Working place. In a later stage, it became clear that they not wanted to join. However, the residents and their interests were represented by the residential council. The municipality, water board and the residential council made different scenarios together. Finally, these scenarios will be presented to the second ring, but the residents should also be involved. They have to be agree with the solutions, because they experienced the problems. So, the residents were important, but they were not present in the Working place and this resulted in lower scores.

Diversity

To which extent is the municipality/water board capable to find various solutions to solve the problems around the “Kasteelgracht”?

The amount of knowledge and experiences of the municipality and water board was large, but it should be combined. All actors wanted to combine their knowledge and experiences, because this was not done before. The authorities were capable to find multiple solutions, but they did not solve the problems. The problems were difficult to solve, because the case was complex and it had many different sides and consequences. However, they wanted to find a good approach for solving the problems. In the Working place was a brainstorm, where many subjects were addressed. All actors could come up with new ideas, which improved the process of finding various solutions.

Table 9.17: Scores of the factor diversity

Adaptive capacity	Score before	Score after
Water board	0.60	0.80
Municipality	0.75	1.25
Average	0.68	1.03

Observation and conclusion: Before the Working place, there was only a select group of actors involved with finding solutions for the problems around the “Kasteelgracht”. There was too much focus on technical measures, which was detrimental for the diversity. In the Working place, more persons with different experiences and knowledge were involved, which resulted in a higher diversity. The actors came with new ideas and a wide range of options to tackle the problems became available. The persons had also different interests and this could lead to more conflicts. However, in this case it was needed to involve more persons, because before the Working place the amount of possible solutions was limited. Due to the Working place, the municipality and water board were more capable to find various solutions and this resulted in higher scores of both authorities.

Redundancy

To which extent provides the municipality/water board for the availability of back-up measures or a back-up plan?

In general, the municipality and water board invest much time in making plans. This resulted in much confidence in this plan, so they created no back-up plan. If the actors not found solutions, there was no alternative and the process would come to a standstill. Finally, after a long period they would create a new plan. In the Working place, the actors had also much confidence in finding solutions. However, the actors really wanted to solve the problems, so they would also have back-up measures.

Table 9.18: Scores of the factor redundancy

Adaptive capacity	Score before	Score after
Water board	-0.80	-0.60
Municipality	-0.75	0.00
Average	-0.78	-0.30

Observation and conclusion: Before the Working place, the authorities implemented measures, but it did not solve the problems. They did not make a back-up plan and had no back-up measures. The authorities continued the same way as they did, but this was not effective. In the Working place, the actors made a plan and determined the consequences of not taking measures. They created different possible solutions, which could be used as back-up and this resulted in a small increase of the scores.

4.3.6. Fair governance

Accountability

To which extent can procedures and processes intern the municipality/water board be checked by extern parties (example: residents)?

If persons are interested in an overview of the processes and procedures, they could ask for it at the water board, residential counsel or district manager. Most information could be given, but the water board and municipality were also interested in the reason of the request. For example, a resident wanted to know when the authorities maintain the “Kasteelgracht”. The authorities could give that information, but they wanted to know why the resident ask to it. Besides that, many audits were organized for different parties, where whole processes were screened. However, not all information could be viewed by externals. Only the most important information would be shared and mostly this it is a positive update. The municipality and water board were not entirely transparent and limited information could be found on the website.

Table 9.19: Scores of the factor accountability

Adaptive capacity	Score before	Score after
Water board	0.20	0.20
Municipality	-0.75	0.00
Average	-0.28	0.10

Observation and conclusion: It was possible for extern parties to check the procedures and processes of the authorities, but they have to be ask for it. During the Working place, the authorities did not share the developments of the process. The process was documented into the growing narrative, but this included personal information, so they did not want to share it. After all session, a report will be sent to the residents to inform them about the process and developments. However, these scores are after two sessions and this report was not sent yet. However, the appointment of sending a report resulted in an increase of the score from the municipality, but the score of the water board remain the same. In addition, the scores are low, but the authorities wanted to improve their openness to extern parties and they consider it as a learning point.

Responsiveness

To which extent is there a dialogue between the municipality, water board and extern parties (residents)?

The dialogue between the municipality, water board and other parties was good, but not optimal. It became better the last years, but it was more a discussion. The conversation was negative, because the residents had complaints and the authorities did not solve the problems. During the location visit, there was a good dialogue with the residents. So in a face to face situation the dialogue was good, but by mail it became negative. Most of the mails contained complaints, which led to discussion. Now, the residents can only communicate with the residential council, district manager or the contact person from the water board.

Table 9.20: Scores of the factor responsiveness

Adaptive capacity	Score before	Score after
Water board	0.60	0.80
Municipality	1.00	1.00
Average	0.80	0.90

Observation and conclusion: In general, the dialogue between the authorities and the residents became better the last years. The dialogue improved due to the presence of the residential council in the Working place. This resulted in a higher score for the Water board. For the municipality was the presence of the residential council too limited and wanted involve more extern parties in the Working place. The score of the municipality did not change, because of the absence of the residents and other extern parties.

Equity

In which extend will political and economic resources be divided fair?

The political and economic resources were divided equally before the Working place. The water board invest more money to solve the problems around “Kasteelgracht”, but they did not have more influence on the design than other organizations. There is relatively much attention for the “Kasteelgracht” in relation with other urban areas in Apeldoorn. The current design leads to high maintenance costs, so both authorities wanted make a new design, which solve the problems and also reduce the maintenance costs. Investing in a new design with lower maintenance costs is better than doing investments in maintenance. Because the important of reducing the maintenance costs, the department for the maintenance of the “Kasteelgracht” had a little bit more influence on the design.

Table 9.21: Scores of the factor equity

Adaptive capacity	Score before	Score after
Water board	0.80	1.20
Municipality	-0.75	0.00
Average	0.03	0.60

Observation and conclusion: The water board invested more money in the “Kasteelgracht” than the municipality. However, the municipality was also responsible for the problems around the “Kasteelgracht”. In the Working place, both authorities had much influence in the new design, so they wanted also to divide the costs fairer. This results in higher scores for the municipality and water board.

Legitimacy

To which extent follow the municipality/water board the rules and procedures?

The municipality and water board followed the rules and procedures. Breaking the rules or procedures leads to reputational damage. Furthermore, the authorities have the role as enforcer, so by breaking the rules they lose credibility. Of course the actors gave their own interpretation and twist on rules and procedures for their own interests. Sometimes it was needed to work pragmatic and that can deviate with the procedures or rules, however, it can also result in better solutions.

Table 9.22: Scores of the factor legitimacy

Adaptive capacity	Score before	Score after
Water board	1.80	1.80
Municipality	0.75	1.00
Average	1.28	1.40

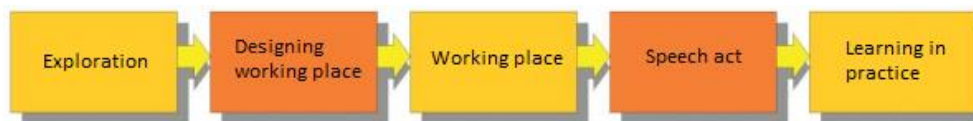
Observation and conclusion: Before the Working place, the municipality and water board follow the rules and procedures well, because they did not want reputational damage or lose credibility. However, the current procedure did not lead to solutions. During the Working place, the goal was to find solutions for the “Kasteelgracht” and this was easier if the authorities work more pragmatic. The municipality and water board deviate from the rules and procedures, but did not exceeded it. For the public interests, it was important to deviate a little. It resulted into a higher score of the municipality, but the scores of the water board did not change. However, the scores of the water board were already high.

Chapter 5. Discussion

5.1. Discussion Working place

The Working place has multiple characteristics, which are always the same. However, each Working place is different, because cases have different actors and problems. This research, is based on one case and the effects of another case can be completely different. The discussion is based on the comparison between the effects of the Working place about the “Kasteelgracht” and the theoretical effects of a conventional Working place. A conventional Working place consists of five phases and multiple characteristics, which are given below (section 1.2). For this research, only the first three phases are completed and are described below.

Five phases



Characteristics

- Use of experiences and tacit knowledge of people
- Narrative approach
- Small, local, specific problem
- First and a second ring
- Five spheres
- Multiple session (3-5) in several months
- Moment of effort
- Speech act

Phase 1: Exploration

The first phase is finding a suitable project for a Working place. Previous Working places were organized by Geldof c.s. at Rijkswaterstaat, municipalities and water boards. The focus of these Working place was on dealing with complex water problems, where many actors were involved. Geldof c.s. had much experience with solving these problems by using tacit knowledge of people. Most Working places emerged from people who Tauw and Geldof c.s. knows and worked with in the past.

During this research, Tauw did not know organizations which wanted a Working place, so cold acquisition was used to find a case at multiple municipalities. This was difficult, because these municipalities had to be convinced about the effectivity of the Working place. In addition, the municipalities did not have problems, which were urgent enough to free budget for a Working place or the potential projects did not have a high priority. During two acquisition conversations, the contact persons of the organization was convinced to set up a Working place. However, when they suggested it to their supervisors, they did not receive permission to execute this idea.

Based on this experience, we can conclude that Tauw needs an employee who has a network large enough to reach the relevant people that have influence or mandate within their own organization. In addition, for implementing a Working place, the project needs to be urgent enough for everyone to participate. When the project is determined and the involved organization is willing to start up a Working place, the second phase can start.

Phase 2: Designing Working place

The second phase is designing the Working place. A case starts with a meeting with Tauw and the contact persons of the organization which want a Working place to find a solution for the specific case. During this meeting, the case should be specified to a small and local problem. There was experienced that if the problems are not specified enough, too many parties with different interests are involved, which makes it difficult to solve the problem of the case. When there are a lot of different interests, people defend their own interests and feel less need to solve the problem. In addition, with a small, local problem it is easier to find persons with specific knowledge and experience about this problem. When it is determined whom will be invited, it is important that the actors should not be invited because of their interests. Interests will be defended and this leads often to discussions, which regresses the collaboration.

For finding solutions, actors with different forms of tacit knowledge should be present in the Working place. The actors can be classified in five spheres. Spheres are cohesive groups of people with similar experiences, values and ways of thinking. It is conventional in a Working place to have at least four of the five spheres to combine all needed tacit knowledge and experiences for finding a solution. When a sphere is absence it is important to involve these persons in a later stage. For example, in the case about the “Kasteelgracht”, only the governance and political sphere, which consists of board members of the water board and representatives of the municipality, was not present. This sphere is important to give permission and to arrange budget for implementing measures. In the last session, the outcome of the session would be presented to this sphere, because they were needed to make a final decision.

When all invited and participating actors are known, the actors with the most crucial tacit knowledge will be selected for a narrative interview, because this is time consuming. It is an intensive process, because the interviews are recorded and transcribed. Furthermore, there should be sufficient budget to do these interviews. For example, in the case of the “Kasteelgracht” all actors were interviewed to obtain more background information about the problems and perceptions. In addition, it is important for the facilitator to have background information and to understand the situation, because it improves facilitating the Working place.

The transcripts of the interviews form the narrative scan and this is the basis of the growing narrative. Because the actors did not meet each other in the Working place yet, only a summary will be sent to the other actors. When the actors are informed about the problems and perceptions of the other actors, this will reduce ambiguities and save time in the first session of the Working place.

Phase 3: Working place

After the interviews, the Working place can start. There are several subjects to discuss in order to find solutions for the problem of a case. These subjects are:

- Introduction of the actors
- Planning of the Working place
- The growing narrative
- Finding solutions
- Role of the facilitator

Introduction of the actors

The first session starts with an explanation of the Working place and what can be expected from the actors. Next, all actors introduce themselves, including their tacit knowledge and experiences about the problems. The other actors can respond during the introduction if something is unclear. By sharing the knowledge and experiences, the actors will get to know each other better. It is important to have a good relationship, because this leads to a better collaboration, which makes it easier to find solutions.

In the case about the “Kasteelgracht, during the introduction, there were already different perceptions about the problems and a fierce discussion arose. The positive energy decreased and the process came to a standstill. This was the moment of effort; the heart of the problem, which should be solved. All Working places have a moment of effort, but the exact moment of it can hardly be predicted. It is often in the start-up phase, because then the budgets and persons for solving the problem should be organized and identified, which is difficult. The moment of effort is a difficult part of the process and cannot be avoided.

Planning of the Working place

In general, the Working place consists of three to five sessions, which are all half a day (4 hours). It is intensive, because everyone should introduce themselves, many stories will be told and the location will be visited. However, the first session of the case of the “Kasteelgracht” was planned for two hours, which was too short. Two persons could not introduce themselves, which was not ideal, because all knowledge and experiences of the actors are important for finding a solution. However, it was not a large problem, because they shared their knowledge and experiences during the discussion in the first session. Furthermore, the location could not be visited due to the limited amount time available. It is good to see the problems in reality, because this clarifies the problems. However, almost all actors together with several residents visited the location three weeks before the Working place. So, the problems of the case were already clarified, but it would have been better to visit the location during the Working place.

The growing narrative

The sessions will be transcribed into the growing narrative. The basis of this document is formed with input of the narrative interviews. Making transcriptions of the Working place sessions is time consuming, but is important because all actors can read back what was discussed during the session.

In the case of the “Kasteelgracht” the sessions were also transcribed into the growing narrative and was sent to all actors. Everyone read the growing narrative, because they were curious what they said exactly. Furthermore, the actors know better what was discussed during the sessions and which decisions were made. This reduces repeats, which increases the effectivity of the process. The second session started with reflecting on the first session and the growing narrative. The actors experienced the first session as intensive due to the fierce discussion. The growing narrative was confrontational, because the actors were not aware anymore of their expressions during the session and now they could read back what they had said. It was important to reflect, because the actors could learn from their experiences, it increases the understanding in each other and it makes the actors conscious of their behaviour.

In Working places, problems will be solved by using tacit knowledge, so reflecting on behalf of the growing narrative will often be done during the sessions.

Finding solutions

After the introduction, the actors can start with the search for solutions regarding the case. All Working places have a different development of the process, which might also result in different solutions. The most important aspect is that solutions are created and supported by all actors.

In the case of the “Kasteelgracht” not all actors were present during all sessions. The Working place depends on tacit knowledge, so if actors are not present in a session it will affect the process. These persons do not have influence in the session, but can be represented by other actors. Otherwise, decisions could be made, where not all actors agree upon. After the session the actors can read back what was said in the growing narrative. This means that the absent actors can read the growing narrative and obtain the feeling that they were present in the session. However, they did not influence the session by themselves.

The role of the facilitator

During the whole process of the Working place, the facilitator has an important role. All Working places are facilitated by the same person. In the case of the “Kasteelgracht”, the facilitator had many examples, which could be used as reference. During a discussion between the actors, the facilitator stays at the background to let the actors find a solution by themselves. When the actors are not able to agree on a solution, the facilitator gave examples of solutions or similar problems from other Working places. This can help the actors to look at the problem in a different way. After a discussion and each session, the facilitator reflected on the situation, which resulted in more understanding between the different actors. Furthermore, the facilitator was a charismatic persons and could appoint the main problems.

The effect of the facilitator on the Working place is large, but it does not affect the whole Working place. The facilitator needs to be independents and have no personal interests in finding a solution. When the facilitator has experiences from previous Working places, it can help the actors to right direction.

Phase 4 and 5: Speech act and learning in practice

After the actors agreed on the found solution, there will be a speech act. This is a common story with the promise that the problems really should be solved. When the solution has proven to be effective, it can also be used for a similar problem.

In the case of the “Kasteelgracht”, the third session of the Working place was planned, but it was too late for this research. Information about the speech act and the final solution are not included in this research. However, the development of the process was good and the actors were convinced that the final solution for the problems around the “Kasteelgracht” will be found. The working method of the Working place was considered as a positive and they liked the use of their tacit knowledge.

5.2. Discussion methodology

In this research, the adaptive capacity wheel (ACW) was used as a tool to analyse persons, organisations and approaches on 22 different factors, which were divided over 6 dimensions. The actors gave a score to these factors (from -2 to 2), which influence the dimensions and finally a clear overview of the strong and weak factors became clear. The actors completed the survey before and after the Working place and gave an explanation of the scores. By comparing these results before and after, the changes of the factors became clear. For determining the change of the authorities, the scores of the actors from these authorities were averaged. However, these authorities are larger than the involved actors in this research, but they were responsible for this specific problem. In this research, they represented the whole organizations.

The results of the survey could be interpreted in different ways. The first way is to assume that if the scores after the Working place are higher, the same or lower than before, the effect of the Working place to find a solution increases, remains the same or decreases. The second way of interpretation is that the actors, due to the Working place, obtained a better perception of the real situation. Therefore, the effect of the Working place corresponds not exactly with the scores. This made it difficult to determine the right way of interpretation. However, the actors also gave an explanation per factor, which made it easier to analyse the results. Furthermore, all actors were interviewed and the sessions of the Working place were observed. The results of the interviews, scores and the explanation of these scores can all be combined to make a final analysis. Due to the observations of the sessions and analyses of the explanations, a better perception of the real situation is created.

The implementation of the ACW for this research was checked by the developers of the ACW. They assisted in drafting the questions for the survey, because they were curious and interested in this approach. The previous implementations of the ACW were also done with interviews and not by using a survey. The researchers did interviews and gave scores by themselves, based on their own interpretation. The only research where a survey was used for the ACW was from Do (2010). However, this survey had two parts. In the first part, the respondents were asked to score the factors of the ACW. In the second part, the respondents could give a score on how important the factors were for them. This second part can be compared with the explanations of this research. However, the explanations and results of the interviews in this research provide more information about the factors. The interviews clarified the problems, perceptions and determined the role of the actors.

Besides using the 22 factors of the ACW, the effects of using tacit knowledge could also be determined by a different theory, method or tool. A different theory is the Contextual Interaction Theory (CIT) of Bressers (2004). This theory argues that the development and results of knowledge transfer projects would be formed by the three core characteristics, being motivation, cognition and resources. These are three broad characteristics, so by analysing a project by using CIT, many different factors can be found which are related to these characteristics. In this research, the AWC was used, which contains 22 factors. These factors are more specified, which makes it easier to analyze. However, there is a risk that the only these factors will be analyzed and that other important factors not will be mentioned.

Furthermore, this research was focused on the actors of the water authorities. However, the facilitator and a board member of the residential council “Osseveld-Woudhuis” were also involved in the Working place. These actors, were called externals and also completed the survey two times (Annex VII). They had an independent view of both authorities. The scores of the externals provide reference and could be compared with the average score of the authorities together. The scores are shown in Table 8 and 9 on the next page. The scores were almost the same as the score of both authorities. The externals were also positive about the Working place and they were convinced that the Working place contributes to finding a solution for the “Kasteelgracht”. The comparison of the scores of the externals and both authorities makes clear that the Working place have a positive effect on finding solutions for the problems of the “Kasteelgracht”.

Table 10: Scores of the survey (externals)

Factors	Score before	Score after
Financial	-0.50	0.00
Human	0.50	1.00
Authority	0.50	1.00
Resources	0.17	0.67
Collaborative	0.50	1.00
Entrepreneurial	0.00	1.00
Visionary	-0.50	1.00
Leadership	0.00	1.00
Ability to improve	0.00	0.50
Act according to plan	1.00	1.00
Continuous access to information	-1.00	0.50
Room for autonomous change	0.00	0.67
Trust	0.50	1.00
Single loop learning	-0.50	-0.50
Double loop learning	-0.50	0.50
Discuss doubt	-0.50	1.00
Institutional memory	-1.00	1.00
Learning capacity	-0.40	0.60
Problem frames & solutions	0.50	1.00
Multi actor level & sector	0.50	0.50
Diversity	0.00	1.00
Redundancy	-1.00	0.00
Variety	0.00	0.63
Accountability	1.00	1.50
Responsiveness	0.00	1.00
Equity	0.00	1.00
Legitimacy	1.00	1.00
Fair governance	0.50	1.13
Adaptive capacity	0.02	0.15
Change (%)		12.81%

Table 11: Scores of the survey (both authorities)

Factors	Score before	Score after
Financial	-1.23	-0.68
Human	0.85	1.33
Authority	0.90	1.35
Resources	0.18	0.67
Collaborative	0.75	0.98
Entrepreneurial	0.65	0.65
Visionary	0.63	1.10
Leadership	0.68	0.91
Ability to improve	1.00	0.68
Act according to plan	0.90	1.00
Continuous access to information	0.68	1.00
Room for autonomous change	0.86	0.89
Trust	1.13	1.23
Single loop learning	0.23	0.23
Double loop learning	0.23	0.23
Discuss doubt	0.80	1.15
Institutional memory	-0.35	0.68
Learning capacity	0.41	0.70
Problem frames & solutions	0.90	1.25
Multi actor level & sector	0.28	0.05
Diversity	0.68	1.03
Redundancy	-0.78	-0.30
Variety	0.27	0.51
Accountability	-0.28	0.10
Responsiveness	0.80	0.90
Equity	0.03	0.60
Legitimacy	1.28	1.40
Fair governance	0.46	0.75
Average score	0.46	0.72
Change (%)		26.70%

Chapter 6. Conclusions and recommendations

This chapter provides answers to the research questions and furthermore shows whether the objective was reached. The objective of this research was to evaluate the effects of Working places as an approach for different actors to find solutions for complex water problems, by monitoring the process and outcome in a case study. First, conclusions will be linked to the research questions. In the second paragraph recommendations can be found for further research.

6.1. Conclusion

This research determined the effects of the Working place by using the case around the problems of the “Kasteelgracht”. In this case, the Adaptive Capacity Wheel (ACW) was used as tool to analyse the effects of the Working place. The tool was used to determine the weak and strong points of actors, organizations or approaches. These weak and strong point were determined by using a survey, which was based on the 22 factors of the ACW. Normally, the scores of the ACW were determined by interviews and the researchers gave score on their own interpretation. However, using a survey was also possible and this was checked by the developers of this tool to increase the trustworthiness of the method. The actors completed the survey before and after two sessions of the Working place. In addition, the actors gave an explanation on why they gave a certain score and they were interviewed. The interviews and the results of the survey before the Working place, provided a clear overview of the problems and of the weak and strong point of the actors, authorities and their conventional approach to solve the problems around the “Kasteelgracht”.

The results of the survey before and after were compared and almost all scores of the factors were higher after the Working place. This means that the Working place had a positive effect on finding solutions for the problems around the “Kasteelgracht”. However, few factors had a lower score than before. The score of ability to improve for extern parties decreased, because the residents were not present in the Working place. The residents did not want to join the Working place, so they did not have influence in finding solutions. Also, the factor multi actor, level & sector decreased. Besides the absence of the residents, other actors with important tacit knowledge, such as managers of the water board or a representative of the municipality were also not present, which lead to lower scores. Furthermore, the factors entrepreneurial, single loop learning (improving routine) and double loop learning (when social actors challenge norms and basic assumptions) did not change. Despite, the residents not being present in the Working place, the capability and intension of the authorities to activate them did not change (entrepreneurial). Furthermore, the monitoring of the achievement of the policy goals did not change, because the Working place was not finished yet (single loop learning). The time period of two sessions was too short to improve the routines and procedures of the actors and authorities (double loop learning).

Despite that some scores became lower or remained the same value, almost all scores increased. Besides the higher scores, the actors gave also an explanation why they gave a certain score, the actors were interviewed and the Working place was analysed. From the explanations, interviews and the analysis, it appears that the actors were positive about the process. The problem was urgent enough for everyone to participate and they wanted to find a solution together. The problem was also small, local, and specific, which made it easier to find all actors with important tacit knowledge to solve the problem. The relationship between the actors improved and they were willing to share their tacit knowledge, which made it easier to find solutions. In addition, the growing narrative increases the understanding toward each other and it makes the actors more conscious of their behaviour and they could learn from their experiences. Finally, the facilitator and the residential council also gave higher scores after the Working place.

Based on the results of the survey, interviews and the analysis of the case, the Working place has a positive effect on finding solutions for complex water problems.

6.2. Recommendations

In this section, recommendations are given to Tauw and Geldof c.s., because they were interested in the effects of the Working place. Both companies want to use the Working place as method to solve complex water problems by tacit knowledge. In addition, there are also recommendations for the water board Valleij and Veluwe, municipality Apeldoorn and Rijkswaterstaat, because they were interested in the use of tacit knowledge.

It is difficult to find a suitable project to implement a Working place by cold acquisition. It is possible to find a suitable project, but more efforts are needed. It requires a clear explanation of the Working place to convince the organizations. For Tauw it is easier to find a project if they have an employee who has a network large enough to reach the relevant people that have influence or mandate within their own organization. In addition, for implementing a Working place, the project needs to be urgent enough for everyone to participate.

In the past, only the actors with the most crucial tacit knowledge were selected for a narrative interview. However, it is important for the facilitator to have a complete overview of all background information, perceptions and tacit knowledge. It is recommended to interview all actors before the Working place, because it improves facilitating the Working place.

By using the ACW, there should also be attention for other factors, because there is a risk that important factors next to the 22 factors, not will be determined.

To deal with complex water problems, organizations should combine actors with different tacit knowledge. Persons with much knowledge and experience have more routine. In addition, they observe and address problems faster. If restructuring of the organization is necessary, it is important to create a good divide of new and experienced people. Furthermore, much attention is needed for transferring tacit knowledge and experience between new and experienced staff.

Making the growing narrative is time consuming, because everything should be transcribed. However, it will be recommended to use it. The growing narrative is important, because the actors can read back what was discussed during the session and which decisions were made. This reduces repeats, which increases the effectivity of the process. The actors will read the growing narrative, because they were curious what they said exactly. Investing in a tool, where voices will be transferred to text will save a lot of time and money.

Reflecting the session and the growing narrative is also important, especially if there was a discussion. It was important to reflect, because the actors could learn from their experiences, it increases the understanding in each other and it makes the actors conscious of their behaviour.

Using a survey to give a score at the factors of the ACW worked well. However, it should be done in combination with (narrative) interviews or the actors should have room in the survey to give an explanation. This resulted in more insights and important information about the problems and why they gave a certain score.

For a better overview of the effects of the Working place, further research is needed. A recommendation for a next research is to observe the whole process, including the last session with speech act and beyond. The last session was planned too late for this research, but especially the speech act gives important information about the final solution.

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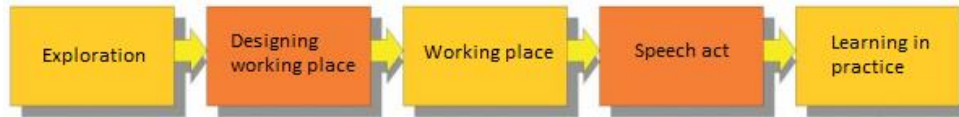
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Annex I: Phases and theory behind Working place

Five phases of Working place

The five phases of the Working place will be described as the rapport of Cath et al, 2011.



Phase 1: Exploration

In the first phase there will be searched for a case to implement a Working place. The most Working places emerged from warm contacts, but also by acquisition. The organized Working place were at different authorities around a complex water problem. After finding a case, the Working place can be started and information about the current situation can be collected. This will be done by organising a meeting with important actors, which have experience and knowledge about the problem. This meeting started with a short introduction and the locations/problem area will be visited, which calls a 'Narrative inspection'. Visiting the area is very important, because many experiences will be exchanged and it clarifies the problems. After this meeting, there can be organized exploratory conversations with some actors, to create a better overview of the situation. The meeting and the conversations with the actors will be recorded and transcribed into a document, which calls "Narrative scan".

Phase 2: Organising and designing the Working place

The second phase is designing the Working place. The location and date will be determined, but the most important in this phase is creating a clear overview of all involved persons, which are needed in the Working place. These persons shall be invited, based on their tacit knowledge and experience with the problem. The invitation is personal and the participation is voluntary. A division will be made between people who are in the first ring, which is the Working place and who form the second ring, consisting of people who have a significant role to bring the result of the Working place to a higher level. The actors of the Working place will be personally invited, and participation is voluntary.

Phase 3: Executing Working place

The Working place consists of three to five sessions of approximately a half day. However, the Working place is not limited to these meetings, because between the sessions the actors should do homework. This is important, because it leads to new inputs for the next sessions and it results in new stories for the narrative scan. During the meetings the specific question and circumstances of the Working place changes constantly due to the inputs of new insights. To respond to these changes different ways of working will be used. The process can also come to a standstill due to difficulties and disagreements. These are the real problems of the case, so it is very important to deal with it and find solutions together. In this way they work towards a substantive and/or social innovation, a local strategy based on practical wisdom. The method is narrative and goes slowly, but moments of difficulty will not be shunned, which lead to a high effectivity.

For the success of a Working place it is important that all spheres are present. The Working place will be organised on location, and will be facilitated by an expert. During the Working places the actors can talk openly, but the narratives have to be relevant to the subject. Furthermore, all people should accept complexity and do not try to go it a way. By accepting complexity, it is easier to find a way to handle it.

Phase 4: Speech Act and evaluating

Phase 4 is relative short, but is very important for the process, because it is the link between having intention and taking action. The Working places ends into a 'Speech Act', which is a story where the intentions, plans, ideas and the proposal for the Working place will be presented. This based on the findings and experiences during the Working places. It is important that the plans are concrete, so they can be used for further taking action. Enouncing the speech act is the start to taking concrete actions and measures. In this phase the narrative scan will be completed and the result will be worked out.

Phase 5: Practice, improving process and concluding

After the speech act, the found solution should be implemented. Furthermore, the process and effects of the Working place can be evaluated. Furthermore, the actors should keep practicing to obtain more tacit knowledge and experiences.

Complexity

The water sector consists of various parties and laws. Surface water, groundwater, water quality and water quantity should be considered together and in context to other fields of policy such as nature, traffic, agriculture, housing and recreation. By involving these parties will be created complex processes, which make the collaboration more difficult (Tainter, 2011). The parties have their own knowledge and experiences, which provide more input for plans. This leads to many benefits, but all the parties should support the plans and this is complex.

Previously, water managers had almost complete authority on the system they had to manage. In modern water management, however, measures are taken to manage the smallest details of the living environment and water managers have relatively little to say here. Nowadays, plans can be rejected, because not all parties do agree with the plans.

Furthermore, the use of (computer) models has limitations. According to Geldof (2005) the models have improved a great deal during the last years and it has become possible to create a better basis for policies and any subsequent measures. The models have also clearly contributed positively to the dimensioning of measures. However, in a number of processes the part played by models has been taken too far. Instead of an aid, they have come to be seen as real and this is dangerous. Some people even think that it is possible to represent reality so accurately with models that they are able to make decisions completely on the basis of objective grounds, in other words, that one can make politics rational.

These three observations of Geldof (2005) all have in common that the complexity characteristic of integrated processes is seen as a nuisance and should therefore be reduced. But because this is not possible, processes run away with the plans. This means plans are not being executed, actors become emotional, and water managers continue to model until truth has been demonstrated. The main argument of this book is that complexity should not be combated, but it should be made manageable. This seems only a minor difference in approach, but in the field it results in a fundamentally different approach to integrated projects.

Narrative approach

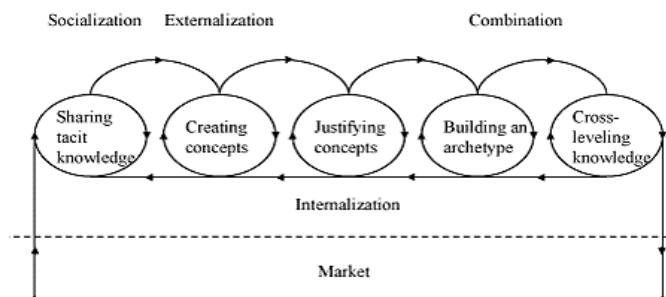
By using externalisation tacit knowledge becomes explicit. Externalisation is the transition of tacit knowledge to explicit knowledge. This transition is hard to do, because tacit knowledge is stored in the behaviour and workmanship of people. The experiences and behaviour (tacit knowledge) are hidden in stories, anecdotes and conversations. To find out the experiences and behaviour of people narrative research is suitable.

Narrative research is a term that subsumes a group of approaches that in turn rely on the written or spoken words or visual representation of individuals. These approaches typically focus on the stories of individual (Andrews et al., 2013). A narrative is derived from the Latin word “narratio” and means story. A narrative is a constructed and structured story with a beginning, a middle and an ending. It has clear entanglements and actions (plot) and is drawn from a certain perspective, world view, given coherence and a dominant ideology and organizational dominance (Nijhoff, 2000).

Narrative research gives no quantitative data, but it is based on experience and stories. Telling stories is not a new method, but old as humanity. People telling stories to others about events which they have experienced or what will happen in the future. These stories usually have the intention to give meaning to the environment, what their role was or what the role was from other people. So telling narratives is a rich and diverse method to get a good view of the situation of person and his experience knowledge. The stories from all the involved parties are important to get a good overview from the perceptions (Cath et al., 2010).

Socialisation

Socialization is sharing knowledge by gaining experience together. By working together knowledge will be shared, often without express this explicitly. An example of this is a trainee, who learns from the mentor by copying.



Annex II: Definitions of criteria and their epistemological roots

Dimension	Criterion	Definition	Relation to literature
Variety	Variety of problem frames	Room for multiple frames of references, opinions and problem definitions	Nooteboom 2006; Buckley 1968, Conant & Ashby 1970; Pollit and Bouckaert 2000; Power 1999
	Multi-actor, multi-level, multi-sector	Involvement of different actors, levels and sectors in the governance process	Pahl-Wostl 2009; Duit & Galaz 2008; Armitage 2008; Folke et al. 2005
	Diversity of solutions	Availability of a wide range of different policy options to tackle a problem	Ostrom 2005; Verweij & Thompson 2006
	Redundancy (duplication)	Presence of overlapping measures and back-up systems; not cost-effective	Weick & Sutcliffe 2001
Learning capacity	Trust	Presence of institutional patterns that promote mutual respect and trust	Pelling & High 2005
	Single loop learning	Ability of institutional patterns to learn from past experiences and improve their routines	Olson et al. 2004; Folke et al. 2005; Carpenter et al. 2001; Marshal & Marshal 2007; Pelling et al. 2008
	Double loop learning	Evidence of changes in assumptions underlying institutional patterns	Argyris 1990; Ormond 1999
	Discuss doubts	Institutional openness towards uncertainties	Pahl-Wostl 2009; Weick & Sutcliffe 2001
	Institutional memory	Institutional provision of monitoring and evaluation processes of policy experiences	Ostrom 2005; Gunderson & Holling, 2002
	Continuous access to information	Accessibility of data within institutional memory and early warning systems to individuals	Folke et al. 2005; Milman & Short 2008; Polsky et al. 2007
Room for autonomous change	Act according to plan	Increasing the ability of individuals to act by providing plans and scripts for action, especially in case of disasters	Smit et al. 2000
	Capacity to improvise	Increasing the capacity of individuals to self-organize and innovate – foster of social capital	Armitage 2005; Folke et al. 2003 & 2005; Pelling & High 2005; Smit et al. 2000; Weick & Sutcliffe 2001; Orlikowski 1996

Dimension	Criterion	Definition	Relation to literature
Leadership	Visionary	Room for long-term visions and reformist leaders	Pielke 1998; Goldfinch & 't Hart 2003; Young 1991; DiMaggio 1988
	Entrepreneurial	Room for leaders that stimulate actions and undertakings; leadership by example	Malnes 1995; Andersson & Mol 2002; Underdal 1994; Kingdon 1984
	Collaborative	Room for leaders who encourage collaboration between different actors – adaptive co-management	Folke et al. 2005; Olsson, Folke & Berkes 2004; Armitage 2005; Marlin et al. 2007; Tierney et al. 2006; Pahl-Wostl et al. 2007; Young 1991; Underdal 1994; Grubb and Gupta 2000; Anderson and Mol 2002; Termeer 2009
Resources	Authority	Provision of accepted or legitimate forms of power; Whether or not institutional rules are embedded in constitutional laws	Biermann 2007
	Human Resources	Availability of expertise, knowledge and human labour	Nelson et al. 2010
	Financial Resources	Availability of financial resources to support policy measures and financial incentives	Nelson et al. 2010; Mendelsohn & Nordhaus 1999; Yohe et al. 1996; Smit et al. 2000; Yohe & Tol 2002
Fair governance	Legitimacy	Whether there is public support for a specific institution	Haddad 2005; Botchway 2001
	Equity	Whether or not institutional rules are fair	Haddad 2005; Botchway 2001
	Responsiveness	Whether or not institutional patterns show response to society	Biermann 2007
	Accountability	Whether or not institutional patterns provide accountability procedures	Botchway 2001; Biermann 2007

Annex III: Data from the survey before Working place (water board)

Dimension	Factors with average score and explanation
Resources	<p><i>Financial (-1.20):</i> The water board did not reserved money for solving the problem. The budget was zero, but there was reserved money for the replacement of two weirs. There was also a large budget for dredging available. So by making a concrete plan, budget became available or it could have been used for an alternative solution.</p> <p><i>Human (1.20):</i> Six persons were involved at the case and they had enough knowledge and experiences. There was much knowledge and experience about the maintenance of the “Kasteelgracht” and also about the execution of technical measures. All expertise was available, needed connections were made and all important persons were involved. It was a nice section of all organizational layers and it did not only consist of technicians. Finding a good solution was important for everyone, however after 14 years they did not found a good solution.</p> <p><i>Authority (0.80):</i> No individual had mandate, but the entire water board did have authority and much influence. Especially if board members will join. The authority is divided among different persons from different layers in the organization. For example: The department of operation and maintenance had influence on design, but not on the financial part. However, there is a short connection with people who have the ability. If something should be organized, then it will be fine. In general, the water has large influence in this project.</p>
Leadership	<p><i>Collaborative (1.20):</i> The collaboration with the water board and municipality was good, especially in maintenance. Furthermore, a good basis was created with the ward council. The collaboration was not optimal, but the last half year it became better. After that, the mood was positive and everyone was willing to find a solution together.</p> <p><i>Entrepreneurial (-0.20):</i> Activating the municipality was going well, however, activating the residents was difficult. In general, the water board was focused on their own organization and they were not good in activating other persons or organizations. Only, by good collaboration in the project and a high level of commitment it was possible to activate others.</p> <p><i>Visionary (1.00):</i> The water board had a vision for the future, but it was not specific. Mainly at policy level the attention for the future was high, but the vision was insufficient. It was based on the complaints of residents and there were only solutions for the short term. The focus for the long term was in particular on technical solutions and not on non-technical solutions. Besides that, the department plan forming had analysed trends to clarify the possible solutions. Other departments, such as ecology did not do that.</p>

Room for autonomous change	<p><i>Ability to improve (0.67):</i> The residents had arranged an external engineering company, which made a rapport with possible solutions. Beside this rapport the ability of residents to improve was low. Maybe there was much room for own initiative, however the water board did little with it. They can give inputs, but it was not clear if it was possible to execute these ideas. So the water board was completely open for own initiative, but they cannot implement everything. The water board wants the control and wanted to find out whether a new idea is functional. The opinion of someone was that residents should have more space for improvement.</p> <p><i>Act according to plan (0.80):</i> All persons were capable of reaching their goals and could take action if necessary. They needed a good story to obtain budget, but then they have capacity to take measures. By having sufficient budget, the water board could act fast. However, there is no procedures to solve the problems of the “Kasteelgracht”.</p> <p><i>Continuous access to information (0.60):</i> Everyone knew the problems, but not all persons knew the possible solutions. The ward council and residents knew only the problems and did not have good access to other information. The most recent information about the problems and solution were shared with the municipality. However, most of the solutions were technical and there was no information available about non-technical solutions.</p>
Learning capacity	<p><i>Trust (1.00):</i> The trust of the actors of the Working place was very good. They knew each other from their daily work and that contributes to the confidence. Everything could be said and would be shared.</p> <p><i>Single loop learning (0.20):</i> The policy goals were monitored, only this should be done better. The water board complied the policy goals as good as possible, but sometimes there was too little time for evaluating.</p> <p><i>Double loop learning (0.20):</i> Regularly, there were discussions about the goals. They were good in discussing the policy goals and they put a gloss if necessary. The goals could always be adjusted.</p> <p><i>Discuss doubt (0.60):</i> There were sufficient discussions with a small group of people. The transparency was very high and they had no secrets for each other. About problems and uncertainties would be talked openly.</p> <p><i>Institutional memory (-0.20):</i> The knowledge and experiences were not documented very well. Everything should be archived and insightful for others, only the registration was a mess. Everyone had their own map and it was not organized well for external parties. Also, many conversations or appointments were not documented. Specific information, such as about the “Kasteelgracht” was not directly visible, only by asking they could deliver it.</p>

Variety	<p><i>Problem frames & solutions (0.80):</i> Sufficient knowledge was available and there were many different views from multiple perspectives. So there was variation, but not very much. The water board and municipality had the same mind-set and they were quickly in agreement. Besides that, they handle problems differently. Some persons expected more problems than others.</p> <p><i>Multi actor, level & sector (-0.20):</i> In this case sufficient parties were involved. Maybe more persons were needed, because the group was thinking too much in their own context by finding solutions. However, they wanted to begin the Working place. If necessary, they invited more persons in a later phase of the process.</p> <p><i>Diversity (0.60):</i> Not many concrete solutions would be made. The hope and expectation was that they found a good approach for solving the problems. The water board was strong in finding technical solutions, but they should think more out of the box. Thinking in that way was difficult.</p> <p>The water board was capable of executing solutions, which were their responsibility. They did not know how many other possibilities they had.</p> <p><i>Redundancy (-0.80):</i> The water board had made an action sequence, but they had not made a back-up for the process. They never made a back-up plan. If the Working place resulted in nothing, they had no alternative.</p>
Fair governance	<p><i>Accountability (0.20):</i> Everyone could view the procedures and processes. Besides that, many audits from different parties were organized. In these audits, whole processes were screened.</p> <p>The water board tried to send all information about the case to the residents, so they had the same information as the water board. Not all information was online, but people can ask for it. Mostly we could give them what they wanted, only they also wanted to know which question was behind the request.</p> <p><i>Responsiveness (0.60):</i> In general, the dialogue is good, only by mail they change their tune. Most of the mails contained complaints. Then the communication became negative and led to a discussion.</p> <p>There was a very good dialogue during the field inspection with residents. So in a face to face situation the dialogue was good, but digitally it became more negative. The communication can always be improved.</p> <p><i>Equity (0.80):</i> The water board invested more money, but it did not mean that they had more influence. They are the water governance, but others also had input. The department operation and maintenance had the most money, but they did not have more influence. It was divided equally. Furthermore, the rules, structures and social norms do not disturb taking action.</p> <p><i>Legitimacy (1.80):</i> The water board cannot afford to break the rules. We were guided by the rules and procedures. Of course people had their own interpretation and gave a twist on rules and procedures, but by many control systems they cannot break it. Besides that, they did not want reputational damage.</p>

Data from the survey before Working place (Project executor & advisor operation and maintenance, water board)

Dimension	Factors	Score	Description (optional)
Resources	Financial	-2	There is no money reserved. Budget becomes available when there is a concrete plan.
	Human	1	We have much knowledge about the execution of maintenance.
	Authority	2	We have only influence on the design, but not on the financial part.
Leadership	Collaborative	1	There is a good collaboration with the municipality and water board in operation and maintenance.
	Entrepreneurial	0	
	Visionary	2	The attention for the future is high, but only at policy level.
Room for autonomous change	Ability to improve	1	The residents are approached often.
	Act according to plan	1	
	Continuous access to information	1	
Learning capacity	Trust	1	
	Single loop learning	-1	
	Double loop learning	-2	
	Discuss doubt	0	There is much discussion with a small group of people.
	Institutional memory	-1	There are many conversations, but not everything is documented.
Variety	Problem frames & solutions	1	
	Multi actor level & sector	-2	
	Diversity	1	
	Redundancy	-1	
Fair governance	Accountability	0	
	Responsiveness	1	
	Equity	2	
	Legitimacy	2	The water board cannot afford to break the rules.

Data from the survey before Working place (policy advisor plan forming/ account manager south/east Veluwe, water board)

Dimension	Factors	Score	Description (optional)
Resources	Financial	-1	The budget now is zero, only there is reserved money for maintenance or replacement of two weirs. This money can be used for something else.
	Human	2	There are six persons involved in the project and with this group we have enough knowledge and experiences.
	Authority	1	Personal I do not have the complete authority, but the total water board does.
Leadership	Collaborative	2	The cooperation with municipality is going well.
	Entrepreneurial	0	Activating the municipality going well, only activating residents is still difficult.
	Visionary	-1	The vision now is insufficient. It is based on the complaints of the residents.
Room for autonomous change	Ability to improve	-1	The residents had arranged an extern party, which made a rapport. Beside this rapport the ability to improve is low. Maybe they have room, only the water board do a little with it.
	Act according to plan	1	With sufficient budget the water board can act fast.
	Continuous access to information	1	The most recent information about the problems and solution were shared.
Learning capacity	Trust	2	The trust in all the people in the Working place is very good.
	Single loop learning	1	Sometimes, there is too little time for evaluating.
	Double loop learning	2	The goals can always be adjusted.
	Discuss doubt	1	There are sufficient discussions.
	Institutional memory	2	Everything will be fixed, archived and is insightful for others.
Variety	Problem frames & solutions	2	There is much variation and there are many different views from multiple perspectives.
	Multi actor level & sector	2	In this case are sufficient parties involved.
	Diversity	-1	There will not create many concrete solutions. Hopefully, there will be found a good approach to solve the problems.
	Redundancy	-1	There is no back-up plan.
Fair governance	Accountability	1	All information about the case will be sent to the residents, so they have the same information as the water board.
	Responsiveness	0	The communication is negative, due to the complaints.
	Equity	2	The rules, structures and social norms do not disturb taking action.
	Legitimacy	2	We are guided by the rules and procedures.

Data from the survey before Working place (policy advisor plan forming, water board)

Dimension	Factors	Score	Description (optional)
Resources	Financial	1	The replacing of two weirs is budgeted this year. A large budget for dredging is also available. These budgets can possible divided in a different way.
	Human	1	All expertise is available, needed connections are made and all important persons are involved. It is very important for us to find a good solution.
	Authority	1	The mandate is low, only there is a short connection with people who have it. If something should be regulated, then it will be fine. The water board generally has a large influence in this project.
Leadership	Collaborative	1	I am very positive about the collaboration with the municipality and the ward council. There is created a good basis.
	Entrepreneurial	0	By the good collaboration in this project and the high level of commitment is it possible to activate others. Normal, the water board focused on their own organization and are they not good in activate people.
	Visionary	1	We thinking about the long term, only this are often technical solutions. We have a strict vision, but we do not want a complete specification of it.
Room for autonomous change	Ability to improve	1	We are completely open to initiative of citizens. After that we will find out if it is functional. They cannot do or implement everything.
	Act according to plan	0	All persons I know are capable to reach their goals and to take action if needed, but there is still no plan or procedure to solve the problems.
	Continuous access to information	0	I think everyone know the problems, but not all the possible solutions.
Learning capacity	Trust	1	All persons know each other from their work, so the trust is very good.
	Single loop learning	1	We comply the policy goals as good as possible.
	Double loop learning	1	There were discussions regularly about the goal and there will be put a gloss if it is needed.
	Discuss doubt	1	The transparency is high. There are no secrets for each other.
	Institutional memory	0	In general, everything will be registered. Specific information of this case ("Kasteelgracht") is not directly visible, but by asking we can deliver it.
Variety	Problem frames & solutions	0	There is variation, but we are naturally in agreement. Besides that, we handle problems differently.
	Multi actor, level & sector	0	I think that more people should be involved. Maybe, we are thinking too much in our own context by finding solutions.
	Diversity	1	The water board is capable to execute solutions, which are our responsibility. I am curious about how much possibilities we do have.

	Redundancy	1	We made an action sequence, but we do not have a back-up for the process.
Fair governance	Accountability	0	Not all information is online, but people can ask for it. Mostly we can give what they want, only we also want to know which question is behind the request.
	Responsiveness	1	In general, the dialogue is good, only by mail they change their tune. In face to face situations it is more a discussion. During the field inspection with residents there was a very good dialogue.
	Equity	0	The water board invest more money, but it does not mean that they have more influence. We are the water governance, but others also have input.
	Legitimacy	2	Of course people give an own twist on the rules and procedures, but there are many control systems so you have to.

Data from the survey before Working place (policy collaborator maintenance water systems / ecologist, water board)

Dimension	Factors	Score	Description (optional)
Resources	Financial	-2	Formal there is no budget, only with a good story make probably money available.
	Human	1	We have a nice section of all organizational layers. The group do not only consist of technicians. I do not know who should be invited.
	Authority	-2	Personal, I have not all influence or mandate, but nobody has. The water board can reach a lot and especially if board members will join.
Leadership	Collaborative	1	The collaboration with the municipality is good. We also have contact with the ward council. Everyone is willing to find a solution together. However, it is not optimal and it could better.
	Entrepreneurial	-1	If we made a decision, we go for it. Only making decisions is hard.
	Visionary	1	The department plan forming had analysed the trends, only the department ecology did not do that.
Room for autonomous change	Ability to improve	0	There is much room for own initiative. They can give inputs, but it is not clear if it is possible to execute.
	Act according to plan	1	If we have a good story, then we have capacity to take measures.
	Continuous access to information	0	There are much technical solutions, but there is no information about the non-technical solutions.
Learning capacity	Trust	1	The trust is good. Everything can be said and will be shared.
	Single loop learning	1	The policy goals will be monitored, only this can better.
	Double loop learning	2	We are good to discuss the policy goals.
	Discuss doubt	1	There will be talked openly about problems and uncertainties.
	Institutional memory	-1	The knowledge and experiences are not captured very well. The registration is a mess. Everyone has their own map, but it not organized good for extern parties.
Variety	Problem frames & solutions	0	Sufficient knowledge is available and there are many different views. So there is variation, but not very much. Some persons see more problems than others.
	Multi actor level & sector	1	Sufficient parties will be involved. Maybe that more persons are needed in a later phase of the process.
	Diversity	1	We are strong in finding technical solutions, but maybe we should think more out of the box. Thinking in that way is still difficult for us.
	Redundancy	-2	We never made a back-up plan. If this process results in nothing, we have no alternative.
Fair governance	Accountability	0	The procedures and processes can be viewed. However, they need to ask for it. Furthermore, there are many audits from different parties where processes will be screened.
	Responsiveness	0	In general, the dialogue is good, but it can always be improved.
	Equity	0	Operation and maintenance has much money. They did have a little more influence. Normally, it is divided equally.
	Legitimacy	1	People have always their own interpretation, but as governance you cannot deny the rules and procedures. Besides that, we do not want reputational damage.

Annex IV: Data from the survey before Working place (municipality)

Dimension and score	Factors with average score and explanation
Resources	<p><i>Financial (-1.25):</i> The municipality had no budget for solving the problem. Only for the things they were responsible, they would pay. They understand that it was a common problem, so the costs would be divided equally. A boost was needed to make money for it.</p> <p><i>Human (0.50):</i> The water board had the most knowledge about the problem, but all responsible persons of the municipality were involved. However, the involved persons suffered with time limits, so it can better.</p> <p><i>Authority (1.00):</i> No individual had mandate or much influence in the process, but the whole municipality had. Inside the organization of the municipality the program manager had much authority. Other had influence, but they had to feed back to the management. The municipality had an important role in the process.</p>
Leadership	<p><i>Collaborative (0.50):</i> There was a good collaboration between the municipality and water board, but it was still in development phase.</p> <p><i>Entrepreneurial (1.50):</i> The municipality is capable to activate other parties. This was very positive, otherwise there was no Working place. Activating other parties went well, only this was also in development. They understand collaboration was needed and they should work together. The municipality force nobody, but they tried to seduce them diplomatic.</p> <p><i>Visionary (0.25):</i> There was too little attention for the future. There was a loop from accident to a short term solution, only the final solution was not found. In the past, during the renovation of the Zuphensestraat was built a pipeline for water transportation to the “Kasteelgracht”. This was done for water supply in the future. So there was attention, otherwise they did not start the case, but it was not enough.</p>
Room for autonomous change	<p><i>Ability to improve (1.33):</i> The focus of the municipality was on room for inhabitants. They were open for initiative, only they were critically. Dealing with inputs of residents was sometimes difficult. Some persons were dominant in the process and municipality should beware of that.</p> <p><i>Act according to plan (1.00):</i> The persons who were involved had much influence in the process and could find a good solution. They did not have much money for the project, only by being creative they could reach a lot. They always solve large problems, so they had confidence in the case.</p>

	<p><i>Continuous access to information (0.75):</i> All information was available and all possible solutions were known. The problem was that everyone had a part of the information. Some persons would be updated earlier, because they were important for the process, but were unaware of the problems. It was necessary that the available information would be shared with others.</p>
Learning capacity	<p><i>Trust (1.25):</i> The respect and trust in the water board was good, but a few years earlier this was negative. The water board was changed positively. Not everyone did not know all persons in the Working place, only they trusted the other people of the municipality and the water board.</p> <p><i>Single loop learning (0.25):</i> We check all our policy goals whether it correspond with the realization. The most persons did not know the policy goals, but they thought that the policy goals would be monitored good.</p> <p><i>Double loop learning (0.25):</i> They did not know the policy goals very well, so there was also little discussion. Tax money should not be waste, only sometimes invest in a potential problem is necessary. There was looked to it at a balanced way.</p> <p><i>Discuss doubt (1.00):</i> There is much discussion about the “Kasteelgracht” and problems would be discussed. The conversations with the water were open. This also happened with the ward council, only then the municipality is more tactical and did not say everything.</p> <p><i>Institutional memory (-0.50):</i> Most of the knowledge and experiences would be documented. Not everything would be shared with externals, but they could ask for it. Furthermore, most knowledge was implicit and that was difficult to adopt. That was one of the problems, which they would solve in the Working place.</p>
Variety	<p><i>Problem frames & solutions (1.00):</i> There was much variation, because many different types were involved in the Working place. On the other hand, the opinions and views of the water board and the municipality were often the same. Both parties understood that something should be done to solve the problem. Furthermore, the expectation of the municipality was that the water board prefer took measures for maintaining the “Kasteelgracht”. There were also other solutions possible.</p> <p><i>Multi actor, level & sector (0.75):</i> There were involved sufficient parties, but it did not reach an optimum. There should be discovered more important actors/parties. Maybe were interesting parties or persons not involved, but could be useful to find opportunities for the future.</p>

	<p><i>Diversity (0.75):</i> To found a various amount of solutions the municipality also needed extern parties. They cannot invent everything by their self. Extern parties could come up with new things, where you never thought of before. Furthermore, the process had an open character and multiple solutions would be possible. If the group was not capable to found solutions, they would hire expertise.</p> <p><i>Redundancy (-0.75):</i> Often, there would not be thought about a back-up plan. In this case there was also no back-up plan. The process came to a standstill if the Working place not led to results. After that, the organization continue the same way as they did, which was not effective.</p>
Fair governance	<p><i>Accountability (-0.75):</i> Extern parties were involved, only they were unable to see the documents. A part of citizen participation is that everyone could saw everything, but the municipality was not entirely transparent. So, the execution of participation was not good enough. That was a learning point. Although, not all information was public extern parties could ask for it and the municipality would send it.</p> <p><i>Responsiveness (1.00):</i> The dialogue between the municipality and other parties was good, but not optimal. There were some conversations, but not much. The dialogue is limited.</p> <p><i>Equity (-0.75):</i> This was very relevant topic and there were many conversations about it. The resources were evenly divided, only this was not per se fair. It depends on where priority is given to. By decision making not anyone make an offer and some persons took a closed position. They did not say which added value they could add to found a solution.</p> <p><i>Legitimacy (0.75):</i> If possible the municipality interpreted rules and procedures in a different manner for their own interests. Sometimes it was needed to work pragmatic and that can deviate with the procedures or rules. In contrast the municipality is a government, so they have to follow the procedures and rules. They adhere properly to the law, only they tried to found the slack. Besides that, if they exceed the rules, they probably suffer with problems afterwards.</p>

Data from the survey before Working (strategic policy advisor – surroundings services
Veluwe IJssel, municipality)

Dimension	Factors	Score	Description (optional)
Resources	Financial	0	I have no insight in the budgets.
	Human	-1	
	Authority	-2	I did not have influence or mandate. The municipality have much influence.
Leadership	Collaborative	0	I do not know.
	Entrepreneurial	2	This is very positive, otherwise we were not on the level, where we are now.
	Visionary	-2	Nowadays there is too little attention for the future. There is a loop from accident to a short term solution, only not the final solution.
Room for autonomous change	Ability to improve	1	Positive, only maybe it is not well-designed.
	Act according to plan	2	The persons who are involved now have much influence in the process and can find a good solution.
	Continuous access to information	-1	Everyone have a part of the information. It is necessary that the available information will be shared with others.
Learning capacity	Trust	1	Positive, otherwise we do not have a Working place
	Single loop learning	-1	
	Double loop learning	-1	We just reached this level of working.
	Discuss doubt	1	Good. Otherwise we do not have this case.
	Institutional memory	0	This is one of the problems, which we want to solve in this process.
Variety	Problem frames & solutions	1	There are sufficient different types to find a solution.
	Multi actor level & sector	1	Sufficient, but it does not reach an optimum yet. There should be discovered more important actors/parties. Maybe there is an interesting party, which is not involved yet.
	Diversity	1	The process has an open character. The process allows multiple solutions.
	Redundancy	-1	Often, there will not thought about a back-up plan.
Fair governance	Accountability	-1	Extern parties are involved, only they are unable to see the documents. This is a part of citizen participation, only the execution of it is not good.
	Responsiveness	1	The dialogue is good between the municipality and other parties, but it is not optimal.
	Equity	-1	This is very relevant and there is much talk about it. Only by decision making not anyone make an offer. Most persons are closed and they do not say which added value can add to find a solution.
	Legitimacy	0	if there is a chance the municipality interprets rules and procedures different for their own interests.

Data from the survey before Working place (program manager water & sewer systems, municipality)

Dimension	Factors	Score	Description (optional)
Resources	Financial	-1	It is not budgeted, only for the things we are both responsible we will also pay together.
	Human	1	The water board have the most knowledge about this problem, but all responsible persons of the municipality are involved.
	Authority	2	Inside the municipality I have much authority.
Leadership	Collaborative	2	I believe there is an excellent collaboration between the municipality and water board.
	Entrepreneurial	2	The municipality is capable to activate other parties. We force nobody, but we seduce them diplomatic.
	Visionary	1	There is much attention for the future. As example: During the renovation of the Zuphensestraat is built a pipeline for water transportation to the "Kasteelgracht".
Room for autonomous change	Ability to improve	1	We are open for initiatives of the inhabitants, only we are critically.
	Act according to plan	0	
	Continuous access to information	2	I think all information is available and all possible solutions are known.
Learning capacity	Trust	2	Nowadays, there is respect and trust in the water board, but three years ago not much. The water board changed positive last years.
	Single loop learning	2	We check all our goals whether it correspond with the realization.
	Double loop learning	2	We looked to it in a balanced way. Tax money should not be waste, only sometimes invest in a potential problem is necessary.
	Discuss doubt	1	There is much discussion about the "Kasteelgracht".
	Institutional memory	0	The most knowledge is implicit and this is difficult to dispose of.
Variety	Problem frames & solutions	1	I think everyone prefer to take measures to maintain the "Kasteelgracht". However, other solutions are also possible.
	Multi actor level & sector	2	All-important parties are involved, so involving other parties is not needed.
	Diversity	2	The municipality is capable to find a various amount solutions and otherwise we hire expertise.
	Redundancy	0	When we do not find a solution than we continue the same way as we did.
Fair governance	Accountability	0	Not all information is public, but if someone asks for it we can send it.
	Responsiveness	1	The dialogue is good, but it can better.
	Equity	0	
	Legitimacy	1	We are a government, so we have to follow the procedures and rules. Sometimes it is needed to work pragmatic and that can differ with the procedures or rules.

Data from the survey before Working place (director public space & district operator maintenance, municipality)

Dimension	Factors	Score	Description (optional)
Resources	Financial	-2	Currently, there is no budget, but maybe this can be made. A boost is needed to make money for it.
	Human	1	All parties are involved, but it can always better. Everyone suffer from time limit.
	Authority	2	We have influence and mandate, but we have to feed back to the management. The municipality important in this process.
Leadership	Collaborative	0	The collaboration is good, only it is still in development phase.
	Entrepreneurial	1	Activating other parties goes better, only this is also still in development. We understand collaboration is needed and we should work together.
	Visionary	1	Of course there is attention for the future. This is where it goes about.
Room for autonomous change	Ability to improve	2	Our focus is on room for inhabitants. We are open for initiative, but dealing with it is sometimes difficult. Some persons are dominant in the process and we should beware of this.
	Act according to plan	1	We do not have much money for this project, only by being creative we can reach a lot. We always solve a large problem.
	Continuous access to information	1	The knowledge and information is available, only we want to know it earlier.
Learning capacity	Trust	1	We do not know everyone very well, only we trust the persons of the municipality and the water board.
	Single loop learning	0	Probably, the policy goals will be monitored good.
	Double loop learning	0	We do not know the policy goals very well, so there is also little discussion.
	Discuss doubt	1	With the water board we have open conversations. This also happened with the ward counsel, only then we do not say everything, because this is sometimes tactical.
	Institutional memory	-1	Everything will be documented, but not everything will be shared with extern parties, but they can ask for it.
Variety	Problem frames & solutions	1	The opinions and views of the water board and us are often the same. We all understand something should be done to solve the problem. There is much variation in finding solutions.
	Multi actor level & sector	0	We think some persons are needed to find the opportunities for the future.
	Diversity	0	To find a various amount of solutions we also needed extern parties. We cannot invent everything by our self. Extern parties can come up with new things, where you never thought of.
	Redundancy	-1	There is no back-up plan. The process come to a standstill if the Working place not lead to results.
Fair governance	Accountability	-1	Everyone can see everything, but we are not entirely transparent. So that is still a learning point for us.
	Responsiveness	1	There are some conversations, but not much. The dialogue is limited.
	Equity	-1	The resources are evenly divided, only this is not per se fair. It depends on where priority is given to.
	Legitimacy	1	We adhere properly to the law, only we try to find the slack. If we exceed the rules, then you have probably a problem afterwards.

Annex V: Data from the survey after Working place (water board)

Dimension and score	Factors with average score and explanation
Resources	<p><i>Financial (-0.60):</i> At this moment there is only money available for usual maintenance. A request is needed if something new would be constructed. Furthermore, there is a budget for replacing the weir. If there is a good plan, it possible to obtain extra finance.</p> <p><i>Human (1.40):</i> -</p> <p><i>Authority (1.20):</i> -</p>
Leadership	<p><i>Collaborative (1.20):</i> It become better</p> <p><i>Entrepreneurial (-0.20):</i> This is new for us</p> <p><i>Visionary (1.20):</i> The plans and policy rapport are on internet.</p>
Room for autonomous change	<p><i>Ability to improve (0.60):</i> There is room for improvements, however the water board should get used to it that it will happen.</p> <p><i>Act according to plan (1.00):</i> During the Working place was made a plan for solving the problems. However, this plan was not finished or implemented, but there is confidence that the problems would be solved after the Working place.</p> <p><i>Continuous access to information (1.00):</i> It was divided over multiple persons, but in the Working place this was combined.</p>
Learning capacity	<p><i>Trust (1.20):</i> The authorities trust each other, but it is the question if the residents have trust in these authorities.</p> <p><i>Single loop learning (0.20):</i></p> <p><i>Double loop learning (0.20):</i> -</p> <p><i>Discuss doubt (0.80):</i> -</p> <p><i>Institutional memory (0.60):</i> -</p>
Variety	<p><i>Problem frames & solutions (1.25):</i> -</p> <p><i>Multi actor, level & sector (-0.40):</i> Combining different actors, levels and sectors started due to the location visit and the Working place.</p>

	<p><i>Diversity (0.80):</i> The water board is capable to find multiple solution, but this is a complex problem with many different sides and consequences.</p> <p><i>Redundancy (-0.60):</i> -</p>
Fair governance	<p><i>Accountability (0.20):</i> Information can found on the website. For explanation of this information could be made an appointment. Furthermore, all question would be answered by phone or mail.</p> <p><i>Responsiveness (0.80):</i> This became better the last years.</p> <p><i>Equity (1.20):</i> There is relatively much attention for the “Kasteelgracht” in relation with other urban area in Apeldoorn.</p> <p><i>Legitimacy (1.80):</i> If the rules or procedures would be broken by the water board, it loses credibility. The water board also have the role as enforcer, so breaking the rules would be hypocritical.</p>

Data from the survey after Working place (individual, water board)

Dimension	Factors	A	B	C	D	E
Resources	Financial	0	0	-1	-1	-1
	Human	2	1	2	1	1
	Authority	2	2	1	1	0
Leadership	Collaborative	1	1	2	1	1
	Entrepreneurial	0	0	0	0	-1
	Visionary	2	2	-1	2	1
Room for autonomous change	Ability to improve	1	2	-1	1	0
	Act according to plan	0	1	1	0	1
	Continuous access to information	1	1	1	1	1
Learning capacity	Trust	1	2	2	1	0
	Single loop learning	0	-1	1	1	0
	Double loop learning	0	-2	2	1	0
	Discuss doubt	1	0	1	1	1
	Institutional memory	-1	0	2	1	1
Variety	Problem frames & solutions	1	1	2	1	0
	Multi actor level & sector	-1	-2	2	0	-1
	Diversity	1	1	1	0	1
	Redundancy	0	-1	-1	0	-1
Fair governance	Accountability	1	0	1	-1	0
	Responsiveness	1	2	0	1	0
	Equity	1	2	2	1	0
	Legitimacy	2	2	2	1	2

A: Advisor operation and maintenance

B: Project executor

C: Policy advisor plan forming/ account manager south/east Veluwe

D: Policy advisor plan forming

E: Policy collaborator maintenance water systems / ecologist, water board

Annex VI: Data from the survey after Working place (municipality)

Dimension and score	Factors with average score and explanation
Resources	<p><i>Financial (-0.75):</i> Currently, there are little resources. However, if constructive ideas will be found to solve the problems, it is easier to create resources. The costs, according to the “Kasteelgracht”, are focused on maintenance of the existing design. The costs to maintain this design are probably higher than a different variant.</p> <p><i>Human (1.25):</i> There are many persons with expertise, but these persons do not work together. It could be well if they organize meetings together. The problems with maintenance are large, so also persons of policy and communication are involved. By solving the problem less persons have to be involved, which lead to decreasing costs.</p> <p><i>Authority (1.50):</i> -</p>
Leadership	<p><i>Collaborative (0.75):</i> The relation between the water board and municipality was good. The collaboration was not very strong, but due to the Working place this changes positively. Both authorities recognize the maintenance problems and they both took responsibility. They try to find a solution together, but until now this was not successful.</p> <p><i>Entrepreneurial (1.50):</i> Contact with the residential counsel and residents is good.</p> <p><i>Visionary (1.00):</i> There was much focus on improvements of the maintenance tasks of the current design. So, the actors had little attention for the future, but it increases.</p>
Room for autonomous change	<p><i>Ability to improve (0.75):</i> The municipality is open for new good ideas from externals, because this improves public support. There is room for suggesting wishes and the municipality try to listen to the residents. The residents can notify if they had hindrances or if they experience convenience. There was little room for inputs from residents in the process until now.</p> <p><i>Act according to plan (1.00):</i> The water board and municipality should come to a common admission of the problems. Many things are possible, if make a problem analysis and optimize the current design.</p> <p><i>Continuous access to information (1.00):</i> The access to information, concerning the data of the subsoil, should be improved. Furthermore, it is not clear which data should be available and how it could be implemented. It is important to share and combine data to increase integral working. More system knowledge can be obtained from water management in relation with subsoil, green and ecosystems.</p>

Learning capacity	<p><i>Trust (1.25):</i> The collaboration between the municipality, water board and other involved actors is good. There is respect and trust in each other. Furthermore, all information would be shared and it would be good if that also happen in the future.</p> <p><i>Single loop learning (0.25):</i> By making a new design, all options and ideas are considered, so the trust in this design is large. However, in practice it is stubborn and less doable than previously thought. Often, the problems would be solved with technical measures, but in practice this is difficult. Finding a more natural measure is hard, but it is more sustainable and lead to a better result for the future.</p> <p><i>Double loop learning (0.25):</i> There is only little discussion about the policy goals. More discussion is essential to change the conventional methods.</p> <p><i>Discuss doubt (1.50):</i> Doubt will be discussed separately and inside the organization is less overview of all knowledge and experiences.</p> <p><i>Institutional memory (0.75):</i> The knowledge and experiences are not recorded sufficiently. The experiences will only be recorded sectoral.</p>
Variety	<p><i>Problem frames & solutions (1.25):</i> The differences in planning and perceptions are large.</p> <p><i>Multi actor, level & sector (0.50):</i> The municipality and water board started the process with a large group of actors before the Working place. With this large group they visited the location and residents could indicate the problems.</p> <p><i>Diversity (1.25):</i> Many subjects were addressed in the brainstorm. The amount of knowledge and experiences of the individuals is large, but it should be combined. All actors wanted combine their knowledge, but they did not do it before.</p> <p><i>Redundancy (0.00):</i> -</p>
Fair governance	<p><i>Accountability (-0.50):</i> Extern parties can obtain an overview of the processes and procedures by asking the residential counsel of district manager.</p> <p><i>Responsiveness (1.00):</i> There is only a dialogue between the residents and the residential counsel and district manager.</p> <p><i>Equity (0.00):</i> This design of the “Kasteelgracht” lead to high maintenance costs. Both authorities wanted to make a new design, however, there was only a small budget. The departments, which was responsible for maintenance had more power, because the first priority was improving the quality of life. Afterward, investing in a new design was better for the district than doing all investments in maintenance.</p> <p><i>Legitimacy (1.00):</i> -</p>

Data from the survey after Working place (individual, municipality)

Dimension	Factors	F	G	H	I
Resources	Financial	-1	-1	-1	0
	Human	1	1	2	1
	Authority	1	2	1	2
Leadership	Collaborative	1	2	0	0
	Entrepreneurial	1	2	2	1
	Visionary	-1	2	1	2
Room for autonomous change	Ability to improve	-1	1	1	2
	Act according to plan	1	1	1	1
	Continuous access to information	0	2	1	1
Learning capacity	Trust	1	2	1	1
	Single loop learning	-1	2	0	0
	Double loop learning	-1	2	0	0
	Discuss doubt	1	2	1	2
	Institutional memory	1	0	1	1
Variety	Problem frames & solutions	1	1	2	1
	Multi actor level & sector	0	2	0	0
	Diversity	1	2	2	0
	Redundancy	0	0	1	-1
Fair governance	Accountability	1	2	-2	-1
	Responsiveness	1	1	1	1
	Equity	1	0	0	-1
	Legitimacy	1	1	1	1

F: Strategic policy advisor – surroundings services Veluwe Ijssel

G: Program manager water & sewer systems

H: Director public space

I: District operator maintenance

Annex VII: Data from survey before and after Working place, completed by externals

Dimension and score	Factors with average score and explanation
Resources	<p><i>Financial (-0.50 -> 0.00):</i> There is a feeling that the maintenance budget was too high. Both authorities, but especially the water board invested much in maintenance of the “Kasteelgracht”. So less money is an important problem, which should be solved. However, the “Kasteelgracht” is not needed for water supply or safety, so it did not have priority. Despite, the low financial resources, there are good developments. The authorities recognize the problems and have to deal with high maintenance costs. By reducing these costs, the money could be invested in new measures to solve the problems. They wanted to find solutions, so probably they create budget for it.</p> <p><i>Human (0.50 -> 1.00):</i> All knowledge and experiences are available and this was combined in the Working place. Before the Working place the authorities talk much about the problems, but did not take measures. The involved persons should work together, because this is more effective.</p> <p><i>Authority (0.50 -> 1.00):</i> The authorities did have more tasks than only their core tasks. The “Kasteelgracht” is not important for water supply, but they were responsible for the problems. The water board and municipality together have much influence and mandate to solve the problems. However, the residents are also very important. If the residents not agree with the different plan, it would not be implemented.</p>
Leadership	<p><i>Collaborative (0.50 -> 1.00):</i> The problems occurred for 13 years, due to poor collaboration. The collaboration was improved a half year ago and now they want to find solutions. The Working place combined all different actors, which resulted in a positive effect on the collaboration.</p> <p><i>Entrepreneurial (0.00 -> 1.00):</i> Until now, the authorities talk much about the problems, but it resulted not in actions.</p> <p><i>Visionary (-0.50 -> 1.00):</i> The governances have attention for the future, but in this case there needed to take measures. Now they listen to the residents, who have many complaints, but a solution is not found yet.</p>
Room for autonomous change	<p><i>Ability to improve (0.00 -> 0.50):</i> There is room for autonomous change, but if the residents are aware of it is unclear. The authorities listen to the input from residents, but did not take action. A better collaboration with the residents and residential council is needed to improve processes.</p>

	<p><i>Act according to plan (1.00 -> 1.00):</i> The authorities did not have plan, which they can use by problems or chances. However, they can more than they think. There is enough experience to take measures on time.</p> <p><i>Continuous access to information (-1.00 -> 0.50):</i> All information is available, but it is divided over multiple persons and parties. In the Working place all information was shared and they found directly new possibilities. The municipality and water board did not have actual information and extern parties did not have access to the information.</p>
Learning capacity	<p><i>Trust (0.50 -> 1.00):</i> The actors trusted and had much respect for each other. Due to the Working place, the trust and respect increased.</p> <p><i>Single loop learning (-0.50 -> -0.50):</i> In general, governances did not evaluate. The governances have much trust in the choices, which they had made for the design.</p> <p><i>Double loop learning (-0.50 -> 0.50):</i> In advance, there are many discussions about the policy objectives.</p> <p><i>Discuss doubt (-0.50 -> 0.50):</i> The municipality and water board talk about uncertainties, but mostly this will be done separated. Everyone shared problems intern their departments, but not with other departments.</p> <p><i>Institutional memory (-1.00 -> 1.00):</i> There are discussions, but only a little will be documented. The activities intern the organizations will not be shared with the surroundings. Except when it is positive news.</p>
Variety	<p><i>Problem frames & solutions (0.50 -> 1.00):</i> The municipality and water board mostly agree with each other. There is variation, but it was better if the residents were present in the Working place. If some persons were unavailable, this had directly effect.</p> <p><i>Multi actor, level & sector (0.50 -> 0.50):</i> All parties will be involved to find solutions. This happened much in the last six months, but before that other parties were not involved. Currently, the most important persons were involved, but more parties with experiences about the problems should be invited.</p> <p><i>Diversity (0.00 -> 1.00):</i> There is much brainpower, but less solutions. All actors had different responsibilities, but also different interests. In the Working place several persons prefer technical solutions, but other did have counter arguments. For the process these persons were very important to improve the diversity.</p>

	<p><i>Redundancy (-1.00 -> 0.00):</i> Authorities made only a back-up plan when they have new innovations. For this case they did not made a back-up plan. There will be invested much time for the optimal design. After that, there is much convenience and if something goes wrong they would make a new plan.</p>
Fair governance	<p><i>Accountability (1.00 -> 1.50):</i> The authorities published new information in the “Wijkkijker”, which is a district paper. Furthermore, extern parties can ask for information at the residential council or district manager.</p> <p><i>Responsiveness (0.00 -> 1.00):</i> In the last year, this became better. They react mostly on the complaints of residents, which is not a dialogue.</p> <p><i>Equity (0.00 -> 1.00):</i> Actors or parties with less money or power had much influence in this process. Also intern the organizations there was equity. However, there was much attention for reducing maintenance costs, so the involved persons of maintenance had a little bit more influence in the process. In the Working place everyone was even important.</p> <p><i>Legitimacy (1.00 -> 1.00):</i> The trick is to deviate from the rules and procedures in an appropriate manner to improve solutions.</p>

Data from the survey before and after Working place (externals)

Dimension	Factors	J (before)	K (before)	J (after)	K (after)
Resources	Financial	0	0	-1	0
	Human	1	1	0	1
	Authority	1	1	0	1
Leadership	Collaborative	0	1	1	1
	Entrepreneurial	-1	1	1	1
	Visionary	-1	1	0	1
Room for autonomous change	Ability to improve	-1	0	1	1
	Act according to plan	1	1	1	1
	Continuous access to information	-1	0	-1	1
Learning capacity	Trust	0	1	1	1
	Single loop learning	-1	-1	0	0
	Double loop learning	0	1	-1	0
	Discuss doubt	-1	1	0	1
	Institutional memory	-1	2	-1	0
Variety	Problem frames & solutions	0	1	1	1
	Multi actor level & sector	1	1	0	0
	Diversity	1	1	-1	1
	Redundancy	-1	0	-1	0
Fair governance	Accountability	2	2	0	1
	Responsiveness	0	1	0	1
	Equity	1	1	-1	1
	Legitimacy	1	1	1	1

J: Facilitator Working place

K: Board member residential council