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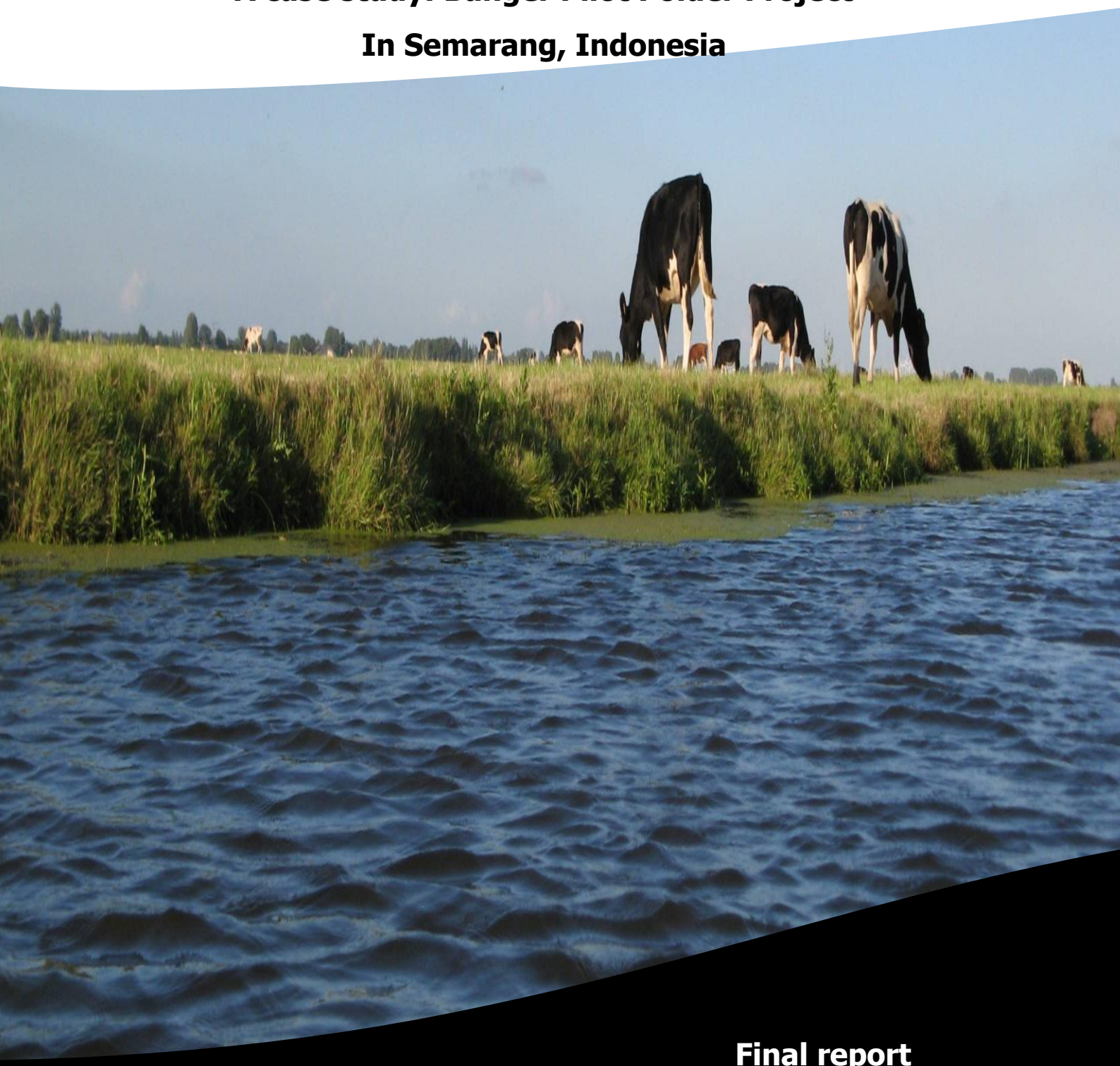
Factors that contribute to effective Dutch-funded international water projects

A case study: Banger Pilot Polder Project

In Semarang, Indonesia



Robin Peters

Business Administration
International Management
University of Twente
The Netherlands

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A case study: Banger Pilot Polder Project In Semarang, Indonesia

Ing. R. Peters
Business Administration
International Management
University of Twente
The Netherlands
r.peters@student.utwente.nl

Supervisors
DR. K. Zalewska-Kurek
School of Management and Governance
University of Twente
the Netherlands

J. Vinke-de Kruijf MSc.
Department of Water Engineering & Management
Twente Centre for Studies in Technology & Sustainable Development
University of Twente
The Netherlands

A. Kops MSc.
Area Manager South-East Asia and Australia
Witteveen+Bos
The Netherlands

Key words: International water management projects, decision-making processes, effectiveness of Dutch funded projects, Contextual Interaction Theory, evaluation research.

Management Summary

Introduction

First of June 2001, a four party Memorandum of Understanding (4P-MoU) was signed between two Indonesian and two Dutch ministries, to cooperate in the fields of environmental preservation, sustainable development, water management, transportation, infrastructure, spatial planning, and urban and housing development. This agreement resulted in the start of a pilot project in Semarang, Indonesia, to protect the 84.000 inhabitants of the project area from daily floods. These are caused by tidal-floods from the Java Sea and inundation, due to extreme rainfall. The intensity and impact of these floods is increasing because the area is steadily sinking due to land subsidence and the increase of paved areas. On top of that there is the problem of inadequate maintenance and a poorly functioning drainage system. To solve these issues, the Dutch polder concept is applied. This concept means that an area is protected from abundant water from the outside, while the water level within is artificially controlled. The floods problems in Semarang are not unique, similar problems occur in other Indonesian cities. Therefore, Indonesian and Dutch authorities work together in the Semarang pilot to demonstrate the polder concept as a sustainable and suitable solution for the protection and development of Indonesian urban delta areas. As a partner in this project, Witteveen+Bos, a Dutch consultancy firm, was responsible for the technical design and technical advice during the current construction of this solution. The Water Board Schieland and the Krimpenerwaard were responsible for setting up an operational and maintenance organization for the polder that is now known as BBP SIMA. Both operations were made possible with the support of Dutch funding programmes. Together with Indonesian actors this laid the foundation for the implementation of the polder concept in Indonesia: a public polder that is maintained, financed and controlled by its stakeholders.

International partnerships like this supported by grants and intended to transfer knowledge from one side of the world to the other, occur more and more frequently these days. However, not all of those projects are equally effective. This MSc thesis examines the aforementioned case to study the factors that lead to effective Dutch-funded international water management projects. The central research question in this MSc thesis is consequently formulated as follows:

What factors contribute to the effectiveness of the Dutch-funded Banger pilot polder project in Semarang, Indonesia?

Theoretical framework & Methodology

To answer the research question we define effectiveness as the degree to which the projects process produces the intended results. These intended results vary across persons or settings. Therefore we assess the likelihood that the more overlapping "ultimate" programme goals of the project will be achieved, (1) solving of the water related problem and (2) follow-up for the Dutch water sector. A conceptual model is developed to predict the likelihood that the ultimate outcome will be achieved. The model is mainly based on Contextual Interaction Theory and an evaluation framework for Dutch-funded international water management projects. The basic assumption is that actors engage in a process of dynamic interaction between an actor's key characteristics i.e. motivation, cognitions, resources, and its context to generate a solution for the water related problem. When these actor characteristics change as a result of the interaction process and actors develop (1) a motivating goal, (2) a negotiated knowledge base, and (3) mobilize the necessary resources for implementation, it is likely that the solution to solve the water related problem will be implemented. Positive relational experiences can be an outcome variable of this process and are expected to contribute to follow-up activities. It is assumed in the evaluaton framework that the following criteria have a positive influence to reach these outcomes: (1) involvement of local stakeholders; (2) institutional embedding;

(3) integration of context-specific knowledge; (4) a mutual understanding in communication, (5) a pro-active diffusion strategy, and (6) adaptive management.

To describe and evaluate our case from this perspective, we study the motivations, cognitions and resources of the actors involved in the case. To do this, data is collected in 33 semi-structured interviews in the Netherlands and Indonesia, 29 observations were made during the projects process, and 90 project related documents are analysed. By analysing the case in-depth from multiple angles of data, we aspire to lay a good foundation for our findings and conclusions.

Analysis of the case process

To evaluate which factors contribute to the effectiveness of the case, this report first analyses the context and changes in motivation, cognitions and resources of the actors. Based on this analysis, we evaluate the process with the evaluation criteria, derived from theory, that have proven to contribute to the effectiveness of the process. Application of these criteria shows that:

- *Involvement of local stakeholders* - Universities, inhabitants and, to a lesser extent, companies were actively involved. This ensured broad commitment and the contribution of the necessary practical and context-specific expertise.
- *Institutional embedding* - Public officials from all levels and layers of governance were actively involved. However, officials with an important role in the construction were involved to a lesser extent. The officials actively involved were more committed and supported the project with necessary resources, as opposed to the actors who were involved to a lesser extent.
- *Application of context-specific knowledge* - The knowledge of Dutch experts was combined with local, context-specific, expertise. This resulted in a solution that is well integrated and supported in the local context. Lack of information concerning the JBIC project and tender procedures of the executing actors resulted in a poorer integration with the standards of these actors.
- *Mutual understanding in communication* - During the project, a mutual understanding in communication was developed. The high frequency of interaction moments, the focus on learning, the low language barrier, and the overcoming of cultural barriers between HHSK and Indonesian actors contributed to this.
- *Implementation of a pro-active diffusion strategy* - The application of lessons learned from this project to other situations in Indonesia is central to the project. This is achieved by showing that the polder concept is a sustainable and suitable solution for urban flood problems.
- *Adaptive management* - Learning from and adapting to local circumstances resulted in a solution that is supported by a wider stakeholder base.

Analysis of the outcomes of the case

The interaction process resulted in the following changes in actors characteristics: (1) actors found the mutually motivating goal of solving the flood related problems in the Banger area. (2) The joint development of the solution in the Indonesia context and the subsequent creation of new knowledge resulted in a negotiated knowledge base. As a result, the Dutch polder concept was perceived as the correct solution to the flood related problems. However, two government actors who joined newly in the construction did not share in the same motivating goal and negotiated knowledge base. As a result they were perceived less motivated and contested the scope and details of the polder. (3) Sufficient resources were mobilized for the physical construction of the project, but not in time and the resources are subject to uncertainties with regard to decisions of the central government. As far as the operation and maintenance organization (BBP SIMA) is concerned, the necessary resources for the current operation were mobilized. However, there are still some uncertainties regarding the guarantee of a sustainable operation. Furthermore, positive personal relationships were forged on the basis of mutual trust between key actors in the project. This was obligatory to ensure full commitment of actors and their willingness to deploy vital resources. These relations were essential for initiatives pertaining to follow-up activities, as well.

As a result of these immediate outcomes, the physical construction of the polder is currently in progress and is quite likely to be completed. This will solve the flood related problems in the short term. However, just how definitive the solution to the problems will prove to be, depends on the quality of the construction. Supervision of Dutch actors is expected to contribute to this. Whether the polder can offer a long term solution to the problems will depend on the efficiency of the water board that has to ensure the sustained functioning of the works after construction. Based on the motivations, cognitions and mobilized resources it is fairly likely that the flood related problems will be reduced substantially. In addition, Indonesian actors put in serious effort to learn from the project, enabling themselves to apply the same solution in similar situations. Intentions for follow-up activities have been formulated but resources are not mobilized yet. Nevertheless, follow-up activities are to be expected.

Other conditions that contributed to effectiveness

In analysing the case context and the actor's motivations, cognitions, and resources we find case-specific conditions that are related to or influence the motivation, cognitions, and resources of actors and contribute to the effectiveness of the case.

- *Context – Dutch funding*
  - Provided Indonesian actors with an incentive to participate in the process and gave Dutch actors influence and the necessary time for a relatively long project duration and physical presence in Semarang of Dutch actors. Lack of finances in the construction for supervision led to a lack of capacity and cooperation during the implementation.
- *Context – The status of a pilot project under a Memorandum of Understanding*
  - Resulted in involvement of powerful officials of Indonesia and the Netherlands, the project had priority. It was learning oriented and actors were more flexible than in regular projects.
- *Context - Clear visibility and urgency of the problem*
  - Resulted in a clear vision on the problem and the urge for change. This contributed to finding a mutual motivating goal.
- *Individual resources – Competence in intercultural communication*
  - Was important for generating trust between actors, motivating actors, knowledge transfer and mobilization of resources.
- *Individual resources – Composition of resources of Dutch actors*
  - The cooperation of an engineering firm and a water board ensured that expert knowledge and financial means were present for an integrated approach to the problem; it also provided the necessary status to cooperate with senior Indonesian officials.
- *Individual resources – Process & Network skills of project leaders*
  - Individual actors from Indonesia and the Dutch who took charge and had the ability and/or power to influence, motivate, and enable others were important to keep the process moving forward. Insufficient presence of actors who actively applied these skills had a negative influence on the cooperation and coordination during the construction process.

Concluding remark

The Banger pilot polder project is quite likely to become effective and solve the flood related problems in the Banger polder area. In addition, Indonesian actors put in serious effort to learn from this project for application of similar solutions elsewhere and higher government officials are aware of this project. For this reason follow-up activities are to be expected. The factors that contributed to the effectiveness of the project are expected to be applicable in other international projects that are funded through government to government programmes in which actors are dependent on each other for external expert knowledge and context-specific resources.

Main recommendations

- In subsequent projects, it is advisable to plan the transition process from design to implementation earlier in the process, in order to identify actors that will have a key role in the later stages of the project. That way, these actors can be actively involved earlier to generate their support and commitment
- When actively involved with government agencies in countries focused on societal status, it is recommended to engage in partnerships that encompass the project with a certain societal status.
- The relations developed during this project should be bolstered, maintained and regarded as important assets in the Indonesian context for the course of future projects and for follow-up activities.
- The project shows a lack of coordination and supervision. Establishing a project management unit or a party that could take the lead in the coordination would improve the situation.
- The strength of the local water board is the involvement of all stakeholder groups. To further strengthen the capacity of the water board, involvement of an influential business man might be advantageous.

Management Samenvatting

Inleiding

Tussen twee Indonesische en twee Nederlandse ministeries werd op 1 juni 2001 een intentie verklaring getekend om samen te werken op het gebied van natuurbescherming, duurzame ontwikkeling, water management, infrastructuur, transport en ruimtelijke ordening. Als gevolg van deze intentieverklaring werd in Semarang gestart met een pilot polder project met als doel om de 84.000 inwoners van het projectgebied te beschermen tegen de dagelijkse overstromingen. Deze worden veroorzaakt door vloed tijdens hoogtij vanuit de zee en door hevige regenval. De intensiteit en impact van de vloed wordt verergerd, doordat het gebied aan het zinken is als gevolg van overmatige grondwater onttrekking en toename van het verhard oppervlak. Anderzijds ligt de oorzaak in onvoldoende onderhoud en een slecht functionerend drainage systeem. Als oplossing voor de overstromingen wordt het Nederlandse polder concept geïmplementeerd. Dit concept houdt in dat een gebied wordt beschermd tegen overvloedig water van buiten het gebied en waarbij tegelijkertijd binnen het gebied het waterniveau kunstmatig wordt gereguleerd. Omdat de overstromingsproblematiek behalve in Semarang ook in meerdere plaatsen in Indonesië speelt, wordt er actief met de Indonesische overheid samengewerkt voor de overdracht van kennis en vaardigheden en om te bewijzen dat het poldersysteem een geschikte en duurzame oplossing is, die bovendien bijdraagt aan het welzijn van Indonesiërs in deltagebieden. Witteveen+Bos is binnen dit project verantwoordelijk voor het ontwerp en geeft technisch advies tijdens de implementatie. Het Hoogheemraadschap Schieland en de Krimpenerwaard is verantwoordelijk voor het opzetten van een organisatie voor het beheer en onderhoud van de polder wat nu bekend staat als BBP SIMA. Samen leggen zij het fundament voor de implementatie van een uniek concept in Indonesië: een publieke polder die wordt onderhouden, gefinancierd en beheerd door zijn belanghebbenden.

Dit soort internationale samenwerkingverbanden die worden ondersteund met fondsen en die tot doel hebben om kennis van de ene kant van de wereld naar de andere kant over te dragen, komen steeds vaker voor. Echter niet al deze projecten zijn even effectief. Deze MSc thesis bestudeert de hierboven genoemde case om te onderzoeken welke factoren leiden tot effectieve internationale watermanagement projecten. Daarvoor staat de volgende onderzoeksvraag centraal in deze thesis:

Welke factoren dragen bij aan de effectiviteit van het met Nederlands geld ondersteunde Banger pilot polder project in Semarang, Indonesie?

Theoretisch kader en methodologie

Om de onderzoeksvraag te beantwoorden hebben we effectiviteit gedefinieerd als de mate waarin het proces van het project de bedoelde resultaten behaalt. Deze bedoelde "ultieme" resultaten verschillen per persoon en situatie. Daarom beoordelen we de waarschijnlijkheid dat de overlappende programmadoelen van het project worden bereikt: (1) oplossen van het watergerelateerde probleem en (2) vervolgactiviteiten voor de Nederlandse watersector. Een conceptueel model is ontwikkeld om de waarschijnlijkheid te kunnen voorspellen. Het model is voornamelijk gebaseerd op Contextuele Interactie Theorie en een evaluatie raamwerk voor met Nederlands geld gesteunde internationale watermanagement projecten. Het uitgangspunt is dat actoren betrokken zijn bij een proces van sociale interactie tussen karakteriserende kenmerken, namelijk hun motivatie, cognitie, middelen en de project context om te komen tot een oplossing voor het watergerelateerde probleem. Wanneer door het proces deze actor gerelateerde kenmerken veranderen en er (1) een gezamenlijk motiverend doel wordt gevonden, (2) een gezamenlijk bepaalde kennisbasis en (3) de benodigde middelen worden gemobiliseerd. Dan is het waarschijnlijk dat de oplossing voor het vloedgerelateerde probleem wordt geïmplementeerd. Daarnaast kan het worden verondersteld dat positieve relationele ervaringen bijdragen aan het ontstaan van follow-up activiteiten. In het toegepaste evaluatieraamwerk wordt het verondersteld dat de volgende criteria, die betrekking op het process hebben, een positieve invloed hebben in het bereiken van deze uitkomsten: (1) het betrekken van de lokale belanghebbenden; (2) institutionele inbedding, (3) integratie van context-specifieke kennis, (4) een wederzijds begrip in communiceren, (5) een pro-actieve diffusie strategie en (6) adaptief management.

Om onze case te beschrijven, te evalueren en te analyseren, bestuderen we daarom de motivatie, cognities, middelen en context van de actoren die betrokken zijn in de case. Hiervoor zijn data verzameld in 33 semi-gestructureerde interviews in Nederland en Indonesië, zijn er 29 observaties gedaan gedurende het constructieproces en 90 projectgerelateerde documenten geanalyseerd. Door de case grondig te analyseren vanuit verschillende invalshoeken van data, aspireren we een goede basis te leggen voor onze conclusies en aanbevelingen.

Analyse van het case proces

Om te evalueren welke factoren bijdragen aan de effectiviteit van de case, analyseert dit rapport eerst de context en de verschillen in motivatie, cognities en middelen van de actoren. Gebaseerd op deze analyse evalueerden we het proces met de evaluatiecriteria die we uit de theorie hadden afgeleid. Toepassing van deze criteria laat zien:

- *Betrokkenheid van lokale belanghebbenden*
  - Universiteiten, bewoners en in mindere mate bedrijven waren actief betrokken. Dit zorgde voor een brede inzet en bijdrage voor de nodige praktische en context-specifieke expertise.
- *Institutionele inbedding*
  - Ambtenaren vanuit alle lagen en nivo`s van bestuur waren actief betrokken. Echter ambtenaren die belangrijk waren bij de uitvoering van het project bleken in mindere mate actief betrokken in het proces. Actief betrokken ambtenaren waren gemotiveerder en ondersteunden actief de gekozen oplossing.
- *Toepassing van context specifieke kennis*
  - Kennis van Nederlandse experts werd gecombineerd met lokale context gerelateerde kennis van Indonesiërs. Dit resulteerde in een oplossing die goed integreerde in de lokale context. Een gebrek aan informatie met betrekking tot het naastgelegen JBIC project en de aanbestedingsnormen van de uitvoerende partijen resulteerde in een mindere integratie met de normen van deze partijen.
- *Wederzijds begrip in communicatie*
  - Dit project slaagde er in een gezamenlijk begrip in communicatie te creëren. De hoge mate van interactie, de focus op leren, de lage taalbarrière en het overwinnen van een culturele barrière tussen HHSK en Indonesische actoren droegen hieraan bij.
- *Toepassing van een proactieve diffusiestrategie*
  - Centraal binnen het project staat het toepassen van lessen, geleerd in dit project, naar andere situaties in Indonesië, door het opzetten van handboeken en actieve betrokkenheid van het Indonesische Nationale Onderzoeks Instituut voor Water
- *Adaptief management*
  - Leren van de lokale omstandigheden en aanpassen aan deze omstandigheden leidde er toe dat de oplossing breed gedragen is door de stakeholders.

Analyse van de uitkomsten van de case

Het interactie proces resulteerde in verandering van kenmerken van de actoren. Ze vonden (1) een gezamenlijk motiverend doel, namelijk het oplossen van de vloedgerelateerde problemen. (2) De gezamenlijke ontwikkeling van de oplossing in de Indonesische context en creatie van nieuwe kennis leidde tot een gezamenlijk bepaalde kennisbasis. Daardoor werd het Nederlandse polder concept gezien als de juiste oplossing voor de vloedgerelateerde problemen. Echter twee overheidspartijen die betrokken waren bij de uitvoering van de polder deelden niet in deze gezamenlijke motivatie en kennisbasis. Deze actoren waren minder gemotiveerd en betwistten de details en scope van het ontwerp. (3) Voldoende middelen voor de implementatie van de fysieke constructie van het project werden gemobiliseerd, echter niet op tijd en deze middelen zijn nog onderhevig aan onzekerheid. Voor het polderbestuur (BBP SIMA) dat functioneren en onderhoud van de polder moet garanderen zijn voldoende middelen gemobiliseerd voor de huidige uitvoering. Er zijn echter nog onzekerheden in de middelen die nodig zijn voor een duurzame uitvoering van het polderbestuur. Verder zijn er persoonlijke relaties ontstaan gebaseerd op gezamenlijk vertrouwen tussen belangrijke actoren in het project. Die waren nodig voor de inzet en de bereidheid van deze actoren om belangrijke middelen in

te zetten voor dit project. Deze relaties zijn daarnaast ook sterk van belang voor het ontwikkelen van initiatieven voor vervolgactiviteiten.

Als gevolg van deze directe uitkomsten van het proces wordt de constructie van de polder momenteel uitgevoerd en wordt dit zeer waarschijnlijk ook afgerond. Hierdoor zullen de vloedgerelateerde problemen op de korte termijn worden opgelost. De mate waarin deze problemen worden opgelost zal afhangen van de kwaliteit van de constructie. Supervisie van Nederlandse actoren zal hieraan bijdragen. Of de vloedgerelateerde problemen duurzaam worden opgelost, zal voornamelijk afhangen van het functioneren van het polderbestuur. Gebaseerd op de motivatie, cognities en gemobiliseerde middelen het is redelijk waarschijnlijk dat de vloedgerelateerde problemen in grote mate worden verholpen. Daarnaast nemen de Indonesische actoren de moeite te leren van dit project en om de kennis toe te passen in nieuwe situaties. Intenties voor vervolgactiviteiten zijn uitgesproken, hoewel de benodigde middelen hiervoor nog niet zijn gemobiliseerd. Op basis hiervan kunnen vervolgactiviteiten worden verwacht.

Andere condities die bijdragen aan de effectiviteit

Naast de factoren die we op basis van het toegepaste evaluatie raamwerk bijdragen aan de effectiviteit van het project, speelden case specifieke condities een rol hierin. Deze hadden een invloed en/of waren gerelateerd aan de motivatie, cognitie en middelen van actoren. Deze waren:

- Context - Nederlandse subsidies
  - Gaf Indonesische actoren een prikkel om mee te doen in het proces en gaf Nederlandse actoren een stem; zorgde voor lokale aanwezigheid van Nederlandse actoren en de noodzakelijke tijd om resultaat te boeken. Gebrek aan geld in de constructie voor de supervisie had een negatieve invloed en leidde tot een gebrek aan kennis en samenwerking tijdens de uitvoering.
- Context - urgentie van het probleem
  - De duidelijke zichtbaarheid van het probleem was belangrijk voor de wil tot verandering
- Context – De status van een pilot project gesitueerd onder een intentieverklaring
  - Hierdoor waren gezaghebbende ambtenaren van Indonesië en Nederland bij het project betrokken, had het project prioriteit, stond leren centraal en waren actoren flexibeler dan bij reguliere projecten.
- Middelen – Competentie in interculturele communicatie
  - Was van belang voor het creëren van vertrouwen, motiveren van actoren, overdracht van kennis en het mobiliseren van middelen.
- Middelen- Process en netwerk gerelateerde competenties van de project leiders.
  - Individuele actoren die leiding namen en door hun capaciteiten andere individuen konden beïnvloeden, motiveren, laten bijdragen en/of deelnemen aan het project waren belangrijk voor het proces. Onvoldoende aanwezigheid van deze actoren tijdens de constructie leidde tot een slechtere samenwerking.
- Middelen - Samenstelling van Nederlandse actoren
  - Samenwerking van een ingenieursbureau met een waterschap, zorgde ervoor dat er kennis aanwezig was voor een integrale aanpak van het probleem en de noodzakelijke status om met hooggeplaatste Indonesische ambtenaren samen te werken.

Conlusie

Het Banger pilot polder project zal waarschijnlijk effectief zijn, omdat de maatregelen die vloedgerelateerde problemen oplossen worden geïmplementeerd. Daarnaast nemen Indonesische actoren actief de moeite om te leren van dit project, om de opgedane kennis daarna in nieuwe situaties toe te passen. Hoger geplaatste ambtenaren zijn bewust van dit project en hebben de intentie om het polder concept in andere situaties toe te passen. Relaties op basis van vertrouwen

tussen belangrijk actoren zijn ontstaan. Daarom zijn vervolgactiviteiten te verwachten voor de Nederlandse watersectoren. Het evaluatie raamwerk en de context-specifieke condities die bijdroegen aan de effectiviteit verwachten we van toepassing te zijn in ander internationale billaterale projecten die gesteund worden met fondsen.

Belangrijkse aanbevelingen:

- Het is aanbevolen om in volgende projecten de overgang van ontwerp fase naar constructie fase te plannen in een vroeg stadium van het ontwerp. Op deze manier kunnen actoren die een belangrijke rol krijgen in latere fases van het project worden geïdentificeerd. Daardoor kunnen ze in de vroege fases actief betrokken worden. Zodat deze actoren begrip en commitment voor de oplossing krijgen.
- Wanneer Witteveen+Bos actief moet samenwerken met overheidsinstanties in landen gefocust op sociale status is het aan te bevelen om deel te nemen aan partnerschappen die het project omvatten met een bepaalde maatschappelijke status.
- Versterk en onderhoud de persoonlijke relaties die gevormd zijn in dit project, omdat deze belangrijk zijn voor vervolgactiviteiten en voor het proces van toekomstige projecten in de Indonesische context.
- In het project is er te weinig coördinatie en supervisie. Opzetten van een project management unit of een partij die de leiding neemt in de coördinatie zal de situatie verbeteren.
- De kracht van het polderbestuur is de betrokkenheid van de lokale belanghebbenden. Om de capaciteit van het polderbestuur te versterken kan de actieve betrokkenheid van een invloedrijke zakenman bijdragen.

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Construction of this report has been a long journey, one of more than seven years and three different educations. The journey went to the other side of the world and back for the hardest struggle of all; writing the report. Now at the end of the adventure I went through many valuable experiences and I learnt a lot about myself. Something I noticed is the more you learn, the less you know, as you learn that there is much more to learn, a curious paradox I found myself.

Thanks to the opportunity to write this thesis I know a lot about how people interact and that construction projects are not only about the technical aspects, but equally about the human touch to accomplish change.

The thesis focuses on the development of a pilot polder in Semarang, Indonesia. A case that is marked by collaboration between a Dutch private engineering firm with a Dutch water board, together with Indonesian actors from all layers and position of society to achieve change. This collaboration resulted in a unique project in Indonesia. That will lead to the improvement of the living conditions of 84.000 people. Therefore I am thankful that I could have been part of such an interesting and promising project. This study could not been executed without the support of/with many people with which I enjoyed working together.

Firstly, Arno thank you for letting me study the Banger Pilot Polder Project in Semarang, Indonesia. I really wish this project and all people participating in it the best of luck for making the project a success. Now with the money of ORIO involved, I have trust that with supervision of W+B the quality of the work will be ensured.

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I wish the reader great pleasure in reading this report. Your interest and reaction is appreciated.

Borne, May 2012

Robin Peters

List of abbreviations

Abbreviation	Full name	Explanation
4P-MoU	Four partite memorandum of understanding	MoU between V&W, VROM, PU and KLH
ABPN	Annual Budget Plan National	The national budget implemented by the sectoral ministries
Bappeda	Badan Perencaan Dearah	Regional planning agency (IN)
BBP SIMA	Badan Pengola Polder Schieland	Polder authority of the Banger Polder Area (IN)
BBWS	Balai Besar Wilayah Sungai	Organization responsible for mayor River Basin management (IN)
BWS	Belai Walai Sungai	Organization responsible for minor river basins (IN)
CBO	Community based organization	Organization based on community participation
DPU	Dinas Pekerjaan Umum	Regional Public Works (IN)
GDP	Gross Domestic Product	The market value of all final goods and services produced within a country in a given period
HHSK	Hoogheemraadschap Schieland en de Krimpenerwaard	Dutch water board
IN	Indonesia	Indonesian actors
JBIC	Japanese bank for international cooperation	Japanese bank for international cooperation
JICA	Japan International Cooperation Agency	Loan agency for Japanese construction
KLH	Kementerian Negara Lingungan Hidup	Indonesian Ministry of Environment
MoU	Memorandum of Understanding	A document describing a bilateral or multilateral agreement between parties
NL	The Netherlands	Dutch actors
NGO	Non-Government Organization	Non-government organization to improve social conditions
O&M	Operation & maintenance	
ORIO	Ontwikkelings Relevante Infrastructuur Ontwikkeling	Dutch funding programme for water infrastructure in developing countries
PfW	Partners for Water	Dutch financing programme
PIU	Project implementation unit	Organ for coordinating in the operation
PSDA	Pengelolaan Sumber Daerah Air	Regional department of water resources management (IN)
PT Kai	PT Kerata Api	National railroad company (IN)

PU	Department Pekerjaan Umum	Indonesian department of public Works
Pus Air	Puslitbang Air	Water section of research and development centre of PU (IN)
UNDIP	Universitas Diperengono	Public University in Semarang (IN)
UNIKA	Soegiiapranata Catholic University	Catholic University in Semarang (IN)
UNISOLA	Universitas Islam Sultan Agung	Islamic University in Semarang (IN)
UNPAR	Universitas Katolik Parahiyangan	Catholic University in Bandung (IN)
V&W	Ministry of Public works, Transportation and Water Management	Verkeer & Waterstaat (NL)
VROM	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer	Ministry of Housing, Spatial Planning and the Environment
W+B	Witteveen+Bos	Dutch consulting firm

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1 Introduction

1.1 Background

In emerging economies, urban areas grow faster than their infrastructure and flood protection infrastructure. This is of serious concern, as urbanisation mostly takes place in flood prone lowland areas in coastal zones, and river deltas (Oudshoorn, 1999). In Indonesia, an emerging economy (World-Bank, 2011), floods are one of the most frequent and disastrous natural hazards (Dewi, 2007). Some places even flood daily due to tidal floods (Kops, 2008). Floods are a complex phenomenon to deal with. Solving this problem usually takes many parties with various interests and competencies to interact together to generate a solution (Vinke de Kruijf 2009a, Smit, 2011).

As countries in the world face similar flood-related problems, solutions for those issues developed somewhere in the world can work in other regions as well. There is no need to re-invent the wheel. Due to its everlasting battle to control the rivers, rain and sea, the Dutch have a unique knowledge position in this field of flood-related problems (NWP, 2010).

This knowledge and expertise related to solutions for flood problems is exported by Dutch companies and government all around the globe. The Dutch government actively promotes the activities of the water sector abroad via funding programmes, like Partners for Water. These programmes, among others, aim to harmonize the activities and initiatives of the Dutch Water sector abroad (Partners for waters, 2011, Top Team water 2011). To strengthen the export position of the Dutch water sector and to contribute to the achievement of the Millennium Development Goals (Hameetman et al. 2008).

In projects supported by those programmes, the Dutch and the benefiting country cooperate in the idea of mutual added value. Actors of both countries foresee additional benefits and expect that these will outweigh the cost of cooperation (Klijn & Thijsman, 2002). The benefiting country often has a lack of funding and / or expertise (Kasperma & Aerst, 2009). Participating in such projects also comes with advantages for the Dutch, since they are able to generate new leads. However, they often lack the authority and context-specific knowledge the actors in the benefiting country possess, which are needed to solve the respective problem (Vinke de Kruijf et al., accepted). Therefore, there is a mutual interest for solving a problematic situation (Vinke de Kruijf, Augustijn & Bressers, 2011). In order to solve the problem and add value to an extent that justifies the mutual investment, all involved actors have to link their interests, mobilize sufficient resources and pursue mutually interesting solutions (Klijn & Thijsman, 2002; Bressers, 2007).

These Dutch-funded international water management projects are not equally effective in all cases. Previous research in the context of Dutch-Romanian water management projects by Vinke-de Kruijf (2009b, 2011) studied therefore the role of Dutch expertise and how to apply it more effective in Dutch-funded international water management projects. This MSc study elaborates on this research in the Indonesian context by focusing on an Indonesian case study. Within this study we are particularly interested into the factors that contribute to the effectiveness of Dutch-funded international water management projects to make future projects more effective.

The project funded by Dutch governmental programmes we focus on in this study is the development of a pilot polder system in Semarang, Indonesia. In this project, a solution - in the form of a polder system to protect an area with 84.000 inhabitants from regular flooding - is developed with the support of Dutch funds (Kops, 2010). The Dutch consultancy company Witteveen+Bos (W+B) was responsible for the technical design of this system and an institutional solution for the operation and maintenance of the polder system was developed by Hoogheemraadschap Schieland and de

Krimperwaard (HHSK) to keep the polder system sustained for the upcoming years. This thesis was executed in cooperation with Witteveen+Bos.

1.2 Objective & Research question

The main objective of this research is to analyse, evaluate and to explain the effectiveness of Dutch-funded international water projects, by investigating the Banger pilot polder project in Semarang, Indonesia. Based on this objective the following research question was derived:

What factors contribute to the effectiveness of the Dutch-funded Banger pilot polder project in Semarang, Indonesia?

Effectiveness is defined as the extent to which the intervention has produced the intended results (Babbie, 2009; Rossi, Lipsey & Freeman, 2004). These intended results vary across person or setting (Vreugdenhil, 2010; Vinke-de Kruijf, 2011). Therefore we assess the likelihood that the more overlapping "ultimate" programme goals of the project will be achieved, i.e. problem solving of the water related problem and follow-up for the Dutch water sector (Vinke-de Kruif, 2009b).

Related Sub-questions are:

1. What is the context of the Banger pilot polder project?
2. What are the processes and outcomes of the Banger pilot polder project?
3. What are the motivations, cognitions and resources of the actors in the Banger pilot polder project?

1.3 Relevance of the research

This research aims to provide scholars with insights in the process and outcomes of the transfer of policy and expertise from the Dutch context into the Indonesian context. In order to provide valuable insight in the factors that contributes to the effectiveness of international water management projects.

The study is further closely related to the PhD research of Vinke-de Kruijf, as the evaluation criteria developed in this research will be used in the Indonesian context. Before these criteria were only applied to the Romanian context. Eventually this MSc study is used in this PhD project as a case study, contributing to the generalizability of the evaluation framework of Vinke-de Kruijf (2011) and the underlying Contextual Interaction Theory of Bressers (2004; 2009) (Shadish, Cook and Campbell, 2002).

The research will further provide more practical insights for Witteveen+Bos and the Dutch water sector in establishing public polders in Indonesia. Based on these insights recommendations are made for future projects.

1.4 Research strategy

This research evaluates the effectiveness of the Dutch interventions in the Dutch-funded Banger pilot polder project. These interventions of Dutch actors the project were evaluated through analysis of the project process and outcomes. To do this, a sound theoretical framework is developed through literature in the fields of: problem-solving, network relationships, change theory, public administration, dynamic interactions processes, knowledge management, water management studies, evaluation research and social sciences.

The articles used are identified via reference lists, read literature and unstructured search for papers via Google Scholar and the Web of Science. This results in a foundation of about seventy scientific papers, various books, websites, student theses and other sources of information. Based on these sources operationalized criteria are derived to assess the process and outcomes of the Semarang pilot polder.

For the research design, a case study design is chosen as it allows us to cover complex or contextual multivariate conditions and not just isolated variables (Yin, 2003). The nature of the study is descripto-explanatory, as we describe and explain the process and outcomes of the Banger pilot polder. This results in a need for triangulation, which refers to the use of multiple qualitative data collection techniques (Saunders, 2009). The techniques we use are semi-structured interviews, observations and document analysis. In the methodology chapter we elaborate on the implications on reliability, internal and external validity for choosing this approach.

1.5 Outline

The remainder of this report is structured as follows; in the next chapter we introduce the main theories and backgrounds used to answer the research questions. Chapter three describes the methodology used to analyse, evaluate and explain the pilot project in Semarang. In chapter four the case and its context is described. In chapter five the results of our research are presented. We reflect on these results, theory and methodology in chapter six. In the final chapter we conclude on our findings, provide recommendations. In Figure 1 an overview of our report structure is given.

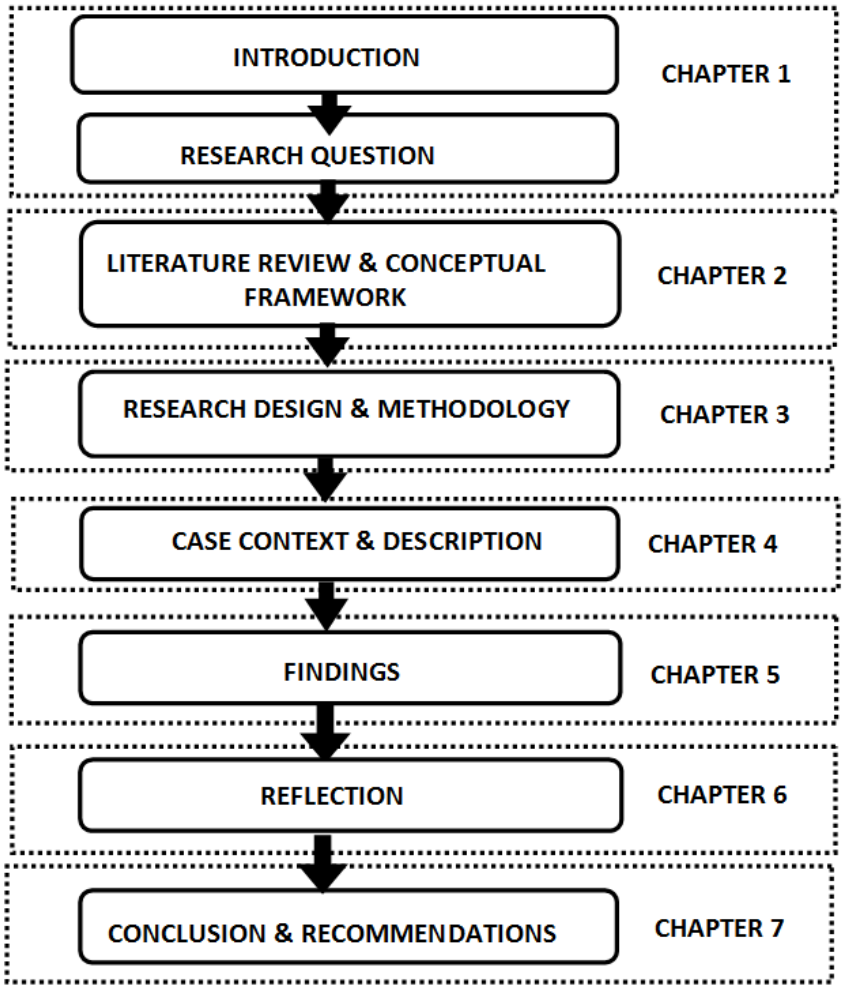

Figure 1 Report structure

2 Literature review

"We are like dwarfs sitting on the shoulders of giants. We see more, and things that are more distant, than they did, not because our sight is superior or because we are taller than they, but because they raise us up, and by their great stature add to ours." John of Salisbury, 1159

Water is a complex issue that affects every human being. It brings wealth but is also the source of floods. In the literature review, a theoretical framework was developed to analyse, explain and evaluate international water projects. It starts by introducing water management projects, as a problem-solving project in a complex multi-actor context aiming to obtain and sustain a certain change. After this chapter Contextual Interaction Theory in section 2.2 is introduced as main line of argument to describe the process of a water management project. In this section the main concepts of the theory respectively, the influence of the project context (Section 2.3) and the characteristics of the actors in section 2.5. Subsequently in section 2.6, evaluation of the outcomes and the process of the project are discussed. The literature review is finalized with the presentation of our conceptual framework in 2.6.

2.1 Characteristics of Water Projects

Water management projects are problem-solving projects

Problem-solving projects are initiated to improve the performance of a system in a certain situation (van Aken, Berend & van der Bij, 2009). Water management projects are problem solving projects initiated for the same reason, for example to improve a sanitation system or the discharge capacity of a river. A problem can be defined as the gap between the current and the desired situation and is a matter of subjective judgement. Consequently, the problem is never formulated objectively but is socially constructed (Vinke-de Kruijf, 2009a). As a result the formulation of the problem is a reflection of the values, norms and perceptions of the person who defines it (van de Graap & Hoppe, 1996; in Vinke-de Kruijf, 2009a).

Problem-solving projects can take place in a single-actor setting and in a multi-actor setting, depending on the amount of actors needed to make an authorative decision (Van de Riet, 2003). An actor can be defined as a participating person in an action or process (Oxford dictionary, 2011). The actions of these actors can be seen as interventions to resolve the problem.

Problems are solved in networks settings

Water management problems arise in multi-actor settings (Smits, 2011; Owens, 2008; Hommes et al., 2008) and in a network setting, as many people have stakes in a water management project. They might not always be directly involved or affected by a project, but can still have an influence on the process through the network. These people are connected to the project via the social relations of the actors participating in the project. Therefore we want to amplify that water management takes place in a network setting, as each actor can be part of the solution for solving the problem (Hommes et al. 2008).

According to Ahuja (2000) social network theory examines the structure of relationships between social entities, called actors in this research. We are all part of a network through our interdependencies and relationships with one another. (Hankinson et al, 2009). Which are created by social interaction and the sharing of information (Rogers, 1986, Burt, 1992), implying the interactive character of networks (Hakansson, 2009). Via the network actors are linked to individuals, organizations and society, who provide us with resources and information. It can further be assumed that the way and to who actors are linked, affects the design and the outcome of a project (Wieriks, 2011, Dijk, 2003).

Elaborating on this view the process of a multi-actor project can be seen as an "arena" in which actors are linked by (inter)actions going on in a certain space-time "envelope" (Bressers, 2007). During the process actors join or leave at a chosen moment of time for various motives. These actors can further be influenced by network actors that do not directly take part in the process, but participate indirectly in the background, providing inputs e.g. resources and information (Burt, 1992; Dijk, 2006). In Figure 2 this network view in which the projects process is linked through and influenced by different actors and society is visualized.

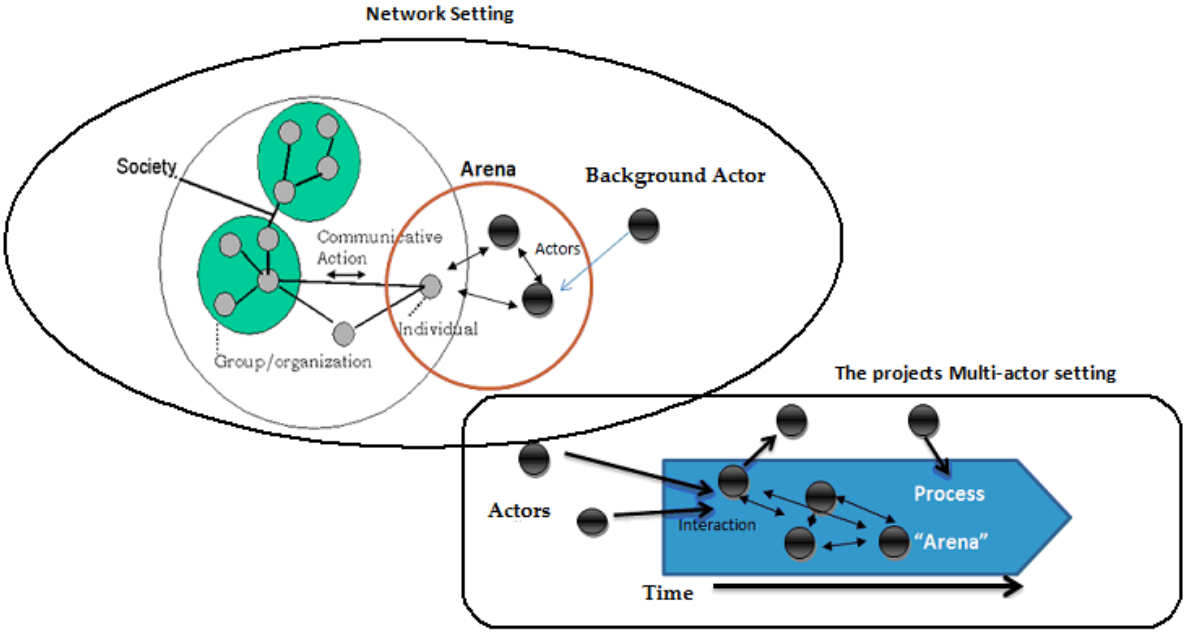

Figure 2 everything is connected through the network (Based on: Dijk, 2006, Bressers, 2007, Burt 2000)

In networks the behaviour of parties is significantly influenced by the image that these parties have of the situation at hand. Their perception on what is possible, impossible, or what they consider as problems determines the way they act and position themselves in the policy network. Furthermore, no single actor in a network ever has complete oversight: e*veryone only sees a part of the "puzzle"* (Wieriks, 2011 p13.). This phenomenon is referred to as the network horizon by Anderson & Narus (1996).

In multi-actor projects relevant information, funds, competences, knowledge, power and other resources are spread among various actors (Runhaar; Diperink & Driessen, 2005; Jackson, 1992), providing each actor with a part of the solution (Alearts & Kasperma, 2009). For this reason, the actors in water management projects are mutually dependent on each other (Van de Riet, 2003), increasing the complexity of such projects (Owens, 2008; Smit, 2010), as there is a large amount of elements and interdependencies influencing the project (Tidd, 2001).

Complexity increases due to divergent interests, objectives and perceptions of the reality of the actors taking part (Van de Riet, 2003; Homes, 2008; Vinke-de Kruijf, 2009a); consequently each actor has his own version of the problem (van Aken et al., 2008; Homes et al, 2008). This leads to an uncertain knowledge base and disagreement about values, norms and standard problems in water management projects. Therefore water management problems are rather problems of disagreement and ambiguity than about the technical or knowledge problems (Hommes et al. 2008). In fact, the discussion about the problem is often driven by the solutions that appear to be attractive and in reach of a number of actors, instead of the problem at hand (De Bruijn, Heuvelhof & van het Veld, 2002).

Problem complexity decreases if the actors involved reach problem consensus, referring to the agreement among actors about the nature of the problem and which goals and outcomes to pursue (Daft, 2007; Bressers, 2004; van Aken et al., 2008; Hommes et al. 2008; Vinke- de Kruijf, 2009a). To come to consensus about the solution, actors must interact and learn about each other's perception of the problem (van Aken; Hommes et al, 2008).

To solve a problem change needs to occur

The goal of these multi-actor complex water management projects is to develop a solution for a certain situation. Development is a change process, a progression of change events that unfold during the duration of the existence of an entity. Change is the empirical observation of difference in form, quality or state in time of an entity (van de Ven & Poole, 1995). It is the adoption of a new idea or behaviour that is new to the entity (Daft, 2007).

Change starts by recognizing a need for change and is aimed to improve or resolve a problematic situation. The next step in change is identifying the current state and desired future state. Subsequently the change is prepared and planned, such as making the technical design and the preparations for tendering in construction projects. To achieve change it must be implemented, while to have a durable change it needs to be maintained (Hayes, 2010). This is visualized in Figure 3.

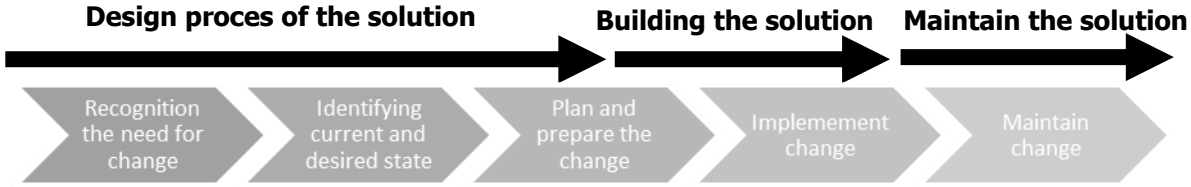

Figure 3 Steps in the Change Process Source: Adapted from Hayes and Hyde, 1998

This perspective on change provides a theoretical lens which recognizes that water management projects are started from a need of changing a problematic situation. This change process occurs in a multi-actor setting and is connected to society and other background actors via the network of the actors participating in the process. During the process the current state and preferred future state are identified, followed by the creation of plan to get to the future state. To really achieve change, the next step is to implement and maintain the solution (Hayes, 2010).

2.2 Contextual Interaction Theory as conceptual viewpoint

To get insight in the process and outcomes of the case, Contextual Interaction Theory (Bressers, 2004) is applied as our conceptual starting point. The theory was initially developed in the early 1980`s under the name of "policy instrument theory" (Owens, 2008), to causally link and asses the relations in a multi-actor process between the actors through conversion of multiple inputs into outputs. During the years, the theory was further developed to assess the likelihood of implementation of policy interventions, which is recognized as the real bottleneck for achieving change (Bressers, 2004). The likelihood of implementation can be assessed using the interplay between the key characteristics of the actors involved (Bressers, 2009). Three key characteristics of the actors proved to have a strong explanatory power of the course and results of interaction processes. These characteristics are: cognitions (information held to be true), motivations (what drives their actions) and resources (sources of power and capacity to act) (Bressers, 2009; Vinke-de Kruijf, 2009a). Those characteristics are acknowledged in implementation research as critical variables for explaining the process that results in implementation (Owens, 2008; Bressers, 2004; Hayes, 2010; Vinke-de Kruijf, 2009b). This interaction is necessary as in multi-actor policy projects (including water management project) resources are dispersed among multiple actors at various levels of governance (Bressers, 2009).

The basic idea is if actors have a common motivating goal, support the same solution, and are able to mobilize the necessary resources, there are no barriers left to achieve a change. The context in which the project imbedded influences the process through the three key characteristics. This limits the amount of independent variables to four, thus reducing the complexity of the theory (Owens, 2008). Complex issues become more easily understandable when they are cut up in isolated events that stand in cause effect relationships to each other (Alearts & Kasperma, 2009; Owens, 2008). This process of dynamic interaction implies that the initial actors' characteristics are the input that shape the interaction process and are shaped by each other. This leads to a change in actor characteristics which can be regarded as output. This is presented in Figure 4.

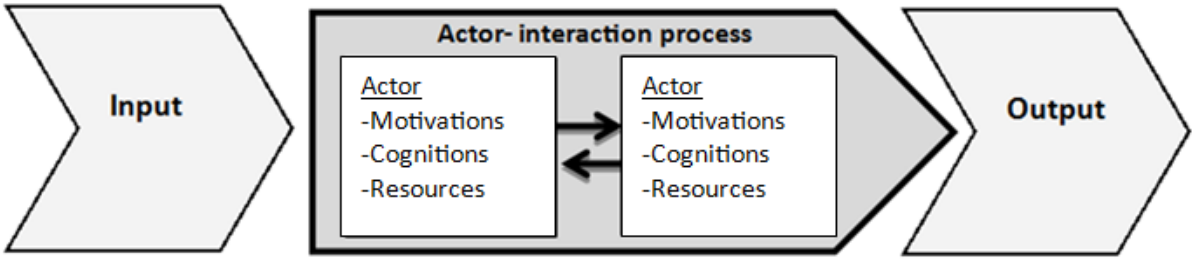

Figure 4 Contextual interaction process (Based on Bressers, 2004; 2007)

Application of this theory results in realistic evaluation, as the relation between outcome and input is not considered to be linear, but gets shaped through dynamic interaction, in which various different outcomes can emerge (Alearts & Kasperma, 2009). Since the development of the theory, it has been applied in various water management projects around the globe, such as the development of integrated water management in Greece (Kampa, 2007), the implementation of wetland restoration policy (Owens, 2008) and the implementation of Dutch-funded water projects in Romania (Vinke-de Kruijf, 2011).

The reason for using this theory is that it is actor centred and provides a deep internal analysis of the process of the project. In addition, it is a tested theory with only a limited number of three variables, reducing the complexity of our research. Finally, the application of this theory enables predictions about the outcomes of the project.

2.3 Contextual layers

Contextual Interaction Theory differentiates between two sets of dependent variables: the core circumstances and external circumstances with the aim to make complexity "workable". The core circumstances are the interaction between the key characteristics of actors: motivation, cognitions and resources that directly influence the development of the process also referred to as "arena". External circumstances have an indirect influence on these key characteristics (Bressers, 2009). For example, during the economic crisis it was difficult for actors to access financial resources for large-scale infrastructure projects. As a result, many projects went on hold. Therefore we take the viewpoint that context influences the project via the key characteristics of the actors.

By doing so, contextual circumstances can be taken into account without exponentially increasing the complexity of the Contextual Interaction Theory. Only three core variables influence the process directly (Bressers, 2009; Owens, 2008). These core and external circumstances might be referred to in literature as the internal and external environment (Daft, 2007). In the theory a further distinction is made between three contextual layers,(1) the wider context, political, economic, cultural and technological contexts,(2) the institutional context, and (3) the project specific-context (Bressers, 2007), each layer encompasses and influences the layer beneath (Figure 5).

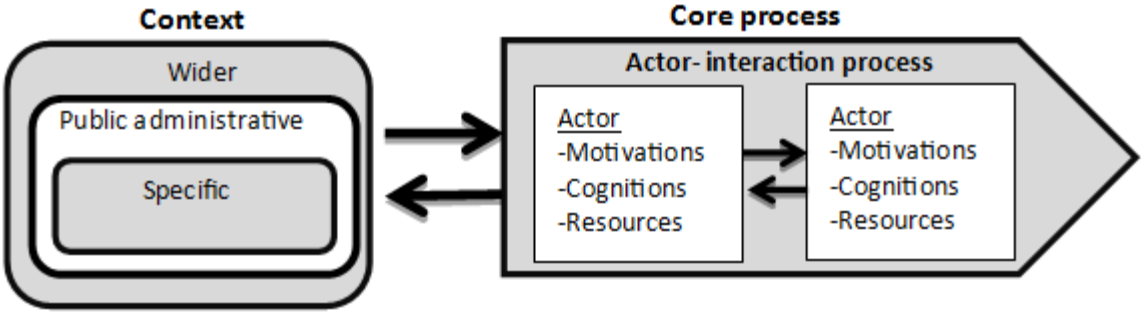

Figure 5 Layers of contextual factor for actor characteristics (Bressers, 2007)

Wider Context

In the wider context political, economic, cultural and technological activities are going on (Bressers; 2007; 2009; Vinke-de Kruijf, 2011). It is these activities that affect or have the potential to affect all other contexts (Daft, 2007). For instance, political elections have an influence on the parties in power; economic prosperity and decline, affects the amount of monetary and human resources available (Mankiw, 2002). Technological developments enlarge the number of solutions to choose out. The culture of a country shapes the inside of a person (Jones, 2007). Affecting an actor's cognition, motivation and emotion and thus the way the actors interact with others (Markus & Kitayama, 1991; Hofstede 2010). Finally, the role of society is of course critically important as it shapes the nations consensus about the priorities for the future and the allocation of budgets through electing its political representatives and holding its government accountable (Alearts & Kasperma, 2009), constructing the problem context.

Public Administrative context

The wider context is not the only aspect to influence the process, also the public administrative setting, seen as a separate layer plays a role (Vinke-de Kruijf, 2009b; Bressers, 2007; 2009). Within this layer, multi-actors and multi-level aspects of governance are located. Apart from this the dominant or competing problem perceptions on the issues at stake and the relevant strategies, instruments, resources and responsibilities of the public administration are to be found for implementation (Bressers, 2009). One way to look upon the public administrative context, apart from its responsibilities is via the theoretical lens, called institutional theory (Burton, Ahlstrom, Han-Lin Li, 2010).

Institutions are the "rules of a game in a society or, more formally, are the humanly devised constraints that shape interaction"(North, 1990). According to Roy and Sideras (2006), there are two types of rules that *„govern the interactions of individuals or organizations*": formal and informal ones. The area of formal rules covers e.g. constitutions, laws, property rights, charters, bylaws, statute and common law, regulations as well as their enforcement through e.g. sanctions. Looking at informal rules, on the other hand, customs, taboos and traditions can be named as examples (Jutting, 2003) Jutting states that these can alter formal rules, regulate behaviour and emphasize standards of conduct from within.

Formal as well as informal rules are present in developed and less developed countries, but poorer nations face a situation in which their formal institutions are underdeveloped or not functioning on a satisfactory level. This leads to informal institutions replacing formal ones whenever applicable (Roy & Sideras, 2006). In these informal institutions trust and networks relationships with officials are important and function as a replacement for weak formal institutions (Chepurenko, 2010).

Case specific context

The specific context influences the core process of the project directly through history of participation, such as decisions and choices made before the project starts (Vinke-de Kruijf, 2009a; Bressers, 2009). Decisions like the choice of instruments, establishment of goals, devotion of resources and time, the planning, the choice for international cooperation, partners to be selected at the start-up of the project and so on. These decisions can be seen as input as they shape the interaction process and can sometimes be the starting point of the process studied (Bressers, 2009).

2.4 Key Characteristics of Actors

Three key characteristics influence the likelihood of implementation of the solution, influenced by the context of the project via the actors' key characteristics. In the following sections we further explain the key actor-characteristics, i.e. motivations, cognitions and resources based on Bressers (2004; 2007; 2009). Bressers explanation of these characteristics is however mainly based on theory from the field of Public Administration. Therefore we elaborate on these characteristics in this section from other fields of study, such as Business Administration.

Motivations

Motivation is the desire or willingness to do something and the reason for acting in a particular way (Oxford, dictionary, 2011). Motivation is the driving force for action and involvement of the actors in the process (Vinke-de Kruijf, 2011).

In the motivation of actors a distinction is made between the organizational and the personal level. Motivation is influenced by intrinsic and extrinsic sources of motivation. Intrinsic motivation comes from within the actor and is driven by an interest or enjoyment of the task at hand. Extrinsic factors for motivation come from outside the individual, such as normative, economic, social and political pressures (Robbins, 2008; Merchant & Stede, 2007; Vinke-de Kruijf, 2009a). In Contextual Interaction Theory the main source for actors are their own goals and objectives for participating in the project (Bressers, 2007). Another source of motivation in Contextual Interaction Theory is self-effectiveness assessment (Bressers, 2007). It refers to the assessment of an actor's own resources (Owens, 2008), as actors get involved from the impression, that within acceptable constraints on time and effort a significant performance improvement is feasible (van Aken et al. 2008, p.9).

To understand the motivational strength expectancy theory gives guidance. Expectancy theory postulates that an individual's behaviour effort and motivating force is a function of (1) their expectation or subjective judgement of the likelihood that their effort and behaviour lead to certain performance; and (2) the value and preferences for the outcomes that are the result of that certain performance (Merchant & Stede, 2007; Hayes, 2010).

Cognitions

Cognitions refer to the way actors perceive reality, i.e. knowledge they held to be true (Vinke-de Kruijf, 2009a; 2011). This influences the behaviour determining the actors' view of what is possible, impossible, or the way they consider the problem and the actions for resolving it (Wieriks, 2011). Actors have different interpretations of information and knowledge. These interpretations are mediated by the frames of references and the observations of reality (Bressers, 2009). Frames of reference and the way the world is observed, can also be referred to as an actor's paradigm; the filters through which information and thoughts are organized; which are implicit and subjective (Babbie, 2007). These paradigms are formed by values, beliefs, ideology and experiences (Koskinen et al. 2003, Kort, 2010). The actors in water management projects often have different perceptions of reality on the problem at hand (Vinke-de Kruijf et al., accepted; Wesselink, 2009; Runhaar, Dieperink,

Driessen; 2005). As a consequence, communication and interpretation problems may emerge (Vinke-de Kruijf 2011).

The perception of reality changes during the project through the interaction between actors via learning; meaning taking knowledge from the environment and relating it to previously acquired frames of reference (Koskinen et al., 2003). This occurs through the process of dynamic interaction by reaching consensus about the knowledge base of the problem to solve (Vinke-de Kruijf, 2009a; Kort, 2010).This implies that in water management projects and actor`s perception about reality and ways to solve their perceived water problem concerns a wide range of topics. We therefore limit the cognitions of actors to the meaning, urgency and the problem at hand; the expected and generated direction for solutions and the potential and relevance for dealing with the problem situation (Vinke-de Kruijf 2009a).

Resources

Resources, "A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively" (Oxford dictionary, 2011).

To enable change and resolve a problem, actors need access to the necessary resources that provide capacity to act and power to enable the implementation and sustainment of the solution (Bressers, 2007; Vinke-de Kruijf et al., accepted; Owens, 2008). Capacity relates to the resources available for the actor, such as competencies, skills, time, money and expertise (Vinke-de Kruijf,2009a) This is often lacking in emerging countries as they are observed to have a weak "capacity", in the form of limited knowledge bases, e.g. small numbers of professionals with the right education and skills (Alearts & Kasperma, 2009).

Power can be defined as the ability to influence or change the behaviour of others to let them perform actions they otherwise did not perform (Mc Cleland, 1975; Oxford dictionary, 2011; Hayes, 2010). Power is embedded in a certain context (Arts and Tatenhove, 2004 in Vinke-de Kruijf, 2009a), e.g., the president of America has a lot of formal power in the States, while none in China. Power is created from position, timing, resources and past actions and is not always legitimate, as individuals can have more informal power than those on formal places in the project. (Hayes, 2010 p.144).

Capacity and power is generated through the resources of the individual (Bressers, 2009), as in a relational setting resources can be used as a source of power. For this research we distinguish between three kinds of resources that a person can bring to the competitive arena (Burt, 2000):

- Financial resources: cash in hand, grants, assets.
- Human resources: natural abilities like charm, health, intelligence and looks, combined with skills acquired in formal education and experience.
- Social resources: the social relationships with other players.

Financial resources

Financial resources are the propelling force to solve the problem, as today`s society is driven by money. Due to a lack of financial capital a project can be paused till enough capital is available (Kops, 2011, Vinke-de Kruijf, 2011). Thus, money is an important resource it can for example change the motivation of other actors by compensation (Bressers, 2009). Other forms of financial capital are assets that have a monetary value such as land assets that actors can contribute (Witteveen+Bos, 2009). Or contributions made in kind, such as an amount of time a person devotes to a project (Vinke-de Kruijf 2011).

Human resources

Actors possess human resources in the form of natural abilities like charm, health, intelligence and looks, combined with skills acquired in formal education and experience (Burt, 2000). It can be divided into two concepts, tacit and explicit knowledge. Explicit knowledge refers to knowledge that is transmittable in formal and systematic language (Nanoka, 1994), such as information and data. While tacit knowledge is imbedded in the actor. It relates to their concrete know-how, crafts and skills and how to apply it to a specific context (Nanoka, 1994).

A part of tacit knowledge is expertise in a specific field. Related in water management projects to: (1) the content (the solution and problem); (2) process (the social and legal process); and (3) network (the way interaction occurs between actor groups) (Leeuwis and van de Ban, 2004; Wesselink, 2007). Experts' abilities to reason and to solve problems depend on well-organized knowledge, affecting what they notice and how they represent problems. (Brandsford, Brown, Rodney & Cocking, 2004).
Expertise requires the judgement and the interpretation of available and maybe more important unavailable knowledge in the context (Wesselink, 2009). It enables actors to recognize meaningful patters of information, providing triggering conditions for accessing knowledge that is relevant for the task (Brandsford et al. 2004).

Expertise about the content relates to the background and history of the project, the various problem formulations and potential solutions (Vinke-de Kruijf, 2009b). We make the distinction between practical knowledge and expert knowledge. Practical knowledge is context-specific knowledge made available by local stakeholders. Who are often the ones to benefit from or use the solutions (Boh, 2007; Vinke-de Kruijf, 2009a). Expert knowledge is applicable in more general contexts and is based on more formal forms of education and experiences (Hommes et al. 2008), concerning for instance technical knowledge for the construction of dikes.

Process expertise concerns the processes enacted during the projects. It concerns, the identification of the relevant stakeholders and their social relations. It concerns expertise about social learning processes, network building and negotiation in the specific project context (Leeuwis and Van den Ban, 2004; in Vinke-de Kruijf, 2009a). It regards the strategy to follow; in order to mobilize the capacity and qualities in the actors needed to solve the problem (Vinke-de Kruijf, 2009a). Strategy is referred to as a goal-mean combination which aims to alter the chosen content of the problem and solution combination, during the interaction process with other actors. The strategy is often formed by limited information and non-rational elements such as, sympathy and therefore not thoroughly rational. It is influenced by the behaviour of other actors, and changes if there is dissatisfaction with the results or changed goals or perceptions (Koppenjan and Klijn, 2004 in Hommes et al 2008).

Network expertise is the way social interactions between the stakeholders can be arranged (Wesselink, 2007). It's about knowledge of politics that are affecting the project on a governance level. Further it concerns the expertise about how decision processes are structured on the legal and formal level (Wesselink, 2007).

Social resources

According to Van der Gaag & Snijders (2003) social resources are: *"The collection of resources owned by the members of an individual's personal social network, which may become available to the individual as a result of the history of these relationships".* This form of resources is an important one, considering competitive advantage in emerging economies is based on network relationships and close government ties (Hokinson, Eden, Lau & Wright, 2000). This is especially true for cultures with collectivism oriented values (Ralston, Holt, Terpstra, & Kai-Cheng, 2007). By, the recognition those social resources are difficult to replicate (Teece, 2007). Moreover, social resources facilitate

cooperation. When people know that others will invest in collective activities, they also have the confidence to do so too. Consequently the transaction cost of working together will be lower (Pretty, 2003).

An aspect for the mobilization of social resources is the level of trustworthiness, aiming at the likelihood that obligations created by the access of social resources will be repaid by the actor (van der Gaag & Snijders, 2003; Vinke-de Kruijf, 2009a). Resultantly, trust is a core component of social capital, together with the actors network (Vinke-de Kruijf, 2009b). While the level of trust influences the way people use their capabilities, resources and cooperate (Pretty, 2003).

Development of actor characteristics

We discussed the context, key characteristics of the actors and the principle of Contextual Interaction Theory. Still, we did not fully address the time dimension of Contextual Interaction Theory. During the process the characteristics of the actors change and outcomes are shaped. How does this occur? A potential explanation lies in the fact that actors learn during the process.

Why is it important that actors learn? Well firstly, we have stated that problem-solving in water management takes place in multi-actor settings, in which actors have different motives, cognitions and resources. The capacity of the group to solve the problem increases by means of learning. Strengthening the capability of an actor or group to identify and understand its development issues, to act and cope with these, and to learn from the experience and acquire knowledge for the future (Alearts & Kasperma, 2009). Social learning occurs through the communication and interaction between different actors in the process *"a set of social outcomes, such as the generation of new knowledge, the acquisition of technical and social skills as well as the development of trust and relationships which in turn may form the basis for a common understanding of the system or problem at hand, agreement and collective actions" (*Muro & Jeffrey 2008 p. 339).

Through the learning process negotiated agreement arise, which is a relative easy way to avoid resistance, when it is clear that someone, who has sufficient power to resist a change, is going to lose out if the change is implemented (Kotter & Schlesinger, 1979). For this reason it is important to involve all stakeholders in the creation of the knowledge base, as the actors who are involved in the development are more likely to accept it (Hommes et al. 2008; Kotter & Schlesinger, 1979). Consequently the ones in power can be influenced with the knowledge shared during the process (Rose, 1991). Social learning thus leads to a common knowledge base, an accumulation of knowledge sources, such as practical experiences, models, reports etcetera, that have been made explicit and are related to a specific problem situation (Hommes et al., 2008). This knowledge base is also referred to as negotiated knowledge; knowledge that is agreed upon, relevant and scientifically valid (de Bruijn, 2002). This is important, as actors need to agree that the developed solution will let them reach their motivating goals in order to mobilize the necessary resources. (Vinke-de Kruijf 2009b; 2011).

Finally learning is important, because water management is quite complex, calling for adaptive management, by the nature of changing circumstances during the process (Vinke-de Kruijf, 2009b). To maintain high level of adaptive capability, one must be able to plan and build to different scenarios that unfold during the process. Adaptive management deals with this through the systematic process for improving the management policies and practices, by means of learning from the outcomes (Scheltinga, Bers & Hare, 2009).

2.5 Evaluation of international water management projects

Evaluation refers to the careful observation and appraisal of the process and effects of problem-solving projects (Aken, 2008). It determines the extent to which the social intervention has produced the intended results (Babbie, 2009; Rossi, Lipsey & Freeman, 2004).

For international water projects, a distinction can be made between three levels of outcomes for evaluation: (1) the actor level; (2) the project level and (3) the programme level. This distinction is made as (1) actors in a project have their own goals and motives to contribute to the project goals. While (2) the project itself aims at a certain change and (3) by being part of a Dutch funding programme the project contributes to the goals of the Dutch programme (Vinke-de Kruijf, 2011).

However, outcomes of the process are not always visible at the instant, especially when a project is not fully implemented yet. Therefore outcomes of the process are divided into immediate and the ultimate more distant outcomes. Immediate outcomes are the direct outcomes of the process. While ultimate outcomes lay in a more distant future (Rossi et al, 2004; Vinke-de Kruijf et al., accepted) and are to some extent a result of the immediate outcomes, keeping in mind that there are many factors influencing the realization of ultimate outcomes (Rossi et al, 2004).

On the project level, immediate outcomes of the collaborative process are, for instance, agreements, policies and plans for change, other more intangible outcomes are the creation of "new" social and human- resources. The immediate outcomes on the actor level relate to the change in motivation, cognitions and resources from start till end of the project. With as underlying thought that if the dominant coalition of actors is motivated, understand each other (especially the nature of the problem), and obtain sufficient resources in time, the developed solution gets implemented and remains sustained. Adding that according to the power perspective, when the demands of the most powerful members of the dominant coalition are satisfied, continued support is ensured (Thompson, 1967).

To evaluate the effectiveness of the outcomes of international water management projects the evaluation framework of Vinke-de Kruijf (2011) is applied. It provides criteria for a "good" process and criteria to assess the outcomes of international water management projects. The framework is based on Contextual Interaction Theory and assumes that the positive effect of user engagement mediate the ultimate outcomes of the project via the characteristics of the actors (Vinke-de Kruijf et al., accepted). The framework further recognized that process and outcomes may evolve simultaneously, indicating the need for feedback loops.

Process evaluation criteria

In order to evaluate the process of the project the framework focuses on the criterion user engagement. Emphasising that it are the actors who are engaged in dynamic interaction. To operationalize the criterion it is divided in six process-related criteria.

In the process it is important that the relevant stakeholders are involved, the first two criteria take the degree of involvement into account. The underlying thought is, that effective water management projects take into account the interests of local, regional national and transnational institutions (Wesselink, 2007; Vinke-de Kruijf, 2009b) and of the local stakeholders, the ones working and living in the area whom are directly affected by the outcomes (Wesselink, 2007). This is of special concern for strategies in emerging countries (London & Hart, 2004). Therefore the first criterion, *stakeholder involvement* ascribes the level of involvement i.e. information, active involvement or consultation and power share (the influence on the decisions making process of the stakeholders). *Institutional embedding*, concerns the second criterion. To have an impact, civil servants need to be actively

involved in the process. Meaning that executives need to play an active role and are committed to the process, in which the politicians can identify a role for themselves (Vinke-de Kruijf et al., accepted).

When involving relevant stakeholders of the benefiting country in the process. These stakeholders create a sense of ownership and involvement, in addition they possess relevant capacity, i.e. practical knowledge that is grounded in experiences of people (Eshuis & Stuiver, 2005), network access and power (Hommes et al. 2008) and other resources. These resources are not accessible for external experts, who usual have specialized, and general knowledge (i.e. knowledge about polders). For this reason, *integration of context-specific knowledge* is put in the framework as a criterion. Followed by the extent to which actors involved have a *mutual understanding in communication,* in projects many actors need to share tacit knowledge for which usually sufficient face-to-face communication is required (Koskinen, Pihlanto & Vanharanta, 2003). Additionally, actors have different backgrounds and interpret knowledge differently (Brandsford et al., 2000), stressing the need to overcome native language barriers or worldviews, for instance, by means of figurative language (Koskinen et al., 2003; Vinke-de Kruijf, 2011).

Another criterion in the framework is the use of a pro-active diffusion strategy. This means that acquired knowledge is applied in new projects, the pilot project itself, but also in policy- and decision making processes. This criterion is based on lessons of the past, as the influence of a pilot project on a change is often considered disappointing. As a result, knowledge and insights that are created in pilot projects for decisions is often being opposed, considered irrelevant, ignored or doesn't reach the right audience (Vreugendenhil, 2010).

The last and sixth criterion is *adaptive management.* During the process, the scope of the problem can change (van Aken et al., 2008). This happens especially in water management projects, as they are characterized by problems of complexity and uncertainty (Scheltinga et al. 2009). Therefore, the project should be approached as a flexible process in which the means and goals are adapted to new insights, changing circumstance and other emergent dynamics (Leeuwis and Van den Ban, 2004 in Vinke-de Kruijf et al., accepted).

Outcome evaluation criteria

To asses the outcomes of the process a distinction is made between the ultimate outcomes and the immediate outcomes of the process. The intended outcomes of a project vary across persons and settings. Therefore the realization of the overlapping programme goals is regarded as the ultimate outcome of the project. We focus on water projects that are supported by Dutch funding programmes. The general goals these programme pursuit are: (1) solving of the water-related problems in the benefiting country; (2) generate follow-up project for the Dutch water sector (Vinke-de Kruijf , 2011, Vreugdehil, 2010).

The realization of these goals (ultimate outcomes) is difficult to measure, only to some degree, as there are many factors contributing to these outcomes (Rossi et al. 2004). Therefore immediate outcome criteria are part of the framework on which expectations can be based about ultimate outcomes (Vinke-de Kruijf, 2011). It is based on the assumption that the likelihood of implementation, i.e. sustainment and realization of the solution can be predicted on basis of motivations, cognitions and resources of the actors involved. It means that the dominant actors (i.e. actors with realization or obstruction power (Zamuto, 2010)) need to arrive at a mutual motivation goal. Then they will be motivated to support or enforce the implementation and sustainment of the project. Regarding the cognitions of actors as a *negotiated knowledge base* is important for solving the problem, implying that the people in the project understand each other, the solution, and the nature of the problem. Furthermore the actors need to *mobilize the necessary resources* for the implementation of the project. The final criterion for evaluating the outcomes is the development of

positive relational experiences, as it is a source for trust. Trust is important for actors to continue their cooperation and commence follow-up projects (Vinke-de Kruijf et al,. accepted). An overview is given of the evaluation criteria for the project level in Table 1.

Process criteria	
Stakeholder involvement	Were the relevant actors informed, consulted or actively involved and able to influence the decision-making process?
Institutional embedding	Were representatives of the government (i.e. civil servants, executives and politicians) actively involved or had a clear role in the process?
Integration of context-specific knowledge	Was the knowledge of Dutch experts combined with context-specific knowledge of experts and stakeholders of the benefiting country?
Mutual understanding in communication	Did actors develop similar understandings of project scope and content and made use of communication means that enhance mutual understanding?
Pro-active diffusion strategy	Was a proper diffusion strategy put in place in an early stage of the project?
Adaptive management	Was the project adapted, if necessary, to new insights and changing circumstances and conditions?
Immediate outcome criteria	
Motivating goal	Did key actors develop a mutual motivation?
Negotiated knowledge	Did the dominant coalition of actors and external experts develop a knowledge base that was relevant and agreed upon?
Mobilization of necessary resources	Did actors mobilize the (i.e., financial, human and social) resources to get things done?
Positive relational experiences	Did actors have a positive collaboration experience and are they willing to continue their collaboration?
Ultimate outcome criteria	
Problem-solving	Did the project result in the solving of a water-related problem?
Follow-up	Did the project result in any follow-up action or a similar project that creates economic opportunities for the Dutch water sector?

Table 1 Overview of the criteria for assessing the process and its outcomes (Source: Vinke-de Kruijf, accepted)

2.6 Conceptual framework

Flood-related projects arise in a multi-actors setting and are initiated by the recognition for a need of solving a complex problematic situation. Change is achieved via the dynamic interactions between the motivation, cognitions and resources of the actors involved. During the interaction process actors learn via dynamic interaction that changes the characteristics of actors. It is assumed that effective change occurs when: (1) actors arrive at a motivating goal (2) have a negotiated knowledgebase and (3) have access to all necessary resources. We identified the criteria that are assumed to play a role in the interaction process in table 2.

Motivation	Cognitions	Resources
• Own goals and objectives • External pressures • Self-effectiveness assessment	• Gap between current and desired situation • Means to get to the desired situation • Need for change	• Financial resources • Human resources • Social resources

Table 2 Criteria for the key characteristics of actors

The context that encompasses the process influences it through the key characteristics of the actors involved. This context embraces three layers: (1) the wider, (2) the public administrative and (3) the specific context. In the literature we identified contextual criteria that are known to affect the interaction process (Bressers, 2007; Vinke-de Kruijf, 2011). The process of dynamic interaction can lead to a change in the actor characteristics. This change is regarded as the immediate outcomes of the interaction process. Based on these immediate outcomes we can make a prediction about the

ultimate outcomes of the project. We further recognized that process and outcomes may evolve simultaneously, indicating the need for feedback loops. The theoretical framework developed for analysing the case study of the Banger pilot polder project is conceptualized in Figure 6.

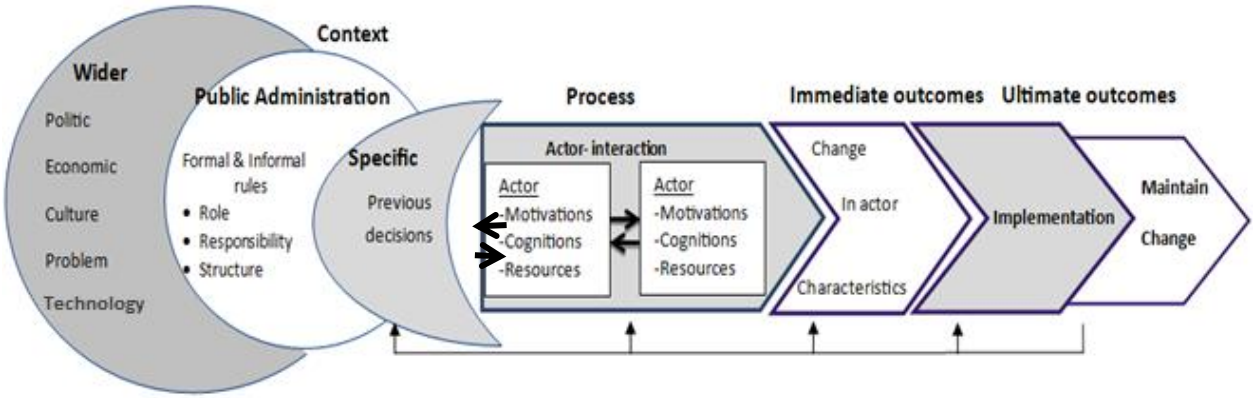

Figure 6 from process to outcome (Based on: Bressers; 2007, Vinke-de Kruijf 2011)

To analyse and explain the process and outcomes of a project, the theoretical model is divided into six concepts: (1) Context, (2) Motivation, (3) Cognitions, (4), Resources, (5) Project process, and (6) Outcomes. To make these concepts measurable they are operationalized in appendix 9.1. Operationalization is the translation of concepts into tangible indicators of their existence (Saunders, 2009). Achieved via sub-dividing the concepts derived from literature, into smaller less abstract sub-criteria that are accompanied by indicators which provide meaning to those concepts. Based on the criteria, interview questions are formulated in appendix 6.2. In the interview questions emphasis lies on actors' characteristics, marginally addressing context for the reason that context is less dynamic and far better described in written data, such as project documents and economic analyses. To analyse and explain the data the evaluation framework of Vinke-de Kruijf (2011) was used.

3 Methodology

The kind of research method is discussed below. Firstly the type of research is explained. Followed by the method of data collection and analyse. Lastly issues about validity and reliability are discussed.

3.1 Research Design

The objective of this research is to explain and describe the process (independent variable) that determines the outcomes of the Dutch-funded Semarang pilot project (dependent variable). Therefore the nature of this study is predominantly descripto-explanatory (Saunders et al., 2009). A case study is a good research strategy to obtain this objective, since it investigates a contemporary phenomenon within its real life context with fuzzy boundaries towards context (Yin, 2003). Another argument for the case study approach is that several case studies with approximately the same design have already been carried out in Dutch-Romanian context. Allowing the lessons learned from this study, to probably generate more knowledge towards those studies and vice versa (Yin, 2003).

Literature review is used for the identification of concepts and criteria for evaluating, describing and explaining the case on the actor, process and programme level (Appendix 6.1). Focus is placed upon the project process as the unit of observation and on the actors within as unit of analysis (Shadish, Cook & Campbell, 2006). This is achieved by seeing projects as a process of social interaction and studying the interplay between resources, cognitions and motivations of the actors within the project. Describing this is not possible to rely purely on pure facts, also interpretations of the data by the researcher plays a prominent role (Vinke-de Kruijf, 2011).

To cope with the researchers' bias, triangulation is used to ensure that the data are telling us what we think they are telling us (Saunders et al. 2009). It refers to the use of multiple qualitative data collection techniques and is often used in case studies. This implies the need for primary and secondary sources of data, i.e. semi-structured interviews, document analysis and observations.

3.2 Data Collection Methods

In the research three sources of data are used, (1) Document analysis is used as a history of decisions of the past and to support our data, (2) Semi-structured interviews are used to provide a rich explanation about the case study process, and (3) Direct observation to observe the outcomes of the process.

Document analysis

Secondary data such as, project documents, minutes of meeting, PowerPoint slides, are used to describe, analyse of the projects process and outcomes. They are a source of support for findings from interviews and observations. Documents are obtained by asking the actors for relevant documents. More factual information, such as data from the CIA Fact book or scientific papers is used to understand the projects general context. While for the public administration context, organograms about the public administration structure were used to explain the responsibilities and power of the institutions involved with water management.

Direct Observation

A good way to explain what is going on and to measure the outcomes of the process in the characteristics of the actors is by means of direct observation. Currently the design phase of the project has been completed and parts of the design are being implemented already. Outcome observation of the project process is therefore possible. This is carried out by observing the functioning of the water board, the construction of the polder and participating in the meetings. In which a spectator role is applied (Saunders et al. 2009).

Semi-Structured interviews

Semi-structured interviews are the main sources of information. They give the chance to probe questions and let the interviewees explain and build on their responses (Saunders, 2009; Babbie, 2006). This leads to a deeper understanding of the processes for establishing the Banger polder. To guide the interview a set of questions and topics to discuss are formulated (See appendix 6.2).

The sample population consists of actors involved or influencing the process. In this population the Dutch actors are selected via purposive sampling, a type of non-probability sampling in which the units to be observed are selected on basis of the researchers judgement. Indonesian actors are selected via snowball sampling, due to the importance of relationships in Indonesia; interviews are arranged by means of introduction. Snowball sampling means that each person interviewed is asked to suggest additional people to interview (Babbie, 2006). In Indonesia the available actors of the relevant parties are interviewed (26 persons). While in the Netherlands key project members are interviewed (5), including an Indonesia expert.

Analysing the Data

The data gathered from the observations, semi-structured interviews and written documentation results in a large pile of information. To structure and analyse these data, template analysis provides guidance. Template analysis involves the development of categories to which units of data will be attached. Using coding techniques to analyse data in order to identify and explore themes, patterns and relationships. It is a way to combine a deductive and an inductive approach for qualitative analysis in the sense that codes can be predetermined and then altered or added as data are collected and analysed (Saunders et al. 2009). The concepts used are derived from our literature review and operationalized in chapter (6.2).

3.3 Reliability & Validity

Validity refers to the approximate truth of the stated propositions and always involves human judgement (Shadish, Cook & Campbell, 2002). While the extent to which our data collection and analyses will yield in consistent findings when the research is undertaken a second time, is a concern of reliability (Saunders, 2009). Together validity and reliability judge the quality of the research in the next sections we elaborate by these concepts how to ensure the quality of the research and findings.

Internal validity

Internal validity refers to measuring what we intend to measure (Shadish, Cook& Campbell, 2002). Strong internal validity means that we have a strong justification for the causal links between the process and outcomes of the dynamic interaction process, something we strive to accomplish.
To ensure strong internal validity we use triangulation to ensure the data are telling what we think they are telling us (Saunders et al. 2009). This will reduce the selection bias, because systematic differences are visible from multiple sources of data. Another threat to internal validity is the role of Indonesian culture. As in Indonesia it appears that people are at first often reluctant to share critical information and to get the information a personal relation often needs to be established (Kasperma, 2011). Therefore we try to meet with our interviewees several times in formal and informal ways. Another source of bias is the langue barrier, because not all Indonesian stakeholders have the same level of English. To make sure a series of questions and answers is understood correctly interviewees are asked to summarize what they said during the interview. In some cases there is need for an interpreter, which might causes a reduction of information to be transferred. To reduce this bias the interview questions will be thoroughly discussed with the interpreter.

External validity

External validity concerns the extent to which the found causal relationship holds over the variation in persons, settings and measurement variables (Shadish et al. 2002). To increase external validity of this study the same framework for evaluating international water management projects, as in similar research in the Romanian context by Vinke-de Kruijf (2009b; 2011) is used, because this makes cross-case analysis possible. Still, the Indonesian context differs from Romanian cases. To improve external validity context is described thoroughly and given a prominent place in the theoretical framework to let the external factors influencing the outcomes become visible.

Reliability

It is important to arrive at similar conclusions each time the research should be reproduced. Therefore it is important to follow the thinking process of the researcher. For this aspect documentation and argumentation is imperative (Staal, 2010). A chapter considering the process of the research is included in which the results are discussed, reflected and explained upon the method of research. Of course the observations and interviews will differ if held in another time-place-frame; therefore the conditions in which they were taken place are noted. To reduce this bias observers bias (Saunders, 2009), as an observation of a phenomena is always subject to the interpretation of the observer and conditions of the observation.

In addition to improve reliability of the study, when analysing the data strict referencing to the original interview or other source of data will further improve the reliability and of the study. A way to do this is to make a case study data base where the arguments of the various actors on the measured constructs are provided (Yin, 2003).

4 Case description

This chapter describes the context of our Banger pilot polder project case. Consistent with our conceptual framework, we distinguish three layers of context. Section 4.1 provides a description of the general context. In section 4.2 the public administrative context is addressed. While section 4.3 gives an overview of the case history and case specific context. The actual case and respective sub-processes is introduced in section 4.4.

4.1 General context

4.1.1 Economic context

Indonesia is a country of 17,000 islands and well known for its diversity in people, languages, and islands (Houterman et al.2004). With 245 million inhabitants it is the fourth most populous country in the world and is the largest country in the pacific, occupying an area of 1,904,570 square kilometres. Nowadays, Indonesia has the 16th largest economy in the world with a GDP of 1.03 trillion dollar. The country experienced growth rates of 6 per cent GDP in the years of 2007, 2008, 2010 and a GDP growth of 4% per cent during the economic crisis of 2009.

Major challenges for the future of Indonesia are the corruption (Indonesia is ranked 110 on the worlds corruption index (Transparency, 2010)), poverty and unemployment, the complex regulatory environment and the on-going challenge of improving the infrastructure in order to remove impediments to growth (CIA, 2011). A master plan is currently in development to improve the country's infrastructure, worth 470 Billion US Dollar, so that Indonesia can become the world's 12th largest economy (Asia-Monitor, 2011).

4.1.2 Political context

After the fall of "New Order" regime of Sukarno in 2001, a process for political reform has started. Goals of these reforms were: administrative decentralization, local government and community empowerment, democracy and transparency (Houterman et al., 2004). As a result, tasks were moved from the central government to municipalities, districts and provinces. Since then, the region/local government have more power and financial authority to plan and implement social/ economic development plans (Zaman; 2002). Part of the reformation was the direct elections of mayors and governors. This took place for the first time in 2005. One of the motives of this decentralization was to restrict the excesses of local officials (Antlov et al. 2010).

This is validated by Gray (1991) who stipulates that the process of policy development and the state of the legal system in Indonesia, functions according the informal model (Gray, 1991). Characteristics of the legal system in Indonesia can be explained as indirect and direct adaptations to risks and to the high cost of information in Indonesia. As a result, politics and legal procedures in Indonesia are characterized by concentrated and unquestioned authority; emphasis is on personal relations and trusts in order to lower transaction costs; decision making is ad-hoc and informal legal processes can be shaped according to preferences of the ones in power (Gray, 1991). In Appendix 9.10, an overview is given of the formal model as applied in the Netherlands and the informal model of Indonesia.

4.1.3 Problem context

The frequency and severity of flood events at waterfront cities in Indonesia is increasing, especially, on Sumatra and North Java. The damage occurred by floods is mayor and effecting large portions of the Indonesian society (Pawitan, 2002). These floods are caused by urbanization, extreme rainfall, rise of the sea-level and land subsidence (Kops, 2008). Effects of the land subsidence are becoming more and more visible and severe. In some areas the land subsidence is of more than 19 cm/year

and areas dry in the past are now, permanently flooded [OB8]. Core to this problem is another major problem on Java, the availability of sufficient fresh water.

The main island of Indonesia, Java, with 813 inhabitants per km^2, is among the most densely populated parts of the world (Houterman et al. 2004). Of the Indonesian population 60% lives on Java; while the island only counts for three per cent of the Indonesian landscape and four per cent of all the fresh water. Providing everyone with a sufficient amount of fresh water is therefore a mayor challenge for the coming years on Java [OB24]. One way to obtain sufficient fresh water is through extraction of groundwater, which is in turn the cause of land-subsidence.

4.1.4 National Culture Indonesia in comparison with the Netherlands

The research of Hofstede`s is used for understanding the influence of national culture on actor characteristics. In his research four dimensions of culture are distinguished, see table 3. According to the table, comparing Indonesia and the Netherlands, the most important differences are found in the individualism and power distance dimensions. Therefore, we will elaborate on these dimensions in the following paragraphs.

Dimension	Extend or degree to which	NL	IND
Power Distance	Less powerful members of organizations accept and expect that power is distributed equally	38	78
Individualism	Individuals are inter-grated into groups	80	14
Masculinity	The distribution of roles between genders in society	14	46
Uncertainty Avoidance	A culture programmes its members to feel either uncomfortable or comfortable in unstructured situations	53	48
Long term orientation	A persons focus on short term, respecting traditions, social obligations and loss of face vs. long term thrift and perseverance	44	

Table 3 Cultural dimensions (Hofstede, 2011)

Collectivism vs. Individualism

The perceptions and behaviour of actors in collectivistic cultures differ from actors of individualistic cultures (Som, 2009; Markus & Kitayama, 1991). It influences how members of a culture process interpret and make use of information, body and knowledge (Bhaget et al. 2002). In collectivistic cultures there is more emphasis on context than in individualism cultures (Trandis, 2009). Indonesia is placed on the lower end of the individualism scale with a score of 14. This score indicates the collective nature of the Indonesian culture. The basis for this is found in the strong Indonesian value called, "gotong royong" (mutual assistance). This value puts strong emphasis on loyalty and cohesiveness (Gani, 2004); in more simple terms taking responsibility for the fellow members of their groups. (Hofstede, 2011; I11; I15; D54; D82). Part of this culture is the natural avoidance for open confrontation. Indonesians, and in particular, Javanese, are generally believed to prefer compromise and consolidation (Grey, 1991; OB7). Consequently, Indonesians do not want to upset others and are therefore concerned about the effect of their actions on the feelings of others (Dirawan & Wirawanto, 2007). How something is said is more important than what is said (Trandis, 2009; I02; I19; I26]. It happens that when you ask an Indonesian can you do that, they will say I try or yes, but don't do it, because they did not want to say no [I01, I10; I12]. Dutch culture is more informal, individualistic, and actors communicate in a more direct manner [I01; I04; OB17; I29]. These differences result, very often in communication that is confusing for both sides. If the confusion gets too big, communication and work may just stop (Katz & Freedman, 2007).

Power distance

Indonesians score high (78) on the dimension of power distance. They have a deep cultural respect for hierarchy. As a result, people will hesitate to approach those higher up the hierarchy and will not

dare to contradict their superiors (Grey, 1991 Hofstede, 2005; I01]. Characteristics of the Indonesian style are: unequal rights between power holders and non-power holders, in-accessible superiors, directive leaderships, centralized power, managers' count on the obedience of their team and vice-versa employees expect to be directed. (Grey, 1991; Hofstede, 2011) [I01]. The Dutch stand with a score of 38 to the other side of this equation. The Dutch style is characterized by: accessible leaders decentralized power, informal leadership relations focus on experience when being promoted and direct participative communication (Hofstede, 2011).

4.2 Public administration in Indonesia

This chapter describes the legal context of the institutional system and the structure of the public administration. We start this section by describing the development in the legal system for water resources. Then, we distinguish between the three levels of governance present in Indonesia: (1) the central government, (2) provincial and (3) the municipality and district level. Later in the chapter we reflect on developments in the legal system for water resources.

4.2.1 Developments in the legal system for water resources in Indonesia

Indonesia has a complex public administration to deal with water management. Many institutions are involved, each with different and sometimes overlapping responsibilities (Sarwan, Subijanto & Rogers, 2004). To improve the situation under pressure of the World Bank the water sector is being reformed. In 2004, a water law (#7/2004) for integrated water resources management was implemented and being fine-tuned since than (Wieriks, 2011; OB28). This law arranges for new roles and management strategies for water: shifting authority from centralized towards decentralized, from provider towards enabler, from single purpose toward a multi sector approach, and from narrow toward broader stakeholder participation (Sarwan et al., 2005; OB26). In the law a stronger focus was on river based management and the availability of water in Indonesia. The result was the creation of river based organisation (RBO`s) (Bhatt, 2009). These organisations are in charge of river basins. The organization called BBWS is in charge of the "major" river basins and BWS for the "minor" river basins (Wieriks, 2011; Bhatt; 2009).

4.2.2 National

In Indonesia, six ministries have water resources in their portfolio`s: Public Works, Forestry, Environment, Bappenas (regional development and planning agency), Agriculture, and Home Affairs (Wieriks, 2007). The most prominent for water resources is the ministry of Public Works. This ministry is split-up into six directorate generals each with their own field of responsibility. Each directorate general coordinates several directorates. In the case-study, three directorates were involved of three different directorate generals, these are: (1) Water Resources, (2) Infrastructure and (3) Research. The directorate for research in the water sector, further referred to as PusAir, was prominently involved in the case. This department is responsible for finding solutions and concepts in the field of water for the challenges of the Indonesian water sector (PU, 2011; I19). In appendix 9.9.1. an overview is given of the structure of the Indonesian ministry of Public Works.

4.2.3 Province

The provincial government is ruled by the governor. The governor is elected every 5 years and is assisted by five assistant governors who form the upper circle of the provincial administration. Beneath this administrative level several agencies operate, by the name Dinas. Several of these agencies have water resources in their portfolio; one of those is Dinas Public Works. Under the responsibility of this Dinas, Cipta karu operates as an executive organ of all the infrastructure activities. On the same level Dinas SDA (Sumber Daya Air) operates and Dinas PSDA with their own portfolio in the field of water management. Spatial planning is conducted by Dinas Bappeda, but falls also under the responsibility of Dinas SDA. At the same administrative level another entity coexists, a commission called SATKER (Satuan Kersa) who can be regarded as a provisional water board. It is a

committee with members of Public Works from the national level and the province is also responsible for water management. Finally, on the provincial level a water committee is present between the Governor and the Provincial Water Resources Management Agency (PSDA). The distinction and overview of each agencies responsibility are not always uniform and clearly defined. As a result, overlap exists and definitions of authority are largely dependent on local administrations and situations (Wieriks, 2011).

4.2.4 Municipality

The mayor is the head of the administrative organization. At his level, there is a concentration of legal authority and power a high degree of power as he is able to enforce and set-up local regulations and rules (Santiago, 2011; Grey, 1991).

Under his authority several departments who are involved with water resources. The department of spatial planning (Dinas Bappeda) is responsible for overall planning of flood risk projects within the cities borders [I11; D20]. The local department of public works (Dinas Pekerjaan Umum; DPU) is responsible for execution of all the infrastructure projects. The department within DPU called PSDA focuses on mainly water resources within the municipality.

At the lowest level, smaller public participation driven institutions operate under coordination of the municipality. On the top level stands an administrative unit responsible for a sub-district (Kecematan). Under this administrative body is the village level (Kelurahan). Below the village level the neighbourhood administrations (Rukun Tengga/RT) and house hold organization the Rukun Tetangga/RT operate (Witteveen+Bos, 2009). In these democratic organizations, the inhabitants participate and arrange activities at the local level (IRP Delft, 2011). In appendix 9.9.3 an overview is given of the organizational structure and distribution of these lower level institutions in the case study area. In appendix a general overview is given of institutional arrangements for water management in Indonesia 9.9.2.

4.2.5 Synthesis

The Indonesian context is different from the Dutch context, as table 4 shows. In this section mainly the Indonesian context is explained. We described the context of the Netherlands based on previous research (Vinke-de Kruijf 2012).

Context	Indonesia	Netherlands
Economic	Growth of an average of 6% GDP	Low growth and economic crisis
Political	Changing climate, towards improvement and decentralization	Development-cooperation
Problem	Floods occur regular and are becoming more severe, due to social circumstances and land subsidence	Stable and strongly regulated flood environment.
Culture	Hierarchical, status driven, indirect communication, collectivistic	Informal leadership, employees expect to be listened to, direct communication, emphasis on personal capacity
Technological	Affection with traditional means of contact and text messages.	Emphasis on digital means of contact, such as e-mail and Skype.
Public administrative	Informal, complex structure for water management practices.	Formal, regulated structure for water management practices.

Table 4 Indonesian vs. Dutch context

4.3 History & Specific context

First of June 2001, a four party Memorandum of Understanding (4P-MoU) was signed between two Indonesian and two Dutch ministries [D8; D7], to cooperate in the fields of environmental preservation, sustainable development, water management, transportation, infrastructure, spatial planning, and urban and housing development [D12].

In line with this four party MoU, Witteveen+Bos organized a seminar "Polders in waterfront cities" [I04; D12]. This led to the agreement for the development of a pilot polder in Indonesia, to demonstrate the polder concept as a viable concept to cope with the problem of land subsidence and flooding in urban areas [I07; I10]. Schultz (1990) defines the polder as an area that was originally subject to high water, separated from the high water in which the water level is artificially regulated. Artificially regulated, indicates that someone regulates the polder. Therefore the concept not only covers the technical elements of the polder, but also the concept of involving its stakeholders in financing and execution of the operation and maintenance of the polder [D13; D14; D16].

The waterfront city of Semarang, capital of central Java with 1.5 million inhabitants was put forward by the Indonesian government for the development of the polder concept. This city was chosen for four reasons; (1) the political landscape was considered to be less complex than the Jakarta region [I24]; (2) the city was considered to be representative for other Indonesian cities [D16, I10], such as Jakarta [I08]; (3) Semarang is known to be severely affected by floods on a daily base; and (4) the geographical location was convenient for most of the stakeholders [I22].

As a result, in February 2003 a technical agreement was signed between the City of Semarang, the Research directorate of Public Works, the Ministry of Settlements and Regional Infrastructure in Indonesia and the Ministry of Transportation, Public Works and Water Management of The Netherlands, to cooperate in developing a pilot polder project in Semarang. Development of the pilot polder project was divided into five phases [D12]:

- Phase 1: Definition of the polder project
- Phase 2: Preparation for a polder authority
- Phase 3: Establishment on organization for managing the polder
- Phase 4: Transfer of knowledge
- Phase 5: Design and construction

The first two phases were conducted in a feasibility study in 2003-2004. This study was financed through the first Partners for Water (PfW) programme in cooperation with: Witteveen+Bos, Waterschap Groot Salland, a University from Bandung and Semarang together with PusAir [I8; I22]. The study focused on the feasibility of setting up an urban polder system that was managed by a stakeholder based, financial and administrative autonomous institution [D14]. During this study, a provisional polder board was formed and the sub-district of the administrative body Kecematan Semarang Timur [D5] was chosen as location, for the implementation of the polder concept in Semarang.

The selected area in the city of Semarang, of about 520 hectare provides homage to about 84,000 inhabitants. Approximately fifty per cent of these inhabitants live close to the poverty level [D5]. The area is located in the North part of Semarang and is situated close to the sea and harbour (Figure 7). The area was chosen as: (1) it is the location with the highest urgency level for flood control, (2) the possibility to set-up a community-based organisation to manage the polder, (3) present infrastructure was available [D14], (4) the area represents a mix of poor and rich people living together with the presence of a business sector [I10; D,4], and (5) the other downstream areas of the city of Semarang

where already fixed by a project of the Japanese Development Bank (JICA) [I18]. This JICA project concerns flood measures for the other parts of Semarang, financed via a loan to the central government in Indonesia [D10].

Figure 7 Case location and area (Source: CIA, 2011; Google maps, 2011)

After the feasibility study in the period of 2004-2006 not many activities were going on [I13]. It took the Dutch some time to find funds for continuation of the project. While within the municipality a competing project was going on, providing more incentives for the mayor of Semarang to support that project [I18; OB26]. On the other side the mayors' staffs was in favour of the Dutch solution [OB19]. When the competing project did not provide the intended results, the municipality therefore turned to the W+B again for the polder project in the Banger area of Semarang [OB-20].

Financing for phase 5 design of the polder and the phase 4 the transfer of knowledge were found in the PfW 2 programme and was to be executed by W+B. The goal of the technical design was according to the project proposal: (*1) to have a series of preparatory measures that lead towards a working pilot polder in Semarang, as an example for other cities in Indonesia and (2) the widening of this approach to other areas in Indonesia, via guidelines and with the perspective for a knowledge-sharing centre [D-14].* Phase 3 the establishment of the organization for managing the polder became the responsibility of the Dutch water board Schieland en de Krimpenerwaard (HHSK) and was financed via the Logo South programme of the Verenigde Nederlandse Gemeenten (VNG).

In our case we study we focus on phase five and three of the project. That encompasses the period from 2007 till the present. We regard (Phase 4) that led to the creation of guidelines as context and out of scope of this research. The reason is that process was going on alongside the project and was not considered to have significant impact [I02, I31].

These phases which we regard as the process of the case resulted in two outcomes:

(1) The construction of the polder design
(2) The establishment of a polder board

Construction of the design commenced in 2010 and in the same year a polder board for the management of the polder, called BBP SIMA was inaugurated by the mayor of Semarang. These measures are intended to lead to the ultimate outcome for this project, to reduce the flood risk in the Banger polder area. In figure 8 the outline of our case study is given.

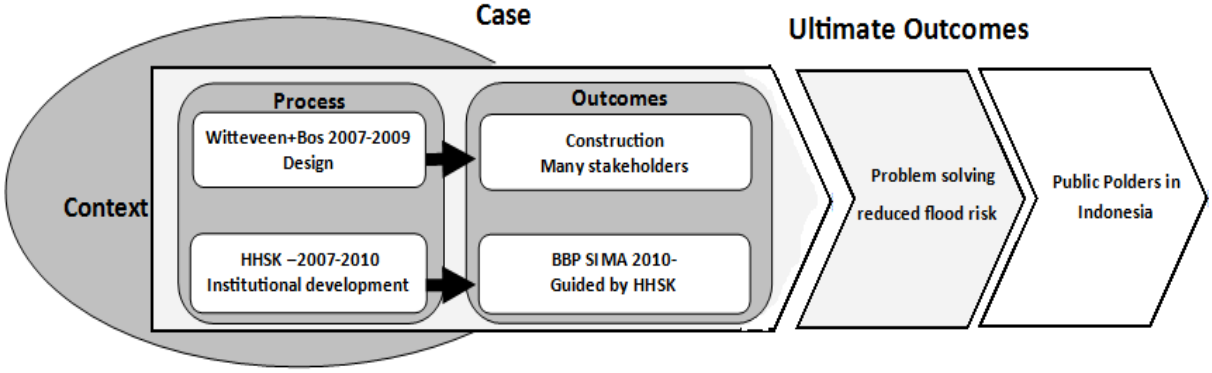

Figure 8 Case outline

4.4 The case process and outcomes

This section describes the process and outcomes of our case. First, the most important stakeholders of our case and their respective role are introduced. Then the technical process and its outcome (construction of the polder) are discussed. Followed by, a description of the institutional process and the outcome of that process.

4.4.1 Key-actors involved in the process

The project structure of the process was managed through three layers [D90].

1. A steering group to decide on the priorities, facilitating and manage the general course of the project implementation unit (Oxford dictionary, 2011).
2. A project implementation unit, responsible to cooperate on the operational level (PIU).
3. A technical and institutional team to execute the daily works.

From the Netherlands, the Dutch ministry of PU, the water board Groot Salland and HHSK were seated in the steering group and was present W+B as guest. From Indonesia the mayor of Semarang, the Directorate of research from the central government, PusAir, the Indonesian secretary for the 4P-Mou, the head of Bappeda Semarang were seated in this steering group [D14]. This group of actors set-up and facilitated the agenda for the project implementation unit.

The project implementation unit coordinated and facilitated the institutional and technical process. In this unit Bappeda arranged for the inter institutional communication [I11] and PusAir acted as coordinator between all parties [I07]. The actors present in this body were heads of the local departments. Furthermore representatives of the technical and institutional teams were present in this body. Other stakeholders could be invited when needed to involve them in the process.

Witteveen+Bos was responsible for the design process and formed a technical team with actors from the local public works to develop the design [I02; E2]. HHSK was responsible for the institutional process in cooperation with inhabitants of the polder area, the department of spatial planning (Bappeda), the legal, and maintenance department of Semarang and formed an institutional team [I13; D90]. Actors in these teams were from the operational levels of government and responsible for the day-to-day progress.

After the design new actors joined the process for the construction and a new project structure was set-up. These actors will be introduced in the following paragraphs. In total, about 35 stakeholders were involved in this project (appendix 9.11). An overview of the cooperation is given in Figure 9.

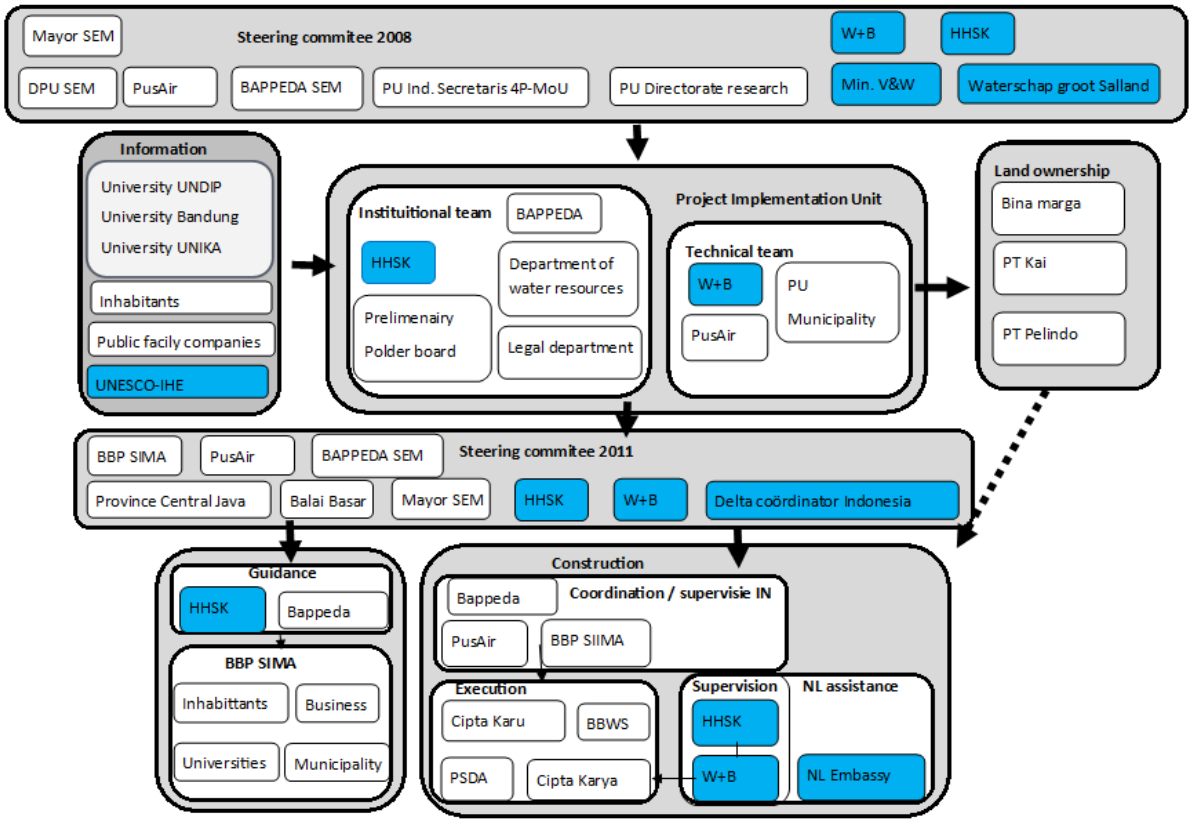

Figure 9 Overview stakeholders Banger project

4.4.2 The technical process and its results

The development of the design of the polder started in 2007 and was finished in 2009. This process was funded via the PfW 2 programme [D15; D17]. The lead actor responsible for the design was W+B, supported by Bappeda and DPU [I02; I32]. In total around 177 meetings were held in this period to complete the polder (appendix 0). The design process moved through a series of phases, visualised in Figure 10.

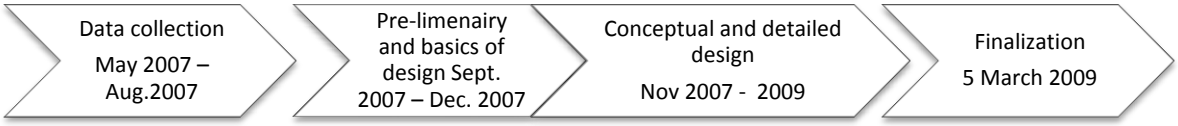

Figure 10 process of the technical design

Data collection and start-up

In 2007, the design process started with primary data collection, kick-off meetings and mobilisation of personnel. In this period there were difficulties obtaining all available data, especially from PSDA and therefore Bappeda mediated [I29]. After analysis of the data, additional in-depth data was collected, particularly on land subsidence. A literature review and benchmark study was conducted, that showed that the rate of land subsidence in Semarang was relatively high (10cm/year), which had implications on the design. During this period, public hearings were commenced to introduce the polder concept to inhabitants and to get knowledge regarding the problem solution perception of the inhabitants. Also progress meetings with the primary stakeholders of DPU, Bappeda, and PusAir were conducted to collect feedback [D80].

Preparing the basics of design and preliminary design

In this phase the boundaries of the project area were determined [D84]. A preliminary design was developed that protects the Banger area of three types of flood; (1) tidal floods caused by the sea, locally known as rob; (2) floods caused by rainfall; and (3) flood caused by rainfall in the mountains around Semarang[D22]. To achieve the required protection the design needed to compromise two aspects; (1) construction of a ring dike to protect the Banger area from tidal floods and floods caused from rainfall in the mountains; (2) measures to manage the water level within the polder. These measures are described in Table 5 and located in the project area in Figure 11.

Ring Dike	Water management
1) Northern Dike	4) Dredging of the kali banger
2) Eastern dike	5) Retention basin
3) Dam	6) Improvement of secondary drainage /weirs
	7) Pumping station

Table 5 Designed measures to overcome the floods [D83]

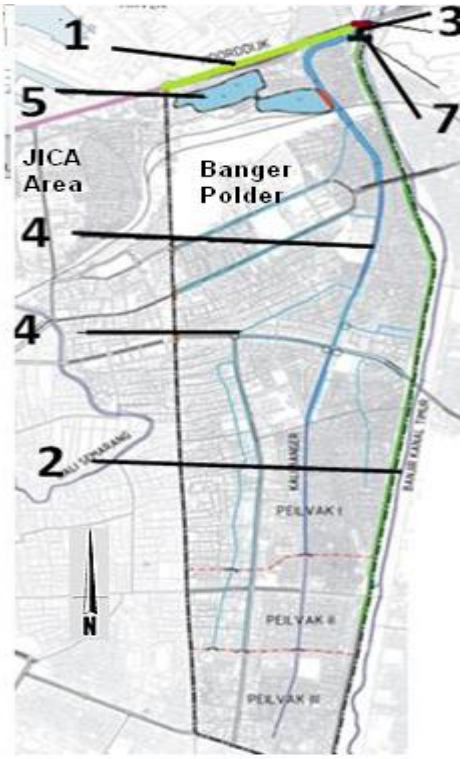

Figure 11 Polder area and measures.

Three different options for the polder system where developed in this period e.g. (1) a gravity driven polder; (2) belt canal system and (3) a separated system [D83]. A cost analysis of each solution was made and the gravity driven solution was chosen at the most cost effective solution. This solution involved, that a dam in the river was needed to protect the area from tidal-floods, without the possibility for a tidal gate [D83]. This non-possibility of a tidal gate became a much discussed issue, between Dutch and Indonesian actors [D82]. At that time DPU had access to governmental funds. Therefore, haste was made with preparing the requirements for a pumping station [D83].

Around the same period, there was discussion about combining the road expansion of Directorate general of Transportation and National highways (Bina Marga) and construction of the dike on the North side of the area. Also the best location for the retention basin was selected. The land of this location was owned by national railroad company (PT Kai) and first talks were initiated for land acquisition. Before the Indonesian stakeholders could agree on the basics of the design, additional information about the polders principles was needed. Therefore a three-day course, which was planned to educate about these principles was moved forward in the process [D80; D81]. After the course, feedback on the design was collected, revised and the stakeholders came to an agreement on the basics of design [D80; D81].

Conceptual and detailed design

Since, the stakeholders already agreed on the basics of the design. The conceptual design and detailed design was a more technical filling-out of the preliminary design [D75]. Creating the design and drawings of the dikes, channels and culverts was considered complex, because the construction needed to fit in the existing situation, according to W+B experts [D81].

To support the process, a second round of 14 public hearings to actively involve the inhabitants, research, and meetings with the municipality was conducted [I13; D81]. Based on the new information changes were made [D81; I02]:

- The costs and social impact of a dike planned in the west side of the project area were considered too high. Therefore a location for this dike was chosen that had a lower social impact and was less expensive.

- Japanese engineers were developing a similar solution in the neighbouring area. Some discussions were held to harmonize the design standards of both projects and it was concluded that there was no need for a dike in the West area.
- The design height of the dikes (the higher the dike – the higher the protection level – but the higher the investment costs) was decided, a cost-benefit analysis to determine the optimal dike height versus safety level. Based on an economic analysis of UNDIP University.

During this period the polder concept was not clear to all the Indonesian actors. Therefore it was visualized with a miniature polder that showed the polder concept with real water and rain [D81; OB1]. Other activities going on in this period were [D82]:

- Coordi nation with HHSK for the development of maintenance, garbage and sanitation plans.
- A social-economic analysis of the impact of the polder.
- The preparation of seven tender packages.
- Assistance to local authorities on supporting activities.

In the end of this period, the focus shifted from meetings at local level in Semarang to meetings at national level (PU and PusAir) in Jakarta. This transition was needed because most stakeholders (e.g. PSDA, P2JJ, Bina Marga, PT KAI), involved for the implementation or land ownership of the northern and eastern dike, and retention basin, were at the provincial or the national level. PusAir, as representative of the central government took the lead and arranged several meetings with the stakeholders [D81]. The results were that, Bina Marga agreed upon the route for the Northern dike, while talks with PT-Kai for acquisition of the land kept ongoing. Furthermore, the financing of the construction and the available (national) budgets were discussed with several government institutions (PSDA, DPU, Cipta Karya, Bappeda) and Indonesian budgets appeared to be available for the construction [D75; D72; D73]. The process with a closure ceremony, in which the detailed design and the miniature polder where handed over to the mayor as a symbol Figure 12, and with a final workshop about polder management

Figure 12 Closing ceremony

After the finalization, there were still ongoing issues, such as, the connection of the dike in the North of the project area with the JBIC project. Also, no agreement was there, on the lands for the retention basin with PT Kai and the financing of the construction was still a pending issue.

4.4.3 The outcome of the design process - construction of the polder

On the 9th of April 2010 a MoU was signed between the Netherlands and Indonesia that resulted in the construction of the polder. The costs of the construction were estimated close to seven million. The agreement stated that the Dutch government will pay via the ORIO grant for 35% of the construction costs, and 35% of the maintenance cost of the polder system for the first 10 years of operation [I10, D75]. The remaining 65% of the construction costs is on account of the Indonesian actors. The construction would be executed by three layers of government [D73; D76; OB03]:

Construction 2010		Actors
MoU financing	2010	PSDA Cipta Karya Cipta Karu BBP SIMA Witteveen+Bos PusAir Bappeda HHSK
Start construction	2010	
Collapse pumping station	2010	
Resume construction	2011	
New parties supervision	2011	
Dredging phase 1	2011	
Admission ORIO grant	2011	

Table 6 Main events and actors in the construction

- The central government executes the works financed by the ORIO grant (upper structure of the pumping station and the retention basin). Cipta Karya from the directorate of infrastructure of PU was assigned for this.
- The province central Java finances and executes the secondary drainage channels, the northern dike and the dam in the kali banger, to be executed by the department of Cipta karu.
- The municipality finances and constructs the lower structure of the pumping station [I20], executed by, PSDA.
- BBWS was assigned to improve the eastern dike, which was a minor part of the works.
- Supervision and technical advice throughout the construction was agreed to be conducted by W+B when the ORIO funds became available.

The construction started on the 9th of October 2010 by PSDA with the foundations of the pumping station [D20]. In November, however, the building pit for the construction collapsed and the work were stopped; all piles of the foundations cracked and were considered to be lost (Figure 13). In May 2011 the construction of the new foundation started again at the same site, after re-design of the foundation by PusAir. The ORIO application procedure was on-going and as no funds were there yet for supervision, W+B was not actively involved in the project. In the course of the construction there was need for technical advice and supervision to ensure the quality of the works [E1]. Therefore, HHSK took on the role of supervisor and hired W+B as their technical representative. An implication of not having a W+B engineer in Semarang amid the construction was that there was no active discussion about the design [I23, I25, I31].

Throughout the construction, new problems arose with the foundation, such as application of shorter piles than designed, movement of the ground and sheet-piles. Eventually the Mayor halted the work in September 2010, urged by PusAir, Witteveen+Bos and HHSK [OB21].

Figure 13 Left collapse of the building pit; right the new building pit.

The province in the meanwhile started in 2011 with the dredging activities and improvement of the secondary drainage system [OB3]. During the construction, Cipta Karya and Cipta Karu constantly questioned the design [OB7]. Only PSDA seemed to follow the design, while the province was acting according to their opinion [I29]. At that time Cipta Karya preferred not be involved anymore in the project. Also an agreement was made with PT KAI for the usage of their lands for the retention basin. Currently the construction is on-going and is expected to be finished in the first half of 2013. In the meanwhile issues keep arising and changes were made that conflict with the design.

4.4.4 Process of institutional strengthening

In 2007, HHSK started with capacity development, financed via the Logo South programme [I03]. This programme aims to develop the capacity of the local government sector (VNG-International, 2011).

Institutional development		Actors
First steering group	2007	Mayor HHSK Bappeda Legal Department Provisional Board Universities PusAir
Institutional team	2007	
Public hearings	2007	
Provisional polder board	2008	
Stimulus project	2008	
Third steering group	2009	
Legal embedding	2009	
Creation of BBP SIMA	2010	

Table 7 Main events and actors in the institutional process

The purpose was to develop a community based organization (CBO), responsible for the operation and maintenance of the future polder. The concept was new in Indonesia, therefore HHSK choose for a process approach to steer the project. HHSK acted as the project owner and was there as advice for the Indonesian government in order to increase the capacity of the local administration [I04]. The starting point for a CBO was already made in the feasibility study. Where an inhabitant based organization for the operation and maintenance was established for the Banger area [D29; I24].

In 2007, the project kicked-off was at the first steering group meeting, held in Semarang [D29]. This meeting and the start of this phase did not went smooth and process was slow [I03; D6]. Firstly, the Indonesians were reluctant to participate in institutional part of the project [I04]. Secondly, the Indonesians had more interests in the technical aspects of the polder [I18]. Indicated as, only different lower level public servants joined the meetings [D6]. Thirdly, at the first meeting there was some uncertainty about the societal status of HHSK. Since, the impression was that HHSK was a NGO. This changed when it became known that the head of water board had the same societal status of a mayor [I3, I11]. Lastly, HHSK had difficulty to connect to the local situation [I13; I04; D9].

The cooperation in the period 2007 until 2009 was quite abstract. Public hearings were commenced together with the technical team to introduce the polder board concept to inhabitants, meetings were held, discussing the need for a separate organization for organization and maintenance, research was conducted to the willingness of inhabitants to pay for operation and maintenance. During the process the solution was shaped and it became clear that the polder board should operate as a separate entity from the municipality, financed and operated by its users. In principle the same, as a Dutch water board [I04; I12]. Since, there was lots of talking in shaping the solution. Not many tangible products were delivered and it was a period of low motivation of the actors. To increase visibility of the water board, improve motivation and support the process. Stimulus activities were commenced, to increase the awareness of inhabitants about the garbage situation. Initially one of the activities was the set-up of a small factory for recycling garbage. However, due to land acquisition problems equipment was bought, but there was no place to put it. Therefore to increase visibility of the polder board a cleaning competition was started to promote a clean neighbourhood [I13].

The course and speed of the process improved in the end of 2008 when a new project leader of HHSK was appointed, that putted emphasis on relationship building with higher officials [I05; I13; I04]. A former resident of Semarang with status and experience in governance processes was hired to connect with the government officials. As a result, the relation with the mayor of Semarang was strengthened. The first change in motivation was achieved during a steering group meeting in 2008, when the mayor of Semarang was invited in the home of the project leader of HHSK [I04; I05 I13]. After this change the process improved and priority was given by the municipality for the project [I04; I05; I18]. The result final result was the inauguration of the first Indonesian polder board.

4.4.5 Outcome of the process - the first Indonesian polder board BBP SIMA

In April 2010, the Mayor of Semarang issued Mayor Act number 060/89, which established the polder board (called BBP SIMA since then). This Act transferred power to the water board – some of which are far-reaching by Indonesian standards. It gave board the power to operate and maintain the Polder Banger [D89] under the authority of the municipality [D85].

Institutional development		Actors
Creation BBP SIMA	2010	Mayor HHSK Bappeda BBP SIMA
Creation vision document	2010	
Photo rally contest	2010	
Start-set-up manuals	2011	

Table 8 Main events and actors involved

The members in the board of BBP SIMA, represent its main stakeholders, each sharing an equal vote in the decision making process [I03; I04; I12; I13]. The selection of these members BBP SIMA was made in cooperation with the municipality and HHSK [I11] and consists of:

- Three members of the municipality; of (1) the water resources department, (2) the legal department and (3) the department of spatial planning [D86; D87; D88].
- Three professors from the three major Universities in Semarang (Islamic, Catholic and Public University [I12; I16; I21; OB13].
- Four inhabitants that were already present in the provisional Polder Board. One inhabitant lives in the neighbouring JBIC area, for replication of a polder board in Semarang [I04; I15].
- Two business representatives, a local restaurant owner and a company in pump maintenance [I29].

The composition of the board was chosen based on the necessary capabilities needed for the task of O&M of the polder. It was as well chosen for the replication of the board to other parts of Semarang and Indonesia [I04; OB3]. BBP SIMA will lead the organization, and will devise, write and introduce all rules, procedures and protocols necessary to ensure the proper working of the polder. Eventually the board will employ around 10 FTE for this task [D85]. These people will, operate the pumping station, conduct surveys, dredge the canals and monitor the conditions of the dikes in the polder area. A budget estimated at 160.000 euro a year is needed to operate and maintain the polder [D16]. Financing of the organization are expected to come from the inhabitants and companies in the project area. Just like in the Dutch water board system that the users pay for the use. For the upcoming 10 years, 35% is expected from the ORIO grant. The municipality is willing to give indirect support [D78; D85]. HHSK will facilitate this organization with capacity building and support until needed [I04].

5 Findings

This chapter describes the findings of the research, based on the theoretical framework (chapter 2). In the first part actor's motivation (section 5.1), cognitions (section 5.2) and resources (section 5.3) of the actors are discussed. In the second part of this chapter the process and outcomes are evaluated with the evaluation framework for international water management projects (5.4).

5.1 Motivations of the actors

In this subsection the respective goals, motives and sources of motivation are described of the most prominent involved actors. First the actors of the Netherlands are addressed, followed by the Indonesian actors.

5.1.1 Actors from the Netherlands

Witteveen+Bos

- *The organizational objective of W+B in this project was to use the project as an example for other similar projects in Indonesia [I10; D13].*

W+B initiated the project since, the polder concept fits with the expertise of W+B and they wanted to use this project as a show case [I08; I10; OB22]. With this expertise the living conditions of 80.000 inhabitants can be improved [I10]. This can be regarded as a positive self-effectiveness assessment. The personal motives of the involved W+B experts were mainly to learn about institutional and technical aspects of polder design [I02; I08; I29]. W+B was willing to invest own capital into the project until a certain extent to ensure project success [I02; I10]. This shows that W+B was committed to the project.

Water board Schieland and the Krimpenerwaard - HHSK

- Organizational objective of HHSK was: *"to improve the living conditions and the health and welfare of the people in Semarang, living in Banger Selatan"* [D14].

To be achieved through: (1) the establishment of a functional and competent stakeholder-based Polder Authority, well integrated and supported by the municipality structure; (2) to train the based community water committee in tasks related to water management, specifically on operation, maintenance, and costing [D14].
HHSK was involved from a sense of international responsibility and from the feeling that with their expertise in water governance they could contribute to the Indonesian situation [I04]. HHSK became involved on request of the Water board Groot Salland [I03; I04]. The chairman of HHSK was interested based on positive experiences with other international projects and eventually the administration of HHSK, agreed with the project due to political motives [I03; I04]. The benefit for participation of HHSK was to become international aware, be more attractive as an employer and for branding of the organization [I03; I04]. The importance of this project for the organization increased when the results became more tangible [I03; I04; I13]. Personal motive of the local representative and the project leader of HHSK was that they can change the problematic situation (positive self-effectiveness assessment) [I04; I13]. The overall motivation of HHSK can be considered strong, due to the willingness to support this project for a long time in order to make it a success [I03; I04].

5.1.2 Actors from Indonesia

Municipality of Semarang

- The overall goal of the municipality was to solve the flood problem in Semarang, through infrastructure development [I11; I17; D22].

The former head of Bappeda wanted to collaborate with the Dutch, because he was positive about the polder concept and the drainage in the area was also constructed by the Dutch [I18]. Another motive was that just before this case started in 2007 the municipality agreed upon a project with the Japanese Development Bank to protect a large area of Semarang from flood, which did not cover the Banger project area [I18; I11; D10].

The previous mayor (in place until the elections of 2010) seemed initially not really motivated for the less tangible institutional solution [I03; I04]. After lobbying activities this changed positively [I04]. This support of the mayor of Semarang was needed to ensure that the public servants gave priority to the institutional solution [I04]. Before, the public servants did not seem motivated, or did not have sufficient time and the progress progressed slowly [I13; D35; D42]. In 2010 there were elections and a new mayor was chosen. He supported the project, after some lobbying activities [I04; OB21]. Possible motives for his support are re-election and his concerns with the poor population of Semarang [I03]. Another source of motivation for the public servants is that project will be a product of the city of Semarang [I03], making it a matter of prestige [OB7].

The personal motivation differs among individual actors of the different departments in the municipality; some are involved, because it was part of their work [I20; I17; I18], a source of extrinsic motivation. Others longer involved, seem to be more motivated from personal beliefs and commitment to improve the problematic situation [I11; I18; I12] or learning [I17]. This is noted as intrinsic motivation.

One actor that seemed not to be motivated for this project was the head of PSDA that was responsible for the construction of the pumping station [I18; I17]. On the other hand in his own opinion, he was motivated to solve the floods in Semarang as his task of civil servant [I20]. What shows the motivation of the Semarang government was the willingness to pay for the Dutch design [I12]. This is an achievement often not the case in Indonesia [OB28; I12].

National research institute for water resources - PusAir

- The objective of PusAir was: the transfer of knowledge and skills from the Netherlands to Indonesia, through a pilot project for polder development that as a new workable concept for resolving urban flood issues, providing ammunition for negotiations with the central government to resolve urban flood management problems [I07; I09; I13; I19; I22 OB23;].

The organizational objective of PusAir is: *"to be a leading institution for providing technological expertise and to support a reliable availability of water resources"*. PusAir conducts research and develops, norms, standards and guidelines in the field of water resources (PusAir, 2010) [I07; I09]. The Banger project is a pilot project in the field of water management. PusAir was involved to execute the MoU between the Netherlands and Indonesia, as it contributes to their organizational objective [I09; I22]. Another goal for PusAir, as mentioned by its director who is personally very concerned with this project [OB24], was the set-up of an educational centre for maintenance of polders in Indonesia together with HHSK [I07]. The importance of the project increased during the process, according to the director of PusAir. Now, it is a high level-project [I07], for the municipality and central government [I17]. The engineers of PusAir act mainly from their responsibility of being a public servant [I22]. According to an actor of PusAir, who was involved for a longer time, during the project a mutual goal to replicate the polder in Indonesia [I19].

Department of infrastructure of the central government – Cipta Karya

- Cipta Karya became involved in the Banger project as implementer of the construction with funds of the ORIO grant of the Dutch government.

This reason fits with Cipta Karya`s organizational objective: *the development and realization of infrastructure* (Cipta Karya, 2011). For this they were already present in Semarang, for the project management of the neighbouring JBIC area [I33]. The department did not seem to be motivated. Representatives without any decision making power were sent to meetings. During the construction the cooperation was difficult and was even discontinued [OB7]. Cipta Karya became involved again, when the directorate general of infrastructure, on request of PusAir, applied external pressure [I22; E2].The project became more interesting for Cipta Karya, when the importance increased to the central government [I17; OB8]. An engineer of W+B mentioned their motivation was influenced, due to the Dutch involvement; Cipta Karya is unable to get the prestige of solving the flood problem in Semarang. They need to share this prestige with other actors, such as the Dutch [OB8]. Another possible reason is that Cipta Karya was not involved in the design and wanted a different design [I09; I19]. The head of Cipta Karya Semarang mentioned that he was not actively involved in the design and was unable to suggest modifications [I23]. His motivation increased when during the process there was uncertainty about continuation of the ORIO grant and he could execute the project by himself. Therefore he already started preparations for a reviewed design, one that included the area north of the Banger project [I23].

The province central Java, department of Cipta Karu

- The objective of the province is to provide technical support and free Semarang from floods [I25; OB3].

Semarang is the capital of the province of central Java. Therefore the province has a responsibility for this city [OB3; I13; I25]. Under the MoU (signed in 2009) the department for infrastructure development Cipta Karu got involved for execution of some of the technical elements of the polder [I23]. The personal goal of the project leader was to have a good system in the Banger polder. This changed in the course of the project to minimizing of the floods in the area and to improve the community managed organizations [I25]. This is confirmed by the statement of the representative of the governor of the province central Java. He stated that the province was in favour of self-financing institutions for operating polders and is now discussing how to distribute the system among other parts of the province [OB3]. Another incentive of the province was, to show that the governor is involved in the well-being of the poor [Observed].

The members of the polder board BBP SIMA

- The polder board consists of representatives of universities, municipality, inhabitants and business, all with a different background and motivation.

Three professors of the three divergent religious universities (Islamic, Catholic, Public) were involved in the polder board. They had three common sources and goals of motivation: (1) the responsibility of their profession to use it for the common good; (2) to use the project as a subject of research, and (3) from the personal beliefs to improve the living conditions of the inhabitants [I12; I16; I21]. Another reason why there were universities' participating from three different religions was that status can be obtained if the project will become a success [OB13]. The inhabitants in the polder board are mainly involved for social activism in order to improve the situation of the inhabitants [I14; I15; I31]. They are highly internally motivated to participate, as they contribute a considerable amount of free time. Other benefits for inhabitants participating in the polder board are social status and social contacts [I15] and the pleasure participating [I31]. Another initial incentive was the ability to go to the Netherlands, as recognition for their activity [OB20]. The representative of a local restaurant business states that they are involved for the well-being of the inhabitants and from the belief to add value with her skills [I29]. The members of the polder board have a positive self-effectiveness assessment and strong internal motivation. Most of the polder board members

contributed knowledge and skills from the belief that they can add something, spent time and other means voluntary in the board.

5.1.3 Synthesis motivations

This section makes clear that the involved actors pursuit different goals and are motivated by different sources of motivation. Dutch parties were involved for a positive self-effectiveness assessment and operated from the belief that with their expertise they can improve the situation. Furthermore they initiated and supported the project with own resources, which shows they were motivated. Regarding the Indonesian actors, importance of the project grew, which shows their rise of motivation. They were motivated through external pressures, social relations and a self-effectiveness assessment. The motivations of actors are summarized in Table 9.

Actor	Motive
Witteveen+Bos	Exporting the polder concept to generate new business
HHSK	International responsibility
Municipality	
• Bappeda/ DPU	Infrastructure development
• Mayor	Elections
• PSDA	Execution of infrastructure
PusAir	Finding a concept for urban floods
Cipta Karya	Execution of the ORIO grant
Cipta Karu	Responsibility for the capital city
Polder board members	Social responsibility

Table 9 Motivations of actors

5.2 Cognitions of the actors

The cognitions of actors relate in this research to their perception of the problem and solution. First the perceptions of Dutch actors are described. Subsequently, the perceptions of the Indonesians are discussed.

5.2.1 Problem perceptions of Dutch actors

The Dutch actors already formed in the feasibility study a clear view about the problems. We read in the project proposal of W+B, which is based on a seminar for polder development in 2001:

"Semarang was presented as a waterfront city, where flooding problems occur due to settlement of the coastal surface level and (future) rise of the sea level. As a consequence of these phenomena daily flooding occurs and inundation of a few centimetres to decimetres (in the streets) is common. This causes severe disturbance to society and disrupts not only economic development significantly, but also leads to retreat of companies from these conurbations. It was concluded that the problems at Semarang are acute, and need utmost attention" (Project proposal PvW2, 2006).

In different project documents of HHSK and W+B, the four main causes of the problems in Semarang were further highlighted: (1) subsidence of the very thick soft subsoil; (2) climate change that increase rainfall and sea water level rise; (2) deforestation and related peak run-off characteristics (3) limited capacity and neglected maintenance of the existing drainage infrastructure (4) population growth and increase of paved areas [D13; D14; D16].

The above indicates that the problem is partly technical and partly institutional/social [I02; I04; I08; I10; OB3]. The project leader of W+B further mentioned in several conversations that in Semarang there are many problems, (e.g. sanitation, water supply etcetera) but that the people first need to have "dry feet" [I10].

According to the respondents of W+B, the land subsidence of more than 10 cm a year in some places is the biggest problem in Semarang's coastal areas [I02; I08; I10; D13; D14; Kops, 2008]. The other side of the problem is garbage and maintenance [I02; I04; I05; I10]. Indonesian cities generally have an open drainage systems and people have the mentality/culture to just throw garbage anywhere and in the rivers. As a result, the drainage system gets clogged and pumps get damaged, consequently floods and diseases occur [I03; I04; I05; I10; I13 OB3; OB7; D13]. The second issue is maintenance. The lifetime of constructions is considerable shorter then it could be and are generally in a "bad" state [I02; I04; I05; OB3; D79]. Maintenance is not properly executed, due to a lack of capacity, finances and other incentives [OB2; D13; D14]. As a result, local stakeholders have do not have faith in the municipality and the communities are passive for change [D14]. A third problem is that the local government does a lot of projects to overcome the flood, but do not address the problems in an effective and comprehensive way [I05; I13; OB7; D16].

5.2.2 Solution perceptions of Dutch actors

The Dutch actors wanted to demonstrate the polder concept as a solution for the flood problems in Semarang. In a feasibility study this solution proved to be feasible and preparations were made for a technical and institutional solution [D14].

Perceptions of the technical solution of Dutch actors

The Dutch actors considered the closed polder system as a good solution for the urban drainage problem in Semarang [I02; I04; I08; I10; D14]. During the process, the actual polder solution was shaped, alternative solutions were developed, the project scope was determined, and finances were found [D78; D80; D81; D82].

In developing the solution, Dutch engineers noticed that the Indonesians had difficulties in seeing the overall problem and understanding how the polder works as an integral solution [I02; I10]. One engineer noticed that in the technical discussions Indonesians think in the hydrological cycle. This means that water always drifts off under the influence of gravity from the river into the sea. It was difficult to understand for Indonesians, that when the sea water level is higher than the river it is not possible for the water to flow freely into the sea [I08]. The low focus on water management in the curriculum of Indonesian Universities is perhaps the cause for this [I08; OB4]. It involved lots of face-to-face contacts to make the concept clear to the Indonesian [I02; I08].

The Indonesians requested a 3D model to visualize the concept and create an understanding about the polder. First, a sophisticated computer simulation was created, but the introduction of a simple scale model proved more effective [OB1]. A W+B engineer noticed that it might have been useful to introduce the model earlier in the process. To decrease the complexity of the design, the tender documents were divided into seven parts. So that Indonesians can understand the function of each sub-piece [I02]. Drafting the bill of quantities for the tender resulted in some difficulties. Since, at the time of drafting it was not known who was going to be the executor and each department has its own standards [I29]. As a result the tender documents were not to the standards of each executing department. According to a review, each tender document should have unit prices and volumes. However, in the documents there was no planned budget of each work [D62]. W+B engineers said that developing the technical solution was not hard, but getting it of the ground in the complex government environment was the hardest part [I02; I10].

Perception institutional solution Dutch actors

An organization is needed that arranges the maintenance and operation of the polder to keep the polder functional after the construction [I02; I03; I04; I08; I10]. At first, the final form of the organization was unclear. Only the vision that it should be single-purpose for the implementation of

water management, transparent, bottom-up, taking into account the demands of its stakeholders, financed by its stakeholders, and based on people participation [I04; D13]. In the public hearings and based on a survey, HHSK learned that the inhabitants were willing to pay for the operation and maintenance. Yet, they did not want to pay directly to the municipality, as there was a lack of trust in the government that their money is well spent [I04; OB12]. Therefore the organization should be a separate entity from the municipality [I04; I12].

According to the project leader, as a reaction on the discussion about a water board, actors of the municipality created a separate department for water. This shows the political sensitivity and the endangerment of vested interests in the discussion for setting-up a separate entity for water management. In consultation with heads of Bappeda and PU, the organization (BBP SIMA) should operate under auspices of the mayor and supported by the public administration of Semarang [I04]. According to respondents of HHSK, the composition of the current polder board is well considered. It involves inhabitants, the municipality, universities - which will make sure that the board will develop and learn, and the private businesses are involved for their economic interest [I03; I04]. Furthermore, to encourage diffusion the design of the organization is easily replicable towards other areas in Semarang [I04]. What the Dutch actors learned was that if you want to accomplish change in Indonesia, you need to do that in observance of the culture and the stakes at play [I03; I04; I05; I10; OB3]. This requires the creation of trust [I03] and patience, as learned by the Dutch actors [I04; I06; I08; I10; I13]. The local representative of HHSK learned that community involvement and openness was effective to control and raise trust in each other [I13].

The delta coordinator and ambassador for water resources of the Netherlands were positive about the project [I06; I27]. According to them the solution is a comprehensive one [I06], combining technical expertise with governance [I27]. Strong about the project is the focus on learning, involvement of the local society and the relatively small project area. This makes the project more successful, compared to larger programmes that are not doing so well [I06; I10; I22; D30].

5.2.3 Problem perceptions of Indonesian actors

The overall problem of rob and flood was commonly shared by to the Indonesian actors [I09; I07; I11; I13; I15 I16;]. The (technical) government actors developed similar views as the Dutch actors about the underlying problem of the flood and rob [I11].

According to the present head of Bappeda of the municipality of Semarang, there are three types of floods in the Semarang with different causes. Firstly, regional floods from incoming water of upper regions, caused by heavy rain, decrease of land infiltration capacity, sedimentation, erosion, increase of coefficient run off. This could happen due a change in land function of the upper area and forest cutting. Second, local floods caused by poor functioning of the urban drainage system. It has insufficient capacity, due to lack of operation and maintenance funds. The third types of flood are tidal floods, which occurs if the sea water level is higher than the land level. This is caused by land subsidence a result of excessive ground water pumping, especially in coastal areas [E4]. This view is shared by the actors of PusAir [I07; E3]. The local inhabitants perceived parts of the problem but could not connect them in a comprehensive way [D31; D34; D36; D67]. They did not seem to perceive the daily floods, which often come to knee level as a real problem. It was rather perceived as a daily nuisance. Only the extreme floods were perceived as problematic [D83].

Another problem recognized by Indonesian actors was inadequate maintenance. Sometimes the object of construction is already broken during the construction process [I16; OB16]. An often heard statement was: *"in Indonesia people just build"* [I19; I09; I16; I18; I17; I20; D22], as they do not really pay attention to maintenance. According to an Indonesian professor, it is worsened by the fact

that in Indonesia there is no flexibility in the budget (a time consuming budget procedure most be followed for each repair) and shortage in the budget [I12; I17; I21]. Also the capacity of the maintenance employees was seen as a problem [I28]. This is enhanced, by the fact that human resources change relatively often and knowledge get lost [I16; I28].

Culture of the inhabitants towards garbage is another problem [I26; I31; I22; I21; I26; I27; I14; I11; E4]. The business representative in the polder board mentioned that this was caused by the lack of intellectual development [I26] and poor access to information [I17, I13]. Therefore inhabitants don't really understand that throwing garbage into the river is related to the flood problems [I26; I33; OB20]. They do not have the information to arrange for a healthy environment and what to do with the garbage [I17]. Another member of the polder board member mentioned it has to do with traditions of the people [I31] and with low law enforcement [D31; D34; D36; D67]. During the interviews it became clear that actors who went to the Netherlands developed a common perception of the problem through the following statement: In Indonesia the river is based in the back of the houses, while in the Netherlands the river lies in front of the houses. In Indonesia people throw garbage in the river and don't respect it while in the Netherlands people respect the river [I11; I16; I21].

5.2.4 Solution perceptions of Indonesian actors

Actors developed different perceptions during the process. In measuring the perceptions, we observed a distinction between three groups of actors: (1) Actors involved in the design process, (2) actors only involved in the construction, and (3) actors involved in the institutional process.

Perceptions about the technical design

The polder system was at first not clear to the Indonesian actors. It was proven quite difficult to let Indonesians understand the polder concept. One reason was that a retention basin in the old city of Semarang (developed in 2002), was given the name Tawang polder [OB7]. Thus, the Indonesians had the perception that a retention basin is the same as a polder system [D38, OB7]. Since, the retention basin floods regularly. The local actors did not have a positive image with the polder system [D41].

An understanding of the polder system was developed during educational courses about polder development and public hearings given by Dutch actors. These were visited by all the stakeholders (DPU; PusAir; Bappeda, Polder board, Inhabitants) and were worked out in cooperation with members of PusAir and DPU. As a result, the actors who participated in the process generated an understanding about the concept [I08; OB1]. Eventually all the actors agreed upon system as the solution [I13; I31; D53; D54; D52; D58; D81]. Still, a university professor noted that among Indonesians there is not much "deep" knowledge about the functioning of polders [I16]. As a result of knowledge learned about polders, inhabitants developed some smaller polder initiatives to cope with floods on neighbourhood level [I15; OB7].

A member of Bappeda declared the solution of a polder with pumping systems and barrages a good solution for the low-land areas subject to land subsidence [D22]. According to the director of PusAir, the technical polder solution is easy to understand and a good concept to cope with tidal floods. According to him the real problem is keeping all the stakeholders involved [I07]. This view is shared with the head of Bappeda [I17]. Regarding the design, the project leader of PusAir Solo had the opinion that the design made by Witteveen+Bos is a strong one, as it makes good use of existing infrastructure and is easy to maintain. This was seen as a positive feature in comparison with the complex Japanese designs, which are mostly high-tech and difficult to maintain [I09]. The Dutch solution is furthermore a cheap one, in comparison with the JBIC area, according to the director of

PusAir [I07]. This is confirmed by an Indonesian professor [I16]. That actors involved in the process supported the solution they developed became clear in observing the construction process. When there were technical disputes actors involved in the design process agreed about necessary measures to solve emerging problems. These actors questioned the knowledge and viewpoints of actors not involved in the process [OB16; OB18; OB21].

Perceptions about the technical solution of new actors involved in the construction
New actors (Cipta Karya, Cipta Karu and PSDA to a lesser extent) involved in the construction had alternative views about the details of the solution. The head of Cipta Karya and project manager for the JBIC area had the opinion that the retention basin does not need to have the designed size. Since, there are already two pumps in the area. Instead he proposed to use the fish ponds located north of the project area as retention basin and move the location of the current pumping station to this location. In order to extent the project area northwards and protect that area also from the floods [I23]. A view shared by Japanese engineers of the JICA area and the project leader of PSDA, who admits that there is not enough money to extent, the scope of the project [I20; I32].

Another detail that was questioned heavily during the design process, but eventually agreed upon by the actors involved, was the construction of a dam in the river as a defence for tidal floods, without a tidal gate [D37; D82; OB7]. According to the actors who joined during the construction, the water can flow using gravity into the sea. Therefore they proposed a tidal gate in the dam that can function for upcoming years [I20; I23; I28]. This would diminish the need to pump the water out of the system all the time and is therefore less costly [I20; I23; I28]. Actors that had been involved in the design process first questioned the same aspect in the design. But eventually agreed that, due to land subsidence the polder infrastructure sinks. As a result, the outflow level of the water will become below sea level, diminishing the need for a tidal gate [I19].

The project leader of Cipta Karu further had remarks on the design. According to him the design of the dikes is not correct. The dikes are designed out of stone, but the soil cannot support this. Therefore, his team decided to change it into concrete sheet-pile. Also, in his perception the design life-time of the dikes of 10 years is insufficient [I23].

Perception about the institutional solution
During the first workshop in 2001, Indonesians already developed some tentative solutions for the institutional part. They recognized that there should be a bottom-up organized, community based organization, responsible for the maintenance in the polder [D13]. Originally, the inhabitants and municipality were sceptical about a CBO organization [D9; I30]. As the project progressed, and several organizational structures for the polder board were discussed, a solution was found that satisfied with the interests of the dominant stakeholders: a community based organization which would cooperate with the city government [D9]. This implied that the members of the polder board were selected in cooperation with the municipality and HHSK [I11; I12; I13]. No national legislation was available for such an organization in Indonesia. As a result, it was developed, which occurred under time pressure. Therefore the result is not perfect but sufficient, according to a legal professor [I12].

The community based maintenance organization was seen as an interesting solution by PusAir, because it involves the social well-being of the people [I19; I22]. Normally, in Indonesia, a project is started by the government. With the polder board it is a more bottom-up approach [I07]. This gives the people a sense of belonging, as stated by another PusAir engineer [I19]. This kind of organization concurs with the vision of the former head of PusAir who stated that: *"due to the rapid growth of urban areas and industrialisation, improvement of community involvement is demanded"* [D30]. The

current project leader of PusAir Solo, shares this view as he sees the polder board as a good solution to change the habits of the people towards garbage [I22]. Generating awareness of the people is therefore perceived as one of the critical success factors [I15; I22; I31]. Part of the solution is that Inhabitants need to see garbage as a source of money. Therefore, an initiative was enrolled in which lamps, bags, and other gear was made out of the garbage [I11; I14]. Another important aspect is that the polder board has a flexible budget for repairs [I21]. According to Indonesian actors, this community based approach adds value to this project [I17; I18; I19].

5.2.5 Perceptions regarding the cooperation

The Dutch and Indonesian actors mentioned that the design process went in good cooperation with the stakeholders [I02; I07; I09; I10; I12; 113; I15; I16; I22; I25; E3] and with a clear project organization [I25]. There were sufficient formal and informal moments of communication [I02; I04; I09; I13; I15; I18; I21; I29] (An overview of the activities of Dutch actors is given in appendix 0). What contributed to the amount of communication was the local presence of Dutch actors and representatives [02; D9]. The amount of communication was one of the key success factors of this project [I02; I07; I09].

What adversely affected the communication was the hierarchical government structure in which the responsibilities of the public servants were sometimes unclear [I08]. The active involvement of PusAir and Bappeda played an import role to navigate through and coordinate between this ambiguous government structure [I07; I08; I11; I16; OB11]. What could have improved the project, according to two actors was the coordination between W+B and the JBIC area [I23; I33]. Another thing that was confusing for Indonesians was the role distribution from the Dutch actors (two project teams, multiple Dutch donors). Therefore more cooperation between both the technical and institutional processes could have improved the communication [D9].

When the transition was made from design to construction the roles and responsibilities of the involved actors were perceived unclear [I08; I09; I19]. Furthermore, the actors mentioned that there was insufficient communication and coordination [I11; I17; I18; I25; D89]. To improve this situation one actor would need to take the lead and set-up a project management unit to coordinate between actors [I11; I13; I16; I17; I25; I31]. When asked who should take the lead in the cooperation, the actors were divided, some mentioned PusAir [I23], others the province [I04], the municipality [I17; I18], BBWS [I19; I20] or expected W+B to do this [D89].

The Indonesian actors who were responsible for the physical construction had some difficulties with W+B regarding the tender procedures [I23; I25; I29]. Since W+B had design responsibility and these actors needed the signature of W+B under the tender documents [I25; I29]. Also, it's normally arranged that the designer is actively involved in the construction with supervision and has the authority to stop the construction when needed [I23]. The absence of W+B during the construction progress did not contribute to this.

5.2.6 Synthesis

Dutch actors had a clear problem-solution combination that needed to be adapted to the Indonesian context. Indonesians wanted to learn from this solution but did not understand it at first. In the process the actors developed a common understanding of the problem-solution combination. Actors not part of the process had on the other hand diverging cognitions.

5.3 Resources to reach the solution

In our theoretical framework we have made a distinction between financial, social and human resources. In this sub-section we describe these different forms of resources for the Dutch and Indonesian actors.

5.3.1 Actors of the Netherlands

Financial resources

Witteveen+Bos has obtained financial resources from the PfW 2 programme to design the polder and to draft the guidelines (1.2 million) [D14]. This grant involved an own contribution of 20%, therefore W+B applied a special hourly rate for this project [I02]. It was mentioned by W+B engineers that these finances provided enough time to develop the design [I29; I08].

Funds to support the construction were found in the ORIO grant. This grant provides funding for 35% of the construction and operation and maintenance cost for the next ten years [I02; I10; I11]. In addition, the grant would arrange finances for the supervision and assistance by W+B concerning the construction [I10; OB3; D25]. The application procedure for this grant was long and the decision to apply for the grant was delayed multiple times [OB3; OB7; I10]. As a result, W+B spent a lot of consulting hours on the application procedure and at some point they were considering to quit the project because the procedure was consuming too much financial resources, i.e. consulting hours [I10]. Another effect of the long procedure was the lack of financial resources for supervision and assistance by W+B during the construction [I08]. Still, there was need for technical advice during the construction, especially after the collapse of the foundation of the pumping station. As a result, HHSK took the role of supervisor and hired W+B for the execution of the supervision and technical advice for one day a week [I04; I05; D28; OB3]

Institutional development was funded via the Logo South programme of VNG international. This programme paid for the direct financial costs (e.g. flights; hotels). HHSK provided the necessary human resources in the form of about 75 working days. The actors of HHSK estimated, though, that considerably more hours were spent [I04; I05]. Due to the economic crisis in the Netherlands in 2009, funding from the VNG programme stopped [I04; D4]. Some Indonesians also thought the ORIO programme was stopped [I04; I23; which was observed]. Obtaining new finances was not considered difficult, as the project had some success and had attention of the Dutch government [I03; I04; I06; I29]. As a result, the project leader of HHSK was able to secure new finances for the continuation of the project from the Dutch water board bank fund (NWB fund) [I04; I05]. According to the local representative of HHSK, the skills of this project leader of HHSK, namely to secure funding is one of the success factors in this project [I13]. The project leader was also able to access other funds such as Aqua for all, NWB fund and Partners for Waters for stimulus activities that improved the motivation and continuation of the project [I13; D35]. The NWB-funds provided budget for a stimulus activity to promote a good culture for garbage through a cleaning competition in 2008. Supporting research about the flushing of the polder system and sanitation improvement by W+B was paid with these funds [D66], too, as well as an English language course for the Indonesian institutional team [D53]. In Table 10 an overview of the main Dutch financing programmes is shown.

Financial resources NL	Funded which costs
Partners for water 2 (1.2 million)	Design + Guidelines by W+B
VNG International until 2009	Direct financial costs HHSK
NWB fund –from 2010	Direct financial costs HHSK
Aqua-for All, via HHSK	Supporting research by W+B, sanitation & flushing
NWB- funds, via HHSK	Technical advice construction
ORIO grant	35% of the construction, 35% of the O&M

Table 10 Overview of the main Dutch financers

Human resources

W+B already had a subsidiary office in Indonesia and experience with working in Indonesia. During the design period, several W+B experts were involved from with knowledge about: project management, (senior and junior) Integrated Water Resources, geotechnics , ground water, urban drainage, economics, institutional development, hydraulics, external consultants, various Indonesian draftsmen and engineers. The time spent of the Dutch W+B consultants of W+B was mostly in Indonesia. Next to a considerable amount of working days of native Indonesian W+B engineers [D14; D81; D82]. Most of these hours spent abroad by Dutch engineers could be contributed to a Dutch expert who lived in Semarang for most of the design period. This engineer acted as local representative and was primarily responsible for the design. He was highly valued for his skills and knowledge, by Indonesian actors [I02; I11; I09; I13; OB5; OB18]. These skills were having an open attitude, flexibility, blending with Indonesian culture and bahasa language [I19; I29; OB18]. He contributed knowledge about flood dynamics, water management and project management [I02]. Later on, another Indonesian engineer who was more involved in the structural knowledge and tendering was recruited for and also lived in Semarang for a year [I29]. From the subsidiary office in Jakarta, an Indonesian engineer with a background in geo-engineering and polder development in Indonesia and the Netherlands was involved for a few days per week. The engineer contributed technical knowledge but also acted as liaison between the Indonesians and the Dutch [I08]. As this engineer originated from central Java he knew the culture and social procedures [OB17]. In comparison to some Dutch engineers who acted during the construction and were mentioned to be too direct. This resulted in issues for obtaining information from Indonesian actors [I04; OB18].

For HHSK this was the first international project. Therefore, assistance of an external agency was foreseen. This idea was disbanded after the first mission. The basic idea was of HHSK was, depending on the local needs, to provide experts for capacity building of the Indonesian government from their background in public policy. Therefore a team of experts in the field in finances, pumps, legal systems, maintenance, CBO`s and project management was formed [OB2; OB3; I04; I05; D6; D23; D81]. Most of these experts attended a training workshop on intercultural communication (own initiative). Furthermore HHSK mobilized external expertise in Indonesia and in the Netherlands, especially in the field of legal expertise. Besides this a local Indonesian representative with experience in NGO`s and translation was recruited [I13]. The topic and the project environment were perceived as difficult and very politically sensitive by actors of HHSK [D6; I03; I04; I13]. This was emphasized by the Indonesian interviewees. They stated that the Dutch must understand the character, culture, stakes at play and limitations of Indonesians [I03; I06; I18; I19: I22; I25; I26; OB17]. When in 2008, a new project leader was appointed who possessed the skills to deal with Indonesian context the project progressed faster [I04; I05]. This project leader recruited a retired "vice mayor" in 2008, who originated from Semarang, spoke the administrative language and was able to deal with the cultural sensitive situation in Semarang [I04]. According to a financial expert of HHSK, this person was important for the communication [I05]. It was noticed by a W+B engineer, that when he got involved it helped a lot in the project [I02]. Furthermore, both, the new project leader of HHSK and the Indonesian representatives of HHSK possessed good lobbying skills [I30].

Social resources

The Dutch W+B engineer, who lived for 1,5 years in Semarang, was trusted by the majority of the Indonesians and sometimes considered more Indonesian than Dutch [OB5; OB18]. He had the ability to get things done by lots of talking and had a feeling for sensitive issues. This made him the spider in the web [I02]. According to him the benefit of being white in Indonesia is that you can talk with all the levels in the hierarchy, something that was not always possible for Indonesians [I02; I08]. The project manager of W+B, (situated in the Netherlands) had strong social skills and a strong network,

through which for example, workshops about the project were provided [D6; OB28], but also network contacts within the Dutch embassy and maintained good contacts the director of PusAir [OB12].

Actors of HHSK were strong in relationship building and were strong in the government to government contacts [I02; I10]. Important in that process was the formal authority (equivalent of a mayor or higher Indonesia) of the chairmen of HHSK [I02; I03; D6]. Showing this formal authority in the first steering group meeting was necessary to awake interest of Indonesian government officials of the municipality for cooperation. [I03]. Furthermore, his network consisted of many high level contacts within the Dutch government, which was important in creating awareness among the Dutch government for this project [I03]. Also important was the formal status of "vice mayor" of an administrative representative of HHSK. Complementary, since 2006 a local representative was there to maintain contact with the local officials [I03, I04; I13], who possessed many personal contacts with public servants in Semarang [I04, Observed]. According to a W+B engineer, one of the success factors of the project is to have a local Indonesian representative [I08]. According to a W+B engineer, the process might have been easier if W+B had given them self some status, by acting as water representative of the Dutch government or something in that spirit [I02].

5.3.2 Resources of Indonesian actors

Financial resources

The main contributions of Indonesian actors during the process were in kind, thus human resources; or tangible assets. Later in the process, financial contributions were also made.

At the start, the municipality arranged for two offices with internet located in the mayors' office: one for the technical team and one for the institutional team [I03; D48]. During the entire project Bappeda arranged for meeting rooms and paid for the snacks [I13]. Places for the public hearings were also arranged with Bappeda in collaboration with the Keluarans and Rukun tengganga`s.

In 2007, there was a budget available of the central government to improve the flood situation in Semarang. This budget was sufficient to buy two pumps in advance for the pumping station [D17; D57]. This placed pressure on the project team to develop the requirements for the pumps. Since, in Indonesia it is not certain that the budget is still available in the next year [D63; OB18]. Also land was acquired and paid for by the municipality for the pumping station [I20]. The costs of land acquisitions of the land for the pumping station and the retention basin were mainly a compensation fee for removal of illegal housing. This was arranged by PSDA who moved about 105 families [D5; D57; D70; D76]. Also, the dike of a rain canal in the project area was improved and paid for by the municipality during the construction. [D47; OB14; I30].

In the course of the process there were several stimulus activities commenced by the municipality and PusAir, to change the culture of the people towards garbage and sanitation, i.e. making garbage a source of income. In 2011, the municipality granted ten machines to the inhabitants, which could make compost out of garbage [I11]. In the early stages of the project, PusAir already contributed a bigger machine to recycle garbage [I31]. However, there was no budget left for installation of the machine [D35]. The initial intention was to build a project office for the polder board in which the machine could be placed, only there was insufficient money for land reclamation and the office. As a result the machine stands still in Bandung [I32].

When the design was finished there were several options for finance available from the Indonesian side for construction of the polder. The costs of construction were estimated at IDR 85 Billion, about 6.8 million euro [D73; D25]. The first choice was funding available under a current loan from the JBIC area to improve flood management in Semarang [D10; D60; D72]. A second option was to put the

costs under the APBN budget of the central government [D60]. This budget was also used to acquire the pumps [D57; D17]. Other options were also explored with the World Bank and Asian development bank [D60]. Later in the process, it turned out that 35% of the construction could be financed with the Dutch ORIO grant. This meant that 65% of the construction costs should be paid by the Indonesian government. As the management of urban drainage systems in Semarang is a local government authority, it was expected that the province and municipality would cover these costs [D72]. Also, an option was worked out without ORIO finances, which was fully paid by Indonesian actors [D73].

Ultimately, the agreement stated that BBWS would improve the dike east of the area [D19], who allocated IDR 2.5 billion has been allocated for this [D70]. The municipality contributed IDR 22.3 billion rupiah for the construction of the pumping station [D19; D70]. The province IDR 22.3 billion for construction of the Northern dike, improvement of the secondary drainage and the kali banger. The upper structure, dam and retention basin would be financed with the ORIO money and executed by Cipta Karu [D73; OB3]. Application process for the ORIO grant was partly paid by PusAir and W+B who had a budget of IDR 200 million for the Banger project in 2011.

Human resources Indonesian actors

Indonesians actors provided a wide variety of human resources. Four departments of the municipality were the main providers of human resources: (1) Bappeda; (2) DPU; (3) PSDA; and (4) the legal department. Members of these departments participated together with Dutch actors in the institutional or the technical team. Members of Bappeda provided network expertise; acted as liaison and coordinator. These members arranged meetings, public hearings; inter-institutional relations and enabled access to different kinds of information [I11; I17; I18; I29; D53; D32]. For example they mediated between the technical team and PSDA when it was difficult to obtain data [I29]. Actors of the local department of Public Works actively participated in the technical team, providing context-specific knowledge about materials, information about the project area, local regulations and standards and other technical knowledge [D57]. BBWS provided the design team with the master plan of Semarang and survey data from the JBIC programme [D46] and sent employees to meetings when invited [I28]. During the technical process, several employees of PusAir were actively involved in the project. Two junior engineers were added to the technical team. According to a Dutch expert these engineers were there for learning, and did not have the experience to be actively involved in the discussions [I28; D61]. Actors acknowledged that PusAir has the most relevant technical knowledge of the Indonesians actors [I18; I29]. Additionally they provided information that was valued by Dutch expert, about for instance, rain intensity and standards about dikes in Indonesia [I31; I32].

Four universities used their human resources to support the project with their expertise and research. In the design process the University of Dipergoro and Parahiyangan University contributed to social and technical studies [I08]. One study concerned a cost benefit analysis of the polder used to design the dike heights [D26]. The analysis was later recalculated by Witteveen+Bos for not using the proper formula's [I02; I08].

In BBP Sima and in the preliminary polder board, professors from three universities (UNIKA, UNNISOLA, and UNDIP) contributed relevant knowledge. From UNIKA University, a professor with his students was involved. He devoted research and knowledge about the legal aspects of the polder board, network expertise about community actors and about solid waste management [I12]. From UNNISOLA University a professor supported the project with knowledge about water management levels and sediment. He already researched the sediment situation in Semarang for ten years [I20] and had access to social resources within the municipality and the province. The third professor in the

polder board and chairman contributed technical knowledge for supervision of the construction. Also he contributed water knowledge from his involvement in the development of the master plan in Semarang. All these professors studied abroad [I12; I20; I24] and had proper English skills; as a result they were a good medium to translate the technical aspects to other stakeholders within the project [I26].

The inhabitants in the polder board contributed knowledge about the social relations within the inhabitant organizations, to ensure the communication about the project targeted the real representatives of the inhabitants and not merely the political people [I13]. But also in public hearings and at other events they acted as spokesmen about the polder concept, towards inhabitants [I14; I31; I15; D51]. With the help of inhabitants, district leaders (Kecetemaan), and members in the polder board, information was gathered about the present water management problems in the area, sedimentation of the channels, water gates, and poorly functioning structures [D36; D54; D56]. Also during the construction, the inhabitants provided practical knowledge to support the activities, such as collection of photos of the construction and data about the dredging [Observed]. Two business representatives contributed knowledge about pump maintenance. The second business representative of the polder board focused on socialization activities [In literature socialization refers to the process in which individuals are prepared in participation in the social situation in which they manifest (Cogswell, 1968)].
Construction of the pumping station and land acquisition were dealt with by experts of the department of PSDA [I20]. Knowledge of PSDA about the construction aspects was questioned by various actors [I19; I29; I32]. A Dutch expert noted that PSDA is a small institution not experienced in big projects like the construction of a pumping station. He indicated that the budget sum of the pumping station is almost 1.5 times higher than their annual budget [I29]. During the construction, PusAir assisted with a team of about six members. PusAir was asked by PSDA after the collapse of the pumping station for technical assistance. Experts of PusAir made a review of the foundation. However when in this foundation was not build as design, due to possible budget shortages, technical difficulties or other motives. The expertise of the experts of PusAir and W+B was questioned by PSDA after difficulties emerged in the construction of the pumping station. To resolve the conflicting opinions between PusAir and W+B versus PSDA and the local contractor, PSDA hired an external expert to assist in the construction [OB11; OB14]. To settle the dispute PSDA hired a professor to review the design once again [OB16].

Social resources of Indonesian actors
Social resources of the public servants played a prominent role. One important individual actor was the director of PusAir; according to others his power and coordination skills were important for the process [I02; I03; I08; I18]. The director represented the central government and had the authority of two levels below ministry level [I09; I22, appendix 9.9.1]. His social network and power played a important role in arranging valuable resources [I03; OB24], for instance: high-level meetings within the central government [I03; I08; D75] for instance for the financing of the construction [D70]and follow-up activities; or forced involvement of Cipta Karya after they decided quit the process [I22; E2]; the resettlement of technical disputes [OB21]; and land acquisition for the retention basin from the national railroad company that at first was reluctant to provide the land [I02; D29; D41 D69]. The second actor involved with considerable power was the mayor of Semarang [I03; OB21]. He authorized the finances for a part of the construction the legal status for the Polder Board [I04; D74]. With the support of the mayor of Semarang his staffs was also willing to commit and give priority to the project [I04; I13] The Indonesian ambassador of the Indonesian Embassy in the Netherlands, committed himself personally to the project and welcomed delegations for this project [I03]. When negotiations for acquiring land of the Port Authority went slow and he heard about it. It was quickly arranged via his personal contact within the Port Authority [OB2; OB25]. The province of Semarang

got involved through a social contact within BBWS, after which HHSK involved the province, who eventually provided finances for the construction of the polder.

5.3.3 Synthesis

A large variety of resources is contributed by both the Dutch and Indonesian actors. Dutch actors provided financial resources for the process and expertise about polders and polder management. Indonesian actors provided context-specific expertise, information, resources in kind and social resources. Especially in the outcome phase Indonesians, also contributed financial resources. An overview of the main resources contributed is given in Table 11.

Resources	Dutch	Indonesian
Financial	• For the design • Institutional strengthening • Supporting activities • 35% of the construction	• Social, legal and technical studies • Supporting funds for BBP SIMA • 65 % of the construction • Land assets
Human	• Expertise about polders • Intercultural communicators • Project management	• Context-specific knowledge & information • Process management • Liaisons
Social	• Status • Personal relations with Indonesian public servants • Networks contacts in NL	• Context-specific authority • Networks contact to mobilize IN resources

Table 11 Main contributions of IN and NL actors

5.4 Evaluation of the process

This section evaluates the Banger project. The building blocks for the evaluation are formed in the evaluation framework for international water management projects of Vinke-de Kruijf et al. (accepted) that was explained in chapter 2 of this thesis. We first focus on the evaluation of the process of the project by evaluating indicators that have an effect on the criterion user engagement.

5.4.1 Stakeholder involvement

In the Banger project considerable effort was put into taking into account the interests of the local stakeholders [I08; D4]. According to most of the interviewees, all the relevant stakeholders were involved [I07; I11; I08; I17; I20; I32]. These were involved in the decision making process and consulted in various ways [I02; I13; D6; D25; D36; D37; D38; D46; D51; D52; D55; D56]:

- Three series of public hearings were organized to consult and involve the inhabitants on the Kecematan, RT and RW level.
- Workshops were given to inform, consult and educate public servants and other interested stakeholders about the polder principles.
- Two teams (institutional + technical) were formed at the operational level within the municipality. These teams met once every two weeks.
- A preliminary polder board was formed in which inhabitants and some university representatives participated.
- Monthly process meetings were held with key stakeholders that formed the local core decision-making process.
- Weekly and daily necessary stakeholders were consulted and informed when needed.

These measures ensured active involvement of the majority of local stakeholder's i.e. land owners, universities, inhabitants, businesses and utility companies during the design process. The institutional process was characterized by active involvement and consultation of the local communities [I04; I12; I13; I15; I32]. At the start, mainly inhabitants participated in the preliminary polder board [OB20]. Universities, businesses and the municipality became involved to a higher degree in the polder board during the process. Eventually, the final board BBP SIMA was formed. This polder board ensured

active involvement and consultation of all layers of society [I04]. In evaluating the structure of this board, various actors mentioned that companies or influential businessmen should have been involved to a higher extent [I03; I08; I17; I26; OB17].

In conclusion, relevant stakeholders were actively involved in this project. These stakeholders participated, were educated about polder principles, actively consulted and involved in the decision making process. This is regarded as a key feature of the project.

5.4.2 Institutional embedding

A key success factor was the active involvement of public servants from all layers of governance and especially the powerful public officials of the Indonesian central and local government [I02; I09; I19; OB3]. This was the result of situating the project under a Memorandum of Understanding as a twinning project [I10; D1]. Consequently, the higher-level Dutch public servants, such as the chairman of HHSK, the Dutch Embassy, actors from the Dutch Public Works or Delta-Coordinator were actively involved [I03; I06; I29; OB3].

These powerful public officials were actively involved via the steering group committee [I03; I18; OB3; D74]. Active involvement of the civil servants of the operational departments was arranged through the establishment of a technical and an institutional team. In the technical team, actors of the local public works from the municipality participated for developing the technical design and there was no indication that they were not actively involved [I02; D47; E3]. However, the provinces of Central Java and Cipta Karya, who had a prominent role during the construction, were not actively involved in the design process [I02; I08; I09; I13; I23; I29].

The ownership of the civil servants in the institutional team was relatively low when the project commenced [D9; I13], as only public servants of the operational level were involved in the beginning. These were assigned to the institutional team, but were not given sufficient time and different actors joined every meeting [I12; D9]. Their involvement improved when the institutional solution was actively supported by the mayor of Semarang [D9; I04; I05; I17]. This happened after the mayor participated in a steering group meeting in 2008; instead of the department heads on the operational level that were originally included because of their administrative responsibility [I13].

Institutional embedding was arranged quite well, since civil servants from multiple layers of government were actively involved in the process and had a clear role in the process. Still, some important government officials were not actively involved in the decision making process.

5.4.3 Integration of context-specific knowledge

The technical solution was developed in combining general expertise about polders of W+B with context-specific knowledge of the Indonesians.

- The technical team with local engineers of the municipality and PusAir provided local data, standards, and feedback [I32; D34; D37; D53; D54; D59; D69].
- In public hearings and from members of the polder board, practical information about dikes, broken infrastructure, social impact of the measures, and feedback was collected [I13; D31; D36; D67; OB7; OB16].
- Consultations with relevant stakeholders, such as utility companies.
- Universities supported the project with economic, social and technical research. [I02; I12; I16; D29; D80; OB13].
- W+B's experience with constructing polders in Indonesia and usage of local engineers [I08; I29; D80; D81].
- Generation of own data by W+B through observation about the local situation [OB7; I29; D80].

As a result of the application of context-specific knowledge, the polder design fits well into the existing infrastructure and is easy to maintain [I09; I10; I19; D84]. Subsequently, the construction costs of the design are relatively low compared to other projects [I07; I09; appendix 9.13]. Yet, integration of the design with the neighbouring JBIC area could, however, have been better [I29]. Furthermore, the tender documents did not follow the standards of the respective implementers, because of a lack of information about the standards of these implementers [I29].

To develop the institutional solution, HHSK contributed their expert knowledge about community based water management in the Dutch context. In Indonesia, the polder board concept was new and there was no legal base or commitment in the local communities [I03; I04; I12; I18; D9]. Therefore, the polder board needed to actively involve the natural leaders, not just the political leaders of the inhabitants. To connect to the local communities, generate ownership, and awareness for the solution among the inhabitants [I12; I32], the Indonesians developed the solution themselves in close assistance with HHSK [I04]. For that reason, each Indonesian expert working on the project was supported by a Dutch counterpart of HHSK [I04; I05; OB28]. In developing the solution the following contributions Indonesian of context-specific knowledge played an important role

- Universities: Garbage management in the project area, sediment transport in Semarang, legal, construction aspects, the master plan of Semarang for water [I12; I16; I21].
- Municipality: Local knowledge about water management, the legal system, local maintenance, and spatial planning. [I11; D86; D87; D88].
- Inhabitants,: Knowledge about the community structure and practical knowledge about the area [I14; I15].

Through the combination of this knowledge with the expertise of HHSK, a legal foundation and organizational structure for the polder board was found that was supported by a broad constellation of stakeholders. Furthermore, the chosen constellation of members of the polder board provides a mix of capabilities needed for the future operation and maintenance of the polder.

5.4.4 Mutual understanding in communication

In the technical process, the language barrier did not play a serious role [I02; I11; I13; I16]. Most of the W+B engineers spoke Bahasa Indonesia or were native Indonesian [I10; I08; I29; OB7]. Also the cultural barrier played a minor role, as the Dutch project leader and manager were well integrated into the local culture [I02; I10; OB7].

In the institutional process, the Dutch experts of HHSK were only skilled in English and at first not really used to the Indonesian culture [I04; I05; D9; I13]. The language was not considered an important barrier [I05; I13]. Since, continuous presence of liaisons and representatives who could were skilled in bahasa Indonesia of HHSK could bridge this language gap [I03; D9]. However, at the start of the project, difficulties arose with regards to communication. This was partly the result of the emphasis on verbal and written communication in Indonesia. The Dutch actors, on the other hand, relied more on electronic means of communication [I13; D63]. The presence of a local coordinator to physically print and deliver the e-mails improved the communication [D9; I13]. In overcoming the cultural gap that was present in the beginning of the project, the employment of an Indonesian who knew the customs, had the correct status to speak with the higher officials of the government, and a change of project leadership helped considerably [I04; I12; I13; I26; OB3]. This improved the speed and effectiveness of the process [I04; I26; D9; OB3; OB18]. In general, it was considered important that Dutch actors need to take into account the culture and limitations of Indonesians [I01; I03; I04; ;I06; I08; I10; I13; I19 ;OB3].

In the communication regarding the technical aspects, barriers were present. Technical language was not always well understood [I08] and Indonesians had difficulties in seeing the polder solutions as an

integral solution [I08; I10; D9; D83]. What contributed to reaching some mutual understanding about the polder concept was:

- The creation of a simple scale model of the polder [I02; I32; OB1].
- Educational workshops/courses about the polder principles [D80; D81; D82; I02; OB28].
- The presence of professors in the polder board who could explain the technical parts of the polder to explain the concept to other stakeholders [I16; I29].
- The creation of guidelines about polder development in Indonesia [I07].
- Sufficient formal and informal face-to-face communication [I02; I113; I15; I16; D68]

As a result, technical actors that were actively involved understood the polder system. Other actors had more difficulties understanding the system [I08; I30; I33; OB16]. One of the reasons why the language communication barrier had a low effect on the cooperation was the effect of the high number of liaisons and actors who could speak English and Bahasa Indonesia [I07; I09; I12; I16; I19; I17; I21; I26]. Also, the intenseness and time given for communication was seen as one of the key success factors in the project [I02; I06; I07; I09; D9]. This contributed to overcome the cultural and knowledge related barriers [D9]. We conclude that the actors actively involved in the process developed a similar understanding of the polder concept.

5.4.5 Pro-active diffusion strategy

Diffusion was an important objective of the project. Since the start of the project, replicating the polder concept was one of the common denominators. The following activities were part of this strategy:

- The city of Semarang was chosen to implement the polder concept, as the problem-context was considered representative for other Indonesian cities [I08; I10; D4].
- The status of a pilot project resulted in the active involvement of PusAir, which had the objective to find a suitable solution for the urban flood problems in Indonesia.
- Dutch actors in cooperation with Indonesian actors gave workshops, public hearings, seminars and discussed the Banger polder. In order to generate awareness and interest of public officials with decision making capabilities within Indonesia and the Netherlands [I02; I03; D70; D72; D80; D81; D82; OB24].
- The constellation of board members in combination with the organizational structure of BBP SIMA makes the community based maintenance organization easily replicable to other areas in Semarang [I04].
- In the polder board, scholars are present who regularly publish about the Banger pilot polder, which increases the awareness of the project to the scientific community.

In conclusion, an early proactive diffusion strategy was applied.

5.4.6 Adaptive management

The development of the technical solution followed a process based on learning-by-doing [I02; I29; OB8]. In the course of the process changes were made, due to new insights and circumstances [I02; D75; D82]. Examples and effects of these changes were discussed in paragraph 4.4.2. The adaptive attitude of an W+B Dutch engineer mainly involved in the design contributed to this [I19; D82; OB29]. This attitude was further important for the tendering phase, as Indonesians wanted to make changes to the design or tender documents that needed the signature of W+B in order to commence the construction. As a result, the design fits well with existing infrastructure and has the commitment of the Indonesian government for implementation [I09; I10; I19]. Furthermore the dikes are designed to adapt to the future effects of land subsidence [I02; D79].

The institutional process first did not connect to the local Indonesian situation, due to a cultural gap [I13; D9]. Later on, when a new project leader joined, this improved [I04; I05]. The emphasis of this project was on the building of trust and the search for solutions that would fit both the local stakeholder inhabitants and the municipality. This meant that there were no strict planning, goals or deadlines. Only the guiding vision about the establishment of a community based organization for polder management [I04; I13; D75]. This strategy was characterized by actors of HHSK as a process oriented approach [I04; I13].

We can state that adaptive management was applied. The institutional process was strongly characterized by adaptive management. The technical process was on the other hand more characterized by a stricter schedule and predetermined process, but when adapted when neccesary to emerging circumstances.

5.5 Evaluation of the outcomes

This section describes the outcomes of the process. In the conceptual framework a distinction was made between the immediate outcomes of the interaction process that are assumed to lead to the ultimate outcomes: (1) a motivating goal, (2) a negotiated knowledge base, (3) mobilization necessary resources, and (4) positive relational experiences. The ultimate outcomes were defind as: (1) solving the water related problems and (2) follow-up.

5.5.1 Motivating goal

Originally, the actors participated from their own objectives and interests. Indonesian actors were at first mainly motivated for the technical polder solution [I03; I12; I13]. Later, when trust was established between Dutch and Indonesian actors, motivation of Indonesian government officials for the institutional process increased [I03]. The motivation of actors participating in the institutional team went with ups and downs, as until 2009 there were not many tangible results. Therefore supporting activities for the project, such as a garbage competition were important to maintain motivation [I12; OB15]. As the case progressed the actors developed a common goal - to solve the problem of flood and tidal-floods in Semarang and the Banger area [I02, I08, I11; I13; I16; I18, I17, I21; I23, OB03; D52]. In addition to the initial mutual goal formed by W+B and PusAir in the start of the project - to develop a model urban flood management together [I07; I08].

In formulating the mutual goal the Dutch actors had a prominent role [I02; I04; I29; D6]. Also visits of the powerful public officials to Netherlands to see the effectiveness of the Dutch system, together with the presence of Dutch actors in Semarang had a positive influence on the motivation of Indonesians [I07; I10; I13; I15; I31; OB10].

5.5.2 Negotiated knowledge

Through joint-fact finding about the nature of the flood related problems and joint development of possible scenario`s for the polder scope, trace, organizational form, and design standards, of the actors with practical and expert knowledge whom were involved in process. The currently being implement technical and institutional solution was agreed upon [I02; I07; I08; I17; I18; I30; OB7; D76; D83; D35; D52; D80]. Thus a negotiated knowledge base was formed. Consequently, Indonesians gained some understanding about the nature of the flood related problems and the polder concept, as a solution for those problems [I12; I13; I16; I33].

Actors that did not actively participate in the design process, but were actively involved with the JBIC project developed a diverging knowledge base [I20; I23: I25; I29; I33]. These actors were actively looking for opportunities in the construction to change the project, the scope and its boundaries [OB7; OB21; OB29; D89]. Furthermore applied norms, standards and methods to execute the

construction were contested [I29; OB7; OB11; OB14; OB16]. Active involvement of Dutch actors could have aided in building a negotiated knowledge base with these actors. Than Dutch actors could explain upon the previous decisions made in the design process or help in raising a understanding for the current design. Since actors stated that there was need for assistance of Dutch experts during the construction process [I08; I19; I20; I25; I28; I29; I32; I30; I33; OB7].

In addition, in the transition from design to construction there was a change in human resources within the Indonesian government, due to promotions, political reasons, or other motives [I12; I13; I16]. This had an important impact on the course of the project. Because of their former involvement these acors of BBWS; PSDA; Bappeda and the mayor of Semarang, supported, coordinated and had some understanding about the project were absent during the construction [I04; I13; I17; I18; OB28; OB29]. The actors who replaced those ones did not always adapted in favour of the project and did not share those characteristics [I16; I22].

The learning oriented process resulted in a common knowledge base that was agreed upon among actors actively engaged in the process. Actors that were not actively involved were more likely to oppose this knowledge.

5.5.3 Mobilization of the necessary resources

The commitment of the Indonesian government was essential in securing the necessary financial resources for the physical construction. They played a central role in the coordination for mobilizing sufficient financial resources for the physical construction [D9; D70; D72; OB24]. The ORIO grant 35% finances of the construction costs. However, the long lasting application procedure of this grants resulted in confusion about continuation of the project, and a lack of finances for the supervision of Dutch actors during the construction. Consequently there was no time for active discussion about the design, less coordination between actors, and maybe the collapse of the construction of the pumping station could have been avoided [E1; I09; I23; I25; I31; OB2; OB3]. Another concern is delay, if a budget is unused in the fiscal period it has been assigned for; there is large uncertainty if the budget will get reassigned again in Indonesia [OB9; OB18]. Which implicate that mobilized resources can be withdrawn. This is further endagerd by government officials that have obstruction power to the necessary resources or don`t have the necessary incentive to be fully commited to this project [OB24].

The land necessary for most of the flood related measures was owned by state companies (i.e. PT Kai; PT Pelindo; Bina Marga). Involvement of these stakeholders in the process contributed in acquisition of these lands [D38; D41; D52; D59]. However, the deciding factor to contribute their lands was the social network ties between the directors of these state companies and government officials [OB2; OB24; OB28]. The result was that eventually sufficient land for construction of all polder measures was mobilized.

The most substantial resource mobilized in the process for the institutional solution was the power of the mayor of Semarang. His support provided the polder board with the required means to act [I04; D9]. Also, there is commitment from inhabitants to actively participate in the polder board [I14; I15; 33]. To guarantee the sustainable functioning of the polder board not all the resources are mobilized yet:

- The legal status of the polder needs to extend by the mayor degree in 2013 [OB30.
- Inhabitants need to become further aware about their responsibilities for maintaining a clean environment.
- The local stakeholders need to be willing to contribute financial 65% of the resources for operation and maintenance, which might be difficult if their neighbours in the JICA area will

not need to pay for maintenance [I13; I30; OB3]. The other 35% of the O&M budget is expected to be financed through the ORIO programme [I10; OB3].

Resources for the transition period from construction to operation, the assistance of the polder board for capacity building and part of the O&M Budget are available:

- The municipality and HHSK provided some funds for the operation and maintenance for the transition period from construction until completion of the polder [I04; I11].
- HHSK is willing to support the polder board for the upcoming five years with capacity building [I04].
- The actors' constellation of the polder board with inhabitants, municipality, universities and business representative will contribute to the access of necessary knowledge needed for the future operation and maintenance of the polder.

In short, most of the resources for the physical construction of the project were mobilized but not on time and these resources are subject to uncertainty. For the polder board, the resources for current operation were mobilised. To ensure a sustainable operation there are still some uncertainties about the financial side, the continuation of the legal degree, and in raising the awareness of inhabitants.

5.5.4 Relational experiences

A strength of the case was the development of personal relations and trust between Dutch and Indonesian key actors [I06]. The long project duration and intenseness of interaction contributed to this. The long duration gave a sense of togetherness to the actors involved [I17].

Good relations based on trust were established with W+B and technical Indonesian actors. The actors in design process were a solid team with good relations with PSDA, Bappeda, the province and PusAir [I32; OB15; OB21; OB24]. PusAir was also willing to continue the cooperation with W+B after the design process into the construction and in other projects [OB24; OB26]. Especially a Dutch actor with strong intercultural communication skills; who was engaged in many social activities in Semarang; was valued for his expertise about polders; contributed to the development of positive trustful relationships [I02; I11; I19; I31; OB7; OB15].

HHSK proved to be strong in building relations with government officials located in the higher levels of governance from the Netherlands and Indonesia [I02; I03; I04; I17]. Building a good relation with Indonesian public officials was part of the strategy of HHSK. Time and resources were devoted for relationship building [I03; I04; D73]. A former "vice mayor" who possessed the skills to talk to Indonesian public officials was hired for developing positive relations with powerful Indonesian public officials [I04; OB28]. Being locally represented was important in creating positive relations with public servant on the operational level [I03; D6]. What further played a role in the development of relations was the public administrative status of the chairmen of HHSK (former mayor), which authorized HHSK to talk to Indonesian public officials with decision making capabilities [I02; I03; I04; I10]. Overall, competences and skills of individual Dutch and Indonesian actors played an important role in establishing these relations [I04; I05; I10; I13; I18; I19].

The result of these conditions was that a trustful relation between the old en new mayor of Semarang and the director of HHSK, the public administrative representative and the project leader of HHSK was established [I03; I04; I17 OB18]. Actors of HHSK and the municipality are willing to build-up a longer institutional relationship [I04; I05; I11; OB3; OB21]. Intentions are there between HHSK and PusAir to cooperate in setting-up a training facility for operation and maintenance in Indonesia [I07]. HHSK further spoke out the intention to keep collaborating with W+B future projects and during the construction [I03; I04].

5.5.5 Ultimate Outcomes – Programme goals

Solving of the flood related problems

The goal of the project is to solve the flood related problems in the Banger area. This will eventually improve the living conditions, the health and welfare of the people living in Semarang [D14]. When dry, the area will have substantial potential for economic development [D14; I14; I33; I28]. In solving the flood related problems, the integrated approach between "hard" technical and "soft" participatory institutional measures, increases the effectiveness of the project [I04; I06; I10; I11; I26; D10; OB3].

The technical measures are currently being implemented and are expected to be finalized in 2013. It is quite certain that the technical measures will be implemented, as there is the motivation, agreement, and sufficient resources to finalize the polder. In addition, there will be social unrest, loss of invested resources, but perhaps more significant in the Indonesian context the loss of face of powerful government officials when the construction will not be finalized [I10; I33; OB8; OB24]. These technical measures will solve the flood related problems on the short-term.

The extent of problem solving will depend on the quality of the construction and if it is build in accordance to the design specifications. In observation of the construction process some parts were not constructed to the design specifications. This was a result of weak capacity, commitment, and the low responsibility level of local contractors [I10; I16; I17; OB3; OB27; D9; D76]. Good supervision of Dutch actors is considered to have a positive influence on the construction process [I04; D9; OB07; OB14; OB16; OB21].

To ensure that the flood related problems will be solved for the long term, it is partly the sustainability of the design what contributes to this. But most important, the sustainability of the solution will primarily rely on the functioning of the water board to ensure that the polder will keep functioning after construction [I02; I18; I22]. This will hinge on: (1) the continuity of the legal status of the polder board that expiries in 2013 [I13; OB3]; (2) the willingness of the local stakeholders to pay for the maintenance organization [I02; I13; I15; I22]; (3) capacity of the organization [I04; I11]; (4) the awareness of the inhabitants in dealing with the garbage to create a clean living environment, otherwise the future pumping station and drainage canals will get clogged [I17; I18; I22; I32]. Keeping these uncertainties in mind and based on the motivations, cognitions of actors, and resources that were already mobilized that were described in the previous paragraphs. It can be stated that the water board is probably able to operate and maintain the polder area, to keep the area dry.

Furthermore some preliminary outcomes of the process that contribute to problems solving are already visible. The area floods less regularly [I30]; in combining the efforts of the RT and RW organizations, the garbage and waste handling has improved slightly [OB2; OB17], illegally placed house were removed from the river banks; and the project area looks cleaner than at the project start-up [I22; I30; OB3; OB17; figure 14].

Figure 14 the Kali Banger river situations in 2007, and the situation in 2011

Considering the current implementation activities of the polder concept, the change in actor characteristics (i.e. motivation, cognitions, and resources), the outlook and the preliminary results we conclude that it is fairly likely that the flood related problems will be reduced in the Banger area. But this will depend on the quality of the construction and the capabilities of the operation and maintenance organization, i.e. BBP SIMA.

Follow-up projects based on this project

The second ultimate outcome of the case is to replicate the polder concept in other parts of Indonesia, to lead to new economic opportunities for the Dutch water sector. What contributes to this objective is to proof that the integral polder concept is a sustainable and suitable solution for Indonesia to cope with floods in urban delta areas [I07; I10; OB18; OB24; D14]. So far the project successfully showed that Dutch actors had expert knowledge in water management [I09; I11; I12; I14; I15; I16; I18; I19; I21; I22; I26; I30; I32].

The project achieved that higher government officials have expressed an interest to replicate the polder concept in other cities facing similar problems [I03; I07; I28; OB3]. The community based maintenance organization is perceived as an interesting solution for the maintenance problem [OB3; I15; I16; I19; I22]. In response of the project, the national government of Indonesia has intentions to collaborate with HHSK to set-up an educational centre for maintenance [I07]. The replication of the water board within Semarang might occur through an expected change in regulation by the local government of Semarang for the Drainage Master Plan [D9]. Follow-up of the water board in Indonesia will depend on the proof of success and the water boards' ability to deal with vested interest of government institutions [I18; OB24]. Until that time a wait and see mentality will be present regarding the maintenance organization in the present form [OB24].

Furthermore, the polder concept is already discussed with other major cities in Indonesia, such as Palembang [I07; I08; I09; I10; I22; OB24] and a list is present with 31 possible locations to replicate the concept [OB28]. Follow-up for this project will depend on the availability of resources, but has not occurred yet. However follow-up based on the project may have occurred but this was not question in the interviews. W+B is involved in the development of private polders in the coast of Jakarta and with the development of a master plan to protect Jakarta from the effects of land subsidence together with PusAir and other Dutch companies.

A concrete result of the cooperation between the Dutch parties is that HHSK has the intention to form a strategic alliance with W+B for similar projects in the Asian region. Also, in the Dutch context and Indonesian context W+B was hired by HHSK for water related projects based on the positive relational experiences [I03; I04; OB4].

The polder concept is considered as a feasible solution by Indonesian government officials. There is initiative for follow-up activities, but obvious concrete economic follow-up for the Dutch water sector based on this project has not occurred yet in the Indonesian context.

6 Discussion & Reflection

In this chapter we discuss and reflect upon the findings in relation to the methodology and the conceptual framework we have used. We will first discuss the influence of context in section 6.1. Subsequently, the interaction process is addressed (Section 6.2). Next, in section 6.3 we discuss the factors that lead to effectiveness based on our theoretical perspective. Then, in section 6.4, we reflect on the applied theory. Finally, the findings in relation to effectiveness of the project are reflected on in section 6.5.

6.1 The Interaction between context and actor characteristics

We assumed that the context influences the interaction process via the key-actor characteristics. To analyse the influence of context we distinguished between three encompassing layers of context: (1) the wider, (2) the public-administrative, and (3) the specific context (Bressers, 2009). We also observed this in the case.

In the wider context, economics, culture, technology, political, and problem context were identified as the main variables (Bressers, 2007). This concurs with our investigation of the case. For example, an economic crisis in the Netherlands resulted in a lack of finances for Dutch actors and influenced the perceptions of Indonesian actors. Technology affected the interaction process by means of communication. Politics influenced the mayor on duty and his motive to be involved for re-election. Culture determined the informal rules of interaction and therefore the way the actors interacted with each other (Markus & Kitayama, 1991; Hofstede 2010). Societal status, working culture, political processes; hierarchy, risk aversion, and the indirect way of Indonesian communication versus the more direct and informal Dutch culture played a prominent role. The urban flooding problem in Indonesia shaped the problem and specific context of the case. Clear visibility of the flooding problem resulted in a recognition for change and a mutual understanding and motivation to solve the flood issue. This concurs with our viewpoint that actors need recognition for change (Hayes, 2010). We state therefore that problem pressure is the most important contextual factor, as it is a prerequisite for all other variables to be relevant. This is followed by culture, as it directly influences the effectiveness of interaction through the rules of interaction.

The public administrative context influenced the interaction process through the structure and responsibilities of the public administration in Indonesia. It determined the involvement of PusAir and other actors responsible for water management. We also observed that the access to information was asymmetric, authority was centralized and the focus was on personal relationships. This conforms to literature that states the Indonesian public administrative context is dominated by the informal legal model (Gray, 1991, see appendix 9.10). A development in this layer was the major shift of fiscal autonomy and responsibility of water management to the local and provincial levels of governance (Herman, 2002; Teeuwen 2011). As a result, the province and municipality became responsible for Semarang's water management. This affected their motives and relevance of necessary public servants involved in the interaction process.

In the case-specific context, the decision to place the case as a pilot project under a MoU played an important role. Consequently, powerful public officials were involved from both the Netherlands and Indonesia, encompassing the project with a certain political status. The pilot status implicated that the project was designed as learning-oriented. Therefore, capacity building, workshops, public hearings and other means were applied that resulted in active learning about the polder principles. This, in turn, positively influenced user engagement and creation of a common knowledge base. The pilot status also affected the attitudes and willingness of actors to allocate additional resources.

Actors were willing to adapt to changing circumstances and were less critical about drawbacks in the process. This finding confirms previous research regarding pilot projects (Vreugdehill et al. 2010).

A reciprocal relation was observed between the interaction process and case context. For instance, the creation of the polder board for management of the polder changed the responsibilities of existing organizations in the polder area. As a result, the local public administrative context changed. Furthermore the habits of inhabitants towards garbage are slowly changing positively. This is a cultural variable that shows that the process had an influence on the context. Therefore, our findings confirm our assumption that there is a reciprocal relation between context and the key actor characteristics (Bressers, 2007). This observation has implications for practice, as the further away a factor in the wider, public administrative, or context-specific environment is situated from the "core process", such as culture, the harder it is to influence the layer through the key characteristics of actors.

6.2 The actors characteristics and interaction process

We assume that actors have different motives, cognitions and resources. Through interaction, actors can arrive at a mutual goal; a shared cognition and mobilize the necessary resources for the implementation of a project (Bressers, 2007). We also observed this in our case.

Motivation and objectives diverged among the actors. Initially, Dutch actors were motivated by a positive self-effectiveness assessment. Indonesian actors were then again more motivated through external pressures and the belief that their effort could positively change the problematic situation. Actors pursued their own objectives, but during the process, the mutual objective to solve the floods and rob was formed. We also observed that when the results became more tangible, the status of the project increased. As a result, the motivation increased, actors were willing to invest resources and to cope with drawbacks in the process. This confirms our assumption that feedback loops exists, as process and outcomes of the project developed parallelly and interacted with each other (Vinke-de Kruijf, 2011).

Cognitions of the actors about the nature of the problem and understanding about the polder as the solution developed throughout the process. Dutch actors had a vision about the eventual solution and through joint fact finding, capacity building, visualization of the polder, educational courses, public hearings, and formal and informal face-to-face meetings. Especially the cognition of the Indonesian actors regarding the nature of the problems and the solution changed. Innitially the problems were seen as socially constructed, problems were dealth with in isolation, and troublesome long-term effects were not taken into consideration. This cognition changed partly and as result, the actors agreed upon the Dutch vision and recognized the polder concept as a suitable solution for the flood problems in Semarang and in other cities. This shows that communicating and developing a shared vision is needed to achieve change (Hayes, 2010, p.170).

Resources of the actors needed to be combined in order to come to implementation. Dutch actors had expert human resources about polder development and financial resources to develop the solution. Indonesian actors possessed context-specific knowledge and information. They had the necessary power to set up legal regulations and tender procedures, possessed financial resources, such as land and finances for the construction. When these resources were combined and sufficient resources were mobilized, the case went into implementation. This confirms the underlying assumption of this research that Dutch funded international management projects are characterized by mutual dependency (Klijn & Thijsman, 2002; Bressers, 2007). In combining these resources new ones developed, such trusts (social capital) and the increase of capacity (knowledge) about polder

development among Indonesian that participated. The creation of these resources are observed to influence the likeliness of follow-up activities.

6.3 Evaluation of the results that contribute to the effectiveness

We postulated that the framework of Vinke-de Kruijf (2011) could be used to evaluate the findings of our research, i.e. change in motivation, cognition, and resources. Based on this evaluation, factors that contribute to the effectiveness of the interaction process can be identified. The framework measures the positive effect of user engagement in the process. It is based on the assumption that user engagement mediates the ultimate outcomes of the case through the key characteristics of the relevant actors (Vinke-de Kruijf et al., accepted). We observed that the effectiveness of the project could mainly be explained and evaluated through these criteria.

The active involvement of the people living in the area (universities, business, inhabitants) and of representatives of all layers of government resulted in commitment of these actors and their willingness to contribute relevant resources. Furthermore, these actors created a mutual understanding about the problems that result in flood related issues and supported the solution. This observation supports our argument to measure user engagement, as the active involvement of (local) stakeholders is needed to access context-specific knowledge (Eshuis & Stuiver, 2005; Hommes et al. 2008). Application of the context-specific knowledge by actively involving the local stakeholders and instituitions in the decision making process resulted in a solution that fits well and was broadly supported in the local context. Active participation in the creation of knowledge leads to support and acceptance of the developed solution (Kotter & Schlesinger, 1979; Hommes et al., 2008). This view is strengthened, as actors that were involved to a lesser extent in the process were more likely to contest and argue upon the developed knowledge and solution.

Especially the active involvement of powerful government officials in the hierarchical and politically oriented Indonesian culture was vital for the process. Their influence mediated the necessary conditions needed for implementation i.e., the active involvement of lower level public servants, dealing with vested interest, high level political status, access to social and financial resources, and for follow-up initiatives. This need for powerful actors in the process is acknowledged by other scholars (Kotter, 1995; Hayes, 2010; Kikkeri & Ramu, 2004) and confirms our statement.

To actively engage users in the process and to positively change actors' characteristics, the creation of a mutual understanding in communication was a necessity. The creation of an understanding about the polder as a solution for the problem and the "world views" of Dutch and Indonesian actors proved to have a positive influence on the immediate outcomes of the case. The large amount of face-to-face interaction experience, such as formal, informal meetings, educational courses, visualization of the polder and training and the development of guidelines contributed to this. Sufficient face-to-face communication is required for the sharing of tacit knowledge and to overcome different "world views" (Koskinen et al., 2003). This high degree interaction was facilitated through the continuous presence of Dutch actors and the long project duration. This long degree of interaction also resulted in the development of trust and the sense of togetherness among actors. Individual actors, which had a feeling for the cultural rules of interaction, were observed to be more effective in reaching a mutual understanding in communication and building personal relationships.

Personal relations based on trust played an important role for Indonesian actors in their willingness to cooperate in using their capabilities, resources, and in initiating follow-up activities. These personal relationships take time to develop, but lower the transactions cost of working together, influence the likelihood of follow-up activities and are of special concern in emerging economies (Grey, 1991; Pretty, 2003; Ralston et al. 2007, Vinke-de Kruijf 2011). These relationships, together with the

application of a pro-active diffusion strategy, resulted in active involvement of powerful actors from the Indonesian government, whom played a central role in follow-up activities. That is expected to emerge from this project. It supports the argument that a pro-active diffusion strategy should be applied early in the process (Vreugendenhil, 2010).

What further contributed to the process was the adaptive character of the management in the case. Due to learning experiences, changes were made to the respective design. As a result of these changes, the designs were supported among a wider stakeholder base. This implicates that the process of water management projects should be adapted to changing circumstances. (Leeuwis and Van den Ban, 2004 in Vinke-de Kruijf et al., accepted). In general observance of the application of the framework of Vinke-de Kruif (2011) it are the factors that enable the neccesarry learning experiences for the envisioned change in actors characteristics that lead to problem-solving and follow-up. Stressing that bilateral projects should be learning oriented.

In the findings, not only process-oriented factors had an effect on the effectiveness of the case. The network and process expertise of individual actors had a considerable impact on the case process.
Actors that were mainly involved with the project management to influence, motivate, took ownership position and enabled other actors to participate in or contribute to the process were essential to keep the process moving forward. When these actors did not take initiative or did not have an active role in the construction, there was lack of active sharing of information and cooperation between actors.

6.4 Reflection on theoretical concepts

The Contextual Interaction Theory of Bressers (2004; 2007; 2009) was the main theory applied in this research. The theory explained to us the dynamics that lead to the implementation of the case. The theory does not cover the path that leads to the ultimate outcomes of the project, e.g. problem solving and follow-up. Therefore, the evaluation framework of Vinke-de Kruijf et al. (2011) that provides process and outcome criteria, which lead to the achievement of these ultimate outcomes, was applied. The process was measured via user engagement through six variables. These six variables were observed to have an explanatory power regarding the effectiveness of the process. We conclude that the framework of Vinke-de Kruijf (2011) is a good tool for setting the strategy to approach international water management projects.

Furthermore, in studying the case we observed that learning experiences change the actor characteristics and are therefore of essence for an effective process. For, instance when government actors learned that the status of the chairmen of HHSK was equivalent to that of a mayor, instead of the perception that HHSK was a non-governmental organization. Then the Indonesians were more willing to cooperate. In our theoretical review, we recognized that actor characteristics change through learning experiences (Alearts & Kasperma, 2009; Muro & Jeffrey, 2008) and stressed the importance of learning (Vinke-de Kruijf 2009b; 2011; Scheltinga et al., 2009; Kotter & Schlesinger, 1989). However, we did not identify factors that lead to effective learning experiences. As initially our research focused on explaining the role of the Dutch, instead of explaining the factors that lead to effective international water management projects. Identification of the factors that contribute to effective learning experiences could therefore have strengthened our study.

6.5 Reflection on the methodology and research process

As a research design, the single-case study strategy was the proper choice for the in-depth analysis of the case. Triangulation of data ensured internal validity (Saunders, 2008). The 28 direct observations provided useful insights into interpersonal behaviour of the actors. Physical artefacts of the process became visible to us through these observations (Yin, 1994 p.80). Analysis of 90

documents provided us with useful insights into the chain of events that led to the current state of the polder. The 33 interviews gave us in-depth insights in the perceived causal inferences we wanted to measure on the actor level (Babbie, 2007). Based on the amount of data and triangulation, we are confident that strong internal validity is ensured. Still, we acknowledge that there are some limitations that affect the validity of our findings.

Firstly, we studied the institutional and technical processes, since both processes are closely related, and both affect the effectiveness of the future solution. The complexity of the case and the amount of data needed to ensure strong internal validity could have been limited if we had only focused on the technical process. However, in our enthusiasm, we chose to study both processes. This meant that trade-offs needed to be made in describing the case process, as our writing space was limited. This decision took more time, but was necessary to understand the process that led to the mobilization of necessary resources.

Secondly, we planned to use a qualitative data analysis program for analysis of the data. Codes were created and some documents were analyzed, but this was considered too time consuming. Therefore we analyzed the data through reading it and directly writing it down, referring strictly to the original interview or other source of data to ensure reliability of the study. Using this strategy, we noticed that we lacked oversight. Therefore, another case study database for the interviews was created for analysis of the data. If we had continued using the qualitative analysis programme, it would have allowed us to process the entire body of data more efficiently. This would have improved the reliability of the study.

Thirdly, a threat to the internal validity of the study is the loss of participants we intended to interview (Shadish, Cook & Campbell, 2002). Three Indonesian actors actively involved in the design phase were not interviewed. These actors were moved to other departments or were promoted and proved difficult to contact. Another bias in the research was the language gap. Therefore, a translator was hired, an MSc student in English. While interviewing, we noticed that his answers were biased, due to insufficient skills. Therefore, for the most important actors, we tried to use another translator who was less available. These interviews were reviewed with this translator to improve internal validity (Saunders, 2008). Another threat to internal validity was the maturation of the actors (Shadish, Cook& Campbell, 2002). Since we measured the characteristics of actors four years after the start of the case period, it was difficult to collect the original perception of the actors. Therefore the research is based on assumptions of the original perception, supported by documents to show the history of event.

Fourthly, Indonesia is a country with a relatively closed culture, where people will not easily express critical views (Kasperma, 2009). To cope with this bias we attended all possible project meetings and engaged in social activities with Indonesian actors to create social bonds. Through these relations, more open views were expressed and actors initially not available for interviews were willing to cooperate. This contributed to the internal validity of our research.

External validity is more difficult to ensure in a single case study. It is to be achieved from theoretical relationships, and from these generalizations can be made (Yin, 2003). Therefore we used this case to test the evaluation framework of Vinke-de Kruijf (2011) that, prior to this research, was only used in the Romanian context. Application in the Indonesian context showed the relevance of the framework for evaluating the effectiveness of the case. We can therefore state that this study contributes to the generalizability of the evaluation framework of Vinke-de Kruijf (2011), and its underlying Contextual Interaction Theory of Bressers (2004; 2009).

Regarding the case specific conditions that we observed to influence the effectiveness of the case, (i.e. the focus on learning, the involvement of powerful government actors, competent intercultural

communicators, and the status of a pilot project). These conditions were in other studies also observed to have a positive influence on the results (Vreugdehill, 2010; Herman, 2002; Ramu, 2004; Kort, 2011, Arasaratban & Doerfel, 2005). We therefore argue that the evaluation framework of (Vinke-de Kruijf, 2011) can and the case specific conditions might be generalized towards other bilateral projects that are aided by funding programme`s, in which actors a mutually dependend on each other.

7 Conclusions and recommendations

This chapter presents the conclusion of this study in section 7.1. Directions for future research are discussed in section 7.2, followed by recommendations resulting from this research (section 7.3).

7.1 Conclusion

Dutch-funded international water management projects are not equally effective in all cases. To make future projects more effective, this research analysed, evaluated and explained the effectiveness of the Dutch-funded Banger pilot polder project in Semarang, Indonesia, by answering the main research question of this thesis:

What factors contribute to the effectiveness of the Dutch-funded Banger pilot polder project in Semarang, Indonesia?

To answer this question, effectiveness was defined as the degree to which the process produces the intended outcomes. These intended outcomes vary across persons and settings. We therefore assess the likelihood that the more overlapping and ultimate outcomes of the project will be achieved:(1) reduction of flood-related problems in the Banger area, and (2) follow-up for the Dutch water sector.

A conceptual model was developed to analyse the likelihood that the ultimate goals will be obtained and to determine which factors will contribute to this result. The model assumes that the achievement of the ultimate outcomes is the results of the immediate outcomes of the process of dynamic interaction between the actor's key characteristics, i.e. motivation, cognitions, resources, and the context. When actors arrive at a common goal, a negotiated knowledge base, mobilize the necessary resources and develop positive relational experiences there is a high likelihood the ultimate outcomes will be achieved. In the process, user engagement was assumed to have a positive effect on the immediate outcomes. The six criteria used to evaluate the case were derived from literature and establish proven factors that contribute to the effectiveness of the case process. These factors are stakeholder involvement, institutional embedding, application of context-specific knowledge, a mutual understanding in communication, application of a pro-active diffusion strategy, and adaptive management.

Evaluation of the case with these process criteria showed that the project scored well on stakeholder involvement, adaptive management and on the application of a pro-active diffusion strategy. Institutional embedding and the application of context-specific knowledge were both well arranged, but did not include all the relevant actors and information. A mutual understanding in communication was developed throughout the process, but at the start, especially between HHSK and the Indonesian government a cultural gap was present.

The interaction process led to the implementation of the technical and institutional measures of the polder concept in Indonesia. The immediate outcomes showed that the key actors developed a mutual goal – to solve floods in Semarang – and that a negotiated knowledge base was established – actors agreed upon the polder concept as a solution for the flood related problems. Also, sufficient resources to start the implementation were mobilized and positive trusting relationships were established between key stakeholders. However, funds for supervision and parts of the construction, are still subject to uncertainty and not all the relevant stakeholders were actively involved. As far as the operation and maintenance organization (BBP SIMA) is concerned, the necessary resources for the current operation were mobilized. However, there are still some uncertainties regarding the guarantee of a sustainable operation.Therefore, we state that the process of the Banger pilot polder project was reasonably effective. Furthermore, positive personal relationships were forged on the basis of mutual trust between key actors in the project

Considering the fact that the physical construction of the polder is currently in progress and a community based water management organization is being established for the operation and maintenance of the polder, it is likely that the flood-related problems in the Banger area will be reduced. Furthermore, interest has been shown for follow-up activities as a result of this project, but resources for these activities are not mobilized yet. In addition the project showed that the intergral polder concept is a sustainable and suitable solution for Indonesia to cope with floods in urban delta areas. We can therefore conclude that the project is fairly likely to become effective.

However, the future effectiveness will depend on the quality of the construction as such, the capabilities of the polder board to operate and maintain the polder and the willingness among local stakeholders to pay for operation and maintenance – the last being dependent on the creation of awareness that a clean environment is essential for prosperous living conditions.

Besides the evaluative factors to assess the effectiveness of the process that were derived from literature, the analyses of the case revealed other project specific conditions contributing to the effectiveness of the case. One of these context related conditions was the *amount* of *support of Dutch funding programs*. These programmes provided the necessary financial resources for a long, intensive process, enabling the continuous presence of Dutch actors, and providing the Indonesians with an incentive to participate. The delay of the ORIO funds for construction, on the other hand, had a negative influence on the process. Equally important in the specific-context was *the status as a pilot project under a MoU*. As a result, the project was a twinning endeavour of the Indonesian government and Dutch actors. Therefore, the project had status, involving powerful government officials; it also was learning oriented, making actors willing to allocate additional resources, and making them more flexible than in regular projects. Another context related condition was the *clear visibility and the urgency of the problem*. This resulted in a clear vision on the problem and the urge for change. Which contributed to finding a mutual motivating goal.

Resources of individual actors were another condition that contributed to the effectiveness of the case. Actors that were *competent in intercultural communication* were important in reaching mutual understanding in communication, and developing positive relational experiences. The *composition of resources of the Dutch actors*, comprising an engineering firm and a water board, ensured that expert knowledge was available for an integrated approach to solve the problem. Also, it provided access to multiple Dutch funding programmes. In addition, the societal status of the water board provided the necessary status to cooperate with powerful Indonesian officials. *The process and network expertise of individual project managers* to influence, motivate, and enable others to contribute to the process was another condition that contributed to the process. The absence of actors who actively applied these skills during the construction, had a negative influence on the construction process.

Concluding remark

In observation of the current progress, the motivations, cognitions, and mobilized resources of the actors; the Banger pilot polder project is likely to become an effective project to solve the flood related problems in the Banger polder area. However, its long term effectiveness will depend on the quality of the construction of the polder and the capabilities of the operation and maintenance organization (BBP SIMA). In addition, Indonesian actors put in serious effort to learn from the project for application of similar solutions elsewhere and higher government officials are aware of this project. For this reason follow-up activities are to be expected. The factors and conditions that contributed to the effectiveness of the project are expected to be applicable in other international projects that are funded through government to government programmes in which actors are dependent on each other for external expert knowledge and context-specific resources.

7.2 Future research

The theoretical basis of this study was Contextual Interaction Theory and the evaluation framework for international water management projects developed by Vinke-de Kruijf (2011). It investigates the interaction processes between the key actor characteristics motivation, cognitions and resources of

actors. Effectiveness of the process depends on the engagement of relevant actors in the intervention process. We observed that in the field of change management several examples acknowledge this finding (Hayes, 2010; Kotter & Schlesinger, 1979). In the same field instruments were developed that contribute to effective change processes. Further research into these instruments and their relation with effective water management projects could therefore strengthen the evaluation framework for international water management projects.

Secondly, recent discussions in literature about doing business in emerging economies have become more popular and relevant (Peng et al. 2008). Testing the findings of this study in another emerging economy should elucidate on the generalizability of our research. This will further contribute to the debate about success factors for doing business in emerging economies.

Thirdly, supervision of the implementation by Dutch actors seemed to be one of the most important determinants for the future effectiveness of the project. Other research suggests the same (NWP, 2011). Since our case was not operational yet in the study phase, future research considering the role of effective supervision in Dutch-funded international projects might lead to useful findings for the Dutch water sector.

7.3 Recommendations

This section presents recommendations to the Dutch actors, based on our findings. Recommendations for future projects are given in paragraph 7.2.1, and in paragraph 7.2.2 recommendations are provided for the on-going process of the project. Subsequent recommendations to HHSK are provided.

7.3.1 Recommendations for future projects and follow-up to Witteveen+Bos

- It is recommended to plan the transition from design to construction early in the design process in order to identify future stakeholders involved in both process early enough to be able to actively involve them. This ensures that the design is supported by and connects to the (tender) standards of actors who play an important role in the construction process.

- It is recommended to engage in partnerships with public officials from the Netherlands to cooperate in projects or to encompass Witteveen+Bos with a certain political status (such as ambassador of Dutch water management practices) when dealing with government agencies in countries focused on societal status.

- The relations developed during this project should be bolstered, maintained and treated as important assets in the Indonesian context for the course of future projects and for follow-up activities.

- It is advisable to set up a communication strategy to keep in touch with and inform actors who were actively involved in the process but left it due to promotion or for other reasons. Because of their former involvement, they understand and support the polder concept and may, when duely informed, discuss the project, giving it indirect support. This can raise awareness for follow-up activities or mobilize their human and social resources to support the project.

- It is recommended to promote the Dutch polder solution using the same criteria the competing Japanese solution in the neighbouring JBIC project uses to measure effectiveness in terms of internal rate of return. For the Dutch polder the internal rate of return (the higher the better) is 30.7% or 55% when taking into account that the Dutch funds are grants. The

internal rate of return for the Japanese solutions lies at 15.2%. In appendix 9.13 these calculations are shown.

7.3.2 Project related recommendations to Witteveen+Bos

- In the current situation the organization of the construction shows an unclear role distribution, as well as lack of communication and coordination between actors. To overcome this, a project management unit for the Banger pilot polder needs to be established, to coordinate roles and actively involve the actors responsible for the construction.

- Instructing local actors involved with the construction about the principles of water pressures and geotechnical principles is essential in order to reach mutual understanding in the communication about the technical principles of polders and the execution of construction works.

7.3.3 Project related recommendations to HHSK

- Engagement of a powerful business representative increases the status and power of the polder board. The greater the prestige of a group, the greater its influence in achieving change.

- It is advisable to strengthen the relation with the Japanese in the neigbouring JBIC project for follow-up of the instituitional solution in the JBIC project area.

- A more intense communication strategy aimed at the inhabitants is recommended. A small sample survey showed that inhabitants living close to the pumping station were uninformed about the construction developments and the Banger polder project. Activities to raise awareness for the project and BBP SIMA are recommended. When inhabitants are aware of importance of the project for the local communion, this might positively influence the motivation of public officials who are responsible for a proper construction.

- When setting the strategy to approach a new project in a unfamiliar context. It is advisable to analyse the instituitional and wider context variables, (e.g. culture and technology) and adapt to these factors in advance. In order start a new project more efficient.

8 References

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9 Appendix

9.1 Operationalization

The process of developing operational definitions is called operationalization (Babbie, 2006). It starts by identifying the main dimensions which are actually fuzzy and imprecise notions. Therefore we conceptualized the dimensions in sub-variables which are more specific and precise. For these sub-variables we developed indicators, which are considered a reflection of the variables we wish to study (Babbie, 2006). A distinction is made between the dimensions we want to measure. Namely dimensions that is present on the actor level, dimensions for evaluating the process and outcomes and the context as a separate dimension.

Dimensions on the actor level

Dimension	**Sub-criteria**	**Indicators**	**Interview Question**
Motivation	Own goals and objectives	-Reasons and means to participate during the project course	1, 2, 3, 4, 5
	External pressures	-Normative pressure -Economic pressure -Political pressure	9
	Self-effectiveness assessment	-Assessment that actors actions lead to the intended outcomes	14
Cognitions	Problem perception	-Gap between desired and future situation	15
	Possible solution	-Means to get to the future situation	16
	Need of change	-Reason and urgency for project completion	
Resources	Financial resources	-Amount of money an actor's organization devoted to the project -Estimate of hours an actor was involved in the project	n.a.
	Human resources	-Knowledge background: BSc, MSc, PhD, Other -Knowledge used as input -Field of study -Strategy followed for the process - Information contributed -Knowledge about decisions processes and legal context -Authority used	1 2 20 21
	Social capital	-Resources and back-up from network contacts - Authority about others	22, 23
Resources of others	Human resources	-Main contributions of other parties	
		- Usefulness of other contributions -What is learned from other actors	

Dimensions on the project level following the framework of Vinke-de Kruijf 2011

Project Process criteria	Pro-active diffusion strategy	-Strategy followed to use the knowledge developed
	Adaptive management	-Changes in the project design and process
	Mutual understanding in communication	- Need for translations - Misunderstanding between actors
	Involvement of stakeholders	-Stakeholders involved -Influence of stakeholders on the process -Sufficient communication between stakeholders -Capacity & Power of stakeholders
	Institutional embedding	-Public servants involved -Power of the public servants -Active contributions of public servants
	Integration of context-specific knowledge	-Integration of knowledge contributed by local stakeholders in the process
Project-Outcome criteria	Realization of programme goals	-Expected level of inundation decline -Contracts received and expected for the Dutch sector as a result of this project
	Motivating goal	-The common goal of the project members
	Negotiated knowledge	-Common problem perception -Understanding of the projects solution
	Mobilization of necessary Resources	-Sufficient
	Positive relational experiences	-Willingness to cooperate in the future -Development of trust

Context of the project

Context	Wider	-Political situation in terms of political change -Economic situation in terms of GDP growth -Cultural differences defined by Hofstede
	Public administrative	-Institutional structure & responsibilities -Legal context
	Specific	-Previous decisions -Initial project goals -Instruments used to get to the goal -Design of the project

9.2 Interviews

9.2.1 English Interview format

Comments

- *Occasion:*
- *Date:*
- *Time:*
- *Location:*
- *Interviewee:*
- *Setting:*
- *Abnormalities:*

Introduction of the Interview

Before the interview:

- Welcome the interviewee and introduction of interviewer;
- Introduce the topic of the interview: The role of Dutch actors in the process & outcomes of the Semarang Pilot Polder
- Explain the role differentiation 'interviewer' / 'interviewee
- Explain why the interviewee has been selected;
- Explain the benefits for the interviewee
- Indicate the duration of the interview and what is done with the data.

Introduction:

Selemat Pagi, Siang, Sore, Malam.

We are sitting here today, because Mr... told me that it was interesting to talk with you, because you were involved in the project. The interview will take about an hour till 2 hours, depending on the amount of time we have.

Pak / Ibu..., First of all, I would like to thank you for the opportunity to conducts this interview. I shall first briefly introduce myself. My name is Robin Peters and I am a master student Business Administration at the University of Twente with a background in civil engineering. To complete my master thesis I am conducting research about the role Dutch actors' play in International project, focused on the Semarang Pilot polder.

The interview will be about the cooperation between the Dutch and Indonesian and the role of each one.

In the interview there is enough time to formulate the answer and there is no such thing as a wrong answer. The interview concerns a set of topics to discuss guided by a set of questions. At some times during the interview you will be asked to summarize the answers, just so that I know I understood it correctly.

Interview Questions

Background and Capabilities:

1. What are the roles and are the responsibilities of your organization?
2. What do you do at work?
3. When do you got involved
4. What was your role in Banger Polder project?
5. What projects are also going on in your organization?

Motivation

6. Why were you interested or asked to participate?
7. What was the goal of your organization for this project?
8. What was the reason that your organization participated in this project?
9. Has your reason for participation been changing?
10. Why do you think they change?
11. Did you develop a mutual goal during the project course?
12. What was the benefit for you participating in this project?
13. What was the relative importance of the project? Did the importance of the project for your organization increase compared to other projects in your organization? If so to what projects?

Cognitions

14. What is the problem this project is solving?
15. What would be a good solution?
16. Did you get new insights for the problem and the solutions? Or about project management/implementation?
17. Where there any changes in the problem and possible solutions?
18. What do you think of the new polder as a solution for the problems in the area?

Resources Self

19. Could you tell me something about your educational background and work experience? (BSc, MSc, Other)
20. What knowledge did you contribute to the project?
21. What else did you contribute and your organization contributes? (Like financial, contacts, etc.) Think also about organizing locations for meetings, translation, inviting stakeholders…
22. Did you make use of your formal position? and so How?
23. Do you have sufficient support to participate in the project? (Do you for example have the facilities, expertise, manpower, time)?
24. Did you talk and discuss this project with others?

Resources of other Indonesians/ Dutch

25. Did you know any other project partners before this project and how long did you know them? Did you cooperate with them? Did you have joint projects with them?
26. Can you say something about the main contributions of other parties involved?
27. Which knowledge and information of other parties you found useful?
28. What did you learn from other people?
29. Did you apply this new knowledge in this project or in other projects?

Cooperation between the actors Indonesian-Indonesian / Dutch-Indonesian

30. How often did you contact other actors involved and how? And on whose initiative
31. Are you satisfied with the cooperation? How did it go?
32. How could it be improved?
33. Did you always understand what the other partners wanted?
34. To what extend was language was problem?
35. Did you experience differences in the way Indonesians and Dutch approached the project?
36. To what extent did these differences play a role?
37. Are you willing to cooperate with the same parties in the future?
38. Do you think the other partners were willing to participate?
39. Are the other partners competent?
40. Were all necessary stakeholders involved in the project? (Governmental institutions, companies, inhabitants)

Role of the Dutch

41. What do you think can be improved the way the Dutch partners work in Indonesia?
42. What where the lessons learned?
43. What was the added value of the Dutch in general?
44. What do you think of the ORIO grant and its process?
45. Who should be the central coordinator from the Indonesian side for this project?

General Evaluation

46. What are the success factors of this project?
47. Is this a good project?
48. How do you expect to be involved in the future?
49. What future projects or cooperation's do you see for the future?
50. Could you suggest some other projects for which this polder principle can be used?
51. If did this project again what would you do different?
52. Do you have any recommendations for future projects?
53. Is there anything I missed in this interview what where important for the project?
54. Any further remarks?

Thank you for the Interview

Terima kasih untuk wawancaranya

9.2.2 Indonesian Interview format

•Komentar
• Acara:
• Tanggal:
• Waktu:
• Lokasi:
• Responden:
• Kelainan:

Pengenalan Wawancara
Sebelum wawancara:
• menyambut orang yang diwawancarai dan pengenalan pewawancara;
• Perkenalan topik wawancara: Peran orang-orang Belanda dalam proses & hasil dari Percontohan Polder Semarang
• penjelasan perbedaan peran 'pewawancara'/ ' yang diwawancarai'
• Jelaskan mengapa beliau telah dipilih untuk diwawancarai;
• Menjelaskan manfaat bagi orang yang diwawancara
• Tunjukkan durasi wawancara dan apa yang dilakukan dengan data.

Pendahuluan:
Selamat Pagi, Siang, Sore, Malam.
Kita di sini hari ini, karena Mr .. mengatakan kepada saya bahwa menarik untuk berbicara dengan Anda, karena Anda terlibat dalam proyek ini. Wawancara akan berlangsung sekitar satu sampai dua jam, tergantung pada jumlah waktu yang kita miliki.
Pak / Ibu ..., Pertama-tama, saya ingin mengucapkan terima kasih atas kesempatan untuk melakukan wawancara ini. Saya pertama kali akan singkat memperkenalkan diri. Nama saya Robin Peters dan saya seorang mahasiswa Master Administrasi Bisnis di University of Twente dengan latar belakang teknik sipil. Untuk menyelesaikan tesis master saya, saya melakukan penelitian tentang peran aktor Belanda yang bekerja dalam proyek Internasional, difokuskan pada pilot polder Semarang.
Wawancara akan tentang kerjasama antara orang-orang Belanda dan Indonesia dan peran dari masing-masing.

Pertanyaan Wawancara
Latar Belakang dan Kemampuan:
1. Apa peran dan tanggung jawab organisasi Anda?
2. Apa yang Anda lakukan di tempat kerja?
3. Kapan Anda terlibat ?
4. Apa peran Anda dalam proyek Polder Banger?
5. Proyek apa juga yang terlibat di organisasi Anda?

Motivasi
6. Mengapa Anda tertarik atau diminta untuk berpartisipasi?
7. Apa tujuan organisasi Anda untuk proyek ini? /
8. apa alasan bahwa organisasi Anda berpartisipasi dalam proyek ini?
9. Apakah alasan Anda untuk partisipasi telah berubah?
10. Mengapa Anda pikir mereka berubah?
11. Apakah Anda mengembangkan tujuan bersama selama proyek?
12. Apa manfaat untuk Anda berpartisipasi dalam proyek ini?
13. Apa kepentingan relatif dari proyek? Apakah pentingnya proyek untuk organisasi Anda meningkat dibanding proyek-proyek lain dalam organisasi Anda? Jika demikian untuk proyek apa?

Kognisi
14. Apa masalah dari proyek ini telah terpecahkan?
15. Apa solusi nya?
16. Apakah Anda mendapatkan wawasan baru untuk masalah dan solusi? Atau sekitar management/implementation proyek?
17.adakah perubahan dalam masalah dan solusi?
18. Apa yang Anda pikirkan tentang polder baru ini sebagai solusi untuk masalah di daerah tersebut?

Sumber Daya Cukup
19. Bisakah Anda ceritakan sesuatu tentang latar belakang pendidikan dan pengalaman kerja? (BSc, MSc, Lain-lain)
20. Pengetahuan apa yang Anda kontribusikan pada proyek ini?
21. Apa lagi yang Anda dan organisasi Anda kontribusikan? (Seperti keuangan, kontak, dll) Pikirkan juga mengatur lokasi untuk pertemuan, terjemahan, mengundang para pemangku kepentingan ...
22. Apakah Anda menggunakan posisi formal Anda, dan? Bagaimana?
23. Apakah Anda memiliki dukungan yang cukup untuk berpartisipasi dalam proyek? (Anda misalnya memiliki fasilitas, keahlian, tenaga, waktu)?
24. Apakah Anda berbicara dan mendiskusikan proyek ini dengan orang lain?

Sumber Daya Indonesia lainnya / Belanda
25. Apakah Anda tahu ada mitra proyek lain sebelum proyek ini dan berapa lama anda kenal mereka? Apakah Anda bekerja sama dengan mereka? Apakah Anda memiliki proyek bersama dengan mereka?
26. Dapatkah Anda mengatakan sesuatu tentang kontribusi utama dari pihak lain yang terlibat?
27. Mana pengetahuan dan informasi dari pihak lain yang bermanfaat?
28. Apa yang Anda pelajari dari orang lain?
29. Apakah Anda menerapkan pengetahuan baru dalam proyek ini atau proyek lain?

Kerjasama antara aktor Indonesia-Bahasa Indonesia / Belanda-Indonesia
30. Seberapa sering Anda menghubungi aktor lain yang terlibat dan bagaimana? Dan siapa yang berinisiatif ?
31. Apakah Anda puas dengan kerja sama ini? Bagaimana?
32. Bagian mana yang bisa diperbaiki?
33. Apakah Anda selalu memahami apa yang diinginkan mitra lain?
34. Untuk alasan apa bahasa menjadi masalah?
35. Apakah Anda mengalami perbedaan dalam cara orang-orang Indonesia dan Belanda menangani proyek?
36. Sampai sejauh mana perbedaan-perbedaan ini ?
37. Apakah Anda bersedia untuk bekerja sama dengan pihak yang sama di masa depan?
38. Apakah Anda pikir mitra lainnya bersedia untuk berpartisipasi?
39. Apakah mitra lain yang kompeten?
40. Apakah semua pemangku kepentingan perlu terlibat dalam proyek? (Instituitions Pemerintah, perusahaan, penduduk)

Peran Belanda
41. Bagaimana menurut Anda, apa yang dapat ditingkatkan dengan cara kerja mitra Belanda di Indonesia?
42. Dalam hal apakah pembelajaran ini didapat ?
43. Apa nilai plus dari orang-orang Belanda pada umumnya?
44. Apa pendapat anda tentang hibah dari ORIO dan proses nya bagaimana?

45. Siapa yang harus menjadi koordinator pusat dari pihak Indonesia untuk proyek ini?

Evaluasi Umum

46. Apa faktor keberhasilan dari proyek ini?
47. Apakah ini proyek yang baik?
48. Bagaimana Anda berharap untuk terlibat di masa depan?
49. Proyek masa depan apa atau kerjasama apa lagi yang dapat Anda lihat untuk masa depan?
50. Bisakah Anda menyarankan beberapa proyek lain yang dapat menggunakan prinsip polder ini?
51. Jika melakukan proyek ini lagi apa yang akan Anda lakukan berbeda?
52. Apakah Anda memiliki rekomendasi untuk proyek-proyek masa depan?
53. Apakah ada sesuatu yang tidak terjawab dalam wawancara ini yang mana penting bagi proyek?
54. komentar lebih lanjut?

9.3 Data inventory

9.3.1 Interview list

Int	Organization	Name	Role	Place	Date
1	UNESCO-IHE	Judith Kasperma	PhD researcher	Delft	26-5-2011
2	WB	Herman Mondeel	Project leader	Deventer	6-6-2011
3	HHSK	Hans Oosters	Dijkgraaf	Rotterdam	14-6-2011
4	HHSK	Johan Helmer	Project leader	Rotterdam	16-6-2011
5	HHSK	Jos van Garderen	Financials	Rotterdam	16-6-2011
6	NL Embassy	Peter de Vries	Representative water the Netherlands	Jakarta	25-6-2011
7	PusAir	Arie Murwanto	Head of PusAir	Jakarta	29-6-2011
8	WB	Sawarendo	Head engineer WB	Jakarta	2-7-2011
9	PusAir	Hermono	Researcher PusAir	Semarang	15-7-2011
10	WB	Arno Kops	Managing director South-East pacific	Jakarta	16-7-2011
11	Bappeda	Ibu Nik	Head research section Bappeda	Semarang	16-7-2011
12	UNIKA	Santiago	Professor and 2nd chairman BBP Sima	Semarang	20-7-2011
13	HHSK	Cecil Iswari	Representative HHSK in Semarang	Semarang	25-7-2011
14	BBP SIMA	Putji	Member BBP Sima	Semarang	22-7-2011
15	BBP SIMA	Ryanto	Representative BBP Sima JBIC Area	Semarang	28-7-2011
16	BBP SIMA	Pak Imam	Professor BBP Sima	Semarang	21-7-2011
17	Bappeda	Purnomo	Head Bappeda Kota department water	Semarang	27-7-2011
18	BBWS	Fargan	BBWS Old Head Water Bappeda	Semarang	4-8-2011

19	PusAir	Hermono	Head PusAir Solo	Solo	4-8-2011
20	PSDA	Gatot	Project leader pumping station	Semarang	10-8-2011
21	UNDIP	Suseno	Chairman BBP/ Professor	Semarang	27-7-2011
22	PusAir	Murlerli	Head PusAir Solo	Solo	12-8-2011
23	Chiptakaryu central	Hartanto	Head of Unit Work PLP, Directory PPLP, Cipta Karya	Semarang	16-8-2011
24	BBP SIMA	Santiago	2nd Chairman / Vice rector Unika University	Semarang	24-8-2011
25	Chiptakaryu Province	Patekat	Project leader work province	Semarang	23-8-2011
26	Toko Oen	Jenny	BBP Sima representative business	Semarang	2-9-2011
27	Centrale Overheid	Michiel de Lijster	Delta Coordinator	Jakarta	12-7-2011
28	BBWS	Zaenal	Project leader and head BBWS	Semarang	22-8-2011
29	Witteveen+Bos	Heru Baskoro	structural engineer and supervisor Semarang project	Jakarta	7-9-2011
30	Inhabitants	Inhabitants	Inhabitants Banger area	Semarang	2-9-2011
31	BBP SIMA	Sumono	Member BBP SIMA	Semarang	4-10-2011
32	Witteveen+Bos	Sawarendo	Follow-up interview Sawarendo	Jakarta	14-9-2011
33	JICA	Sungdeng	Japanese Consultants	Semarang	4-10-2011

9.3.2 Observation list

Nr.	Activity	Persons involved	Date	Time	Place
1	Side talk	Arno Kops	12-5-2011	11.00 11.15	Station Office Deventer
2	Additional notes steering group meeting	HHSK, WB, Semarang persons	9-6-2011	9.00 16.00	Office HHSK Rotterdam
3	Steering group meeting written out	Steering group	9-6-2011	9.00 16.00	Office HHSK Rotterdam
4	Discussion about the Semarang project	Dewan, Mondeel	20-6-2011	14.00 15.00	Witbo office Jakarta
5	Side notes	Robin	-	-	Jakarta & Semarang
6	Introduction Jakarta	Evelyn Butter	22-6-2011	9.00-9.15	Witbo office Jakarta
7	Site visit in Semarang	Dewan, Mondeel, Iswari, Chiptakaryu, Chipta karya, Bappeda, PSDA	23-6-2011	10.15 20.00	Pumping station, Meeting room Balikota Semarang
8	Evening talk guest house	PU Engineer	28-6-2011	23.00	Boarding house Jakarta
9	Jakarta Flood Management workshop	Japanese consultants	5-7-2011	8.00-14.00	Grand Mahakam Hotel Jakarta
10	Conversation concerning the Indonesia Culture	Dewan	6-7-2011	18.00	Jakarta
11	Conversation about project	Dewan	11-8-	9.15	Jakarta

			2011		
12	Jakarta coastal defence workshop	Dutch and Indonesian companies/ government	29-6-2011	8.45 14.00	Jakarta grand Mahakam hotel
13	Lunch with UNIKA Dean	Benny, Dean	19-9-2011	11.30 12.15	Lunch room Unika
14	Project visit with Heru to the pumping station	Heru Baskoro, various parties	14-7-2011	11.00 16.00	Semarang/ Pumping station
15	In the office with Iswari discussing the project	Cecil Iswari	26-7-2011	17.30	Semarang / HHSK Office
16	Site visit pumping station& JBIC area	PSDA, PusAir, Heru, Japanese consultant	3-8-2011	10.30 15.00	Semarang /Project visit
17	Discussing the stimulus project	Putji and Iswari	11-8-2011	15.00	Semarang / HHSK Office
18	Walikota office Iswari	Heru Baskoro, Iswari	15-8-2011	8.00	Semarang / HHSK Office
19	Feedback preliminary results presentation	Pak, Imam, Benny, Iswari, Chichi, Various professors	16-8-2011	15.30 17.00	Unisola University, Lantai 2, Semarang
20	Feedback presentation at Unika	Professors Unika university	18-8-2011	16.30	Semarang Unika University
21	Meeting and pre-meeting Mayor of Semarang	All stakeholders pumping station	24-8-2011	11.00 14.00	Semarang, Walikota meeting room
22	Feedback session after presentation Witteveen+Bos office Jakarta	Marc Evelyn, College's	19-9-2011	12.00 13.00	Jakarta
23	In the car with Pak Imam	Pak Imam	23-8-2011	15.30 16.00	In the car from interview pak Tekad
24	In Bandung with Arie Murwanto	Arie Murwanto	29-31 - 08-2011		Bandung
25	Follow-up question with Iswari	Iswari	23-8-2011		Semarang HHSK office
26	Presentation Witteveen+Bos Jakarta	Colleague's Witteveen+Bos Indonesia	19-9-2011	12.00 13.00	Jakarta Office Witteveen+Bos
27	Last questions in Semarang	Cici	4-10-2011	9.00-10.00	Semarang Office
28	Indonesian network meeting	J.Helmer/ Arno Kops	9-11-2011	12.00 17.00	Deventer Office Witteveen+Bos
29	Day in the Office discussing difficulties Semarang	Marc Scheres	5-9-2011	14.00 - 14.15	Jakarta Office Witteveen+Bos

9.3.3 Document analyzed

Nr	Name	Author
1	MoM of NWPI Meeting on Friday, 11 Feb 2011 at INA meeting room: 10.00 – 13.00	
2	Letter continuation funding Banger Pilot Polder Arie Moerwanto	Arie Moerwanto
3	Organization scheme HHSK	HHSK
4	Presentation Aquaterra about Semarang	A.Kops J. Helmer
5	INA 384-3-082-rapd-summary detailed design	E.A.H. Teunissen
6	Final Report Logo South Evaluation	Logo South
7	Brief Semarang Mayor continuation finance programme	

8	INA 384-3-001-rap-inception		
9	LOGO SOUTH EVALUATION INDONESIA: strategic evaluation		
10	JICA Semarang ex ante evaluation		JBIC
11	Paparan Kelembagaan 29 okt.		Ibu Nik
12	Fact sheet Semarang, Indonesia		Teunissen
13	Final Application Semarang project HHKS		
14	Programma Partners voor Water (PvW) - Stimuleringsregeling Projectvoorstelformulier 3e tender 2006		Teunissen
15	Mom003 IT- 260707		Fibriliana
16	Executive Summary Development of pilot project on community based water management and flood control systems for Semarang city		Teunissen
17	Minutes of meeting closing ceremony		Cici
18	Governance and Banger		J. Helmer
19	Presentation Semarang algemeen		J. Helmer
20	Presentation Hadi or Purnomo BAPPEDA Semarang SC 2011 Bilingual		Purnomo
21	Presentasi Tamzil - PRESENTASI DRAINASE Kali Banger KE BELANDA 25 mei 2011		Tamzil
22	Semarang Flood Situation Presentation Purnomo		Purnomo
23	E-mail Johan Helmer		J.Helmer
24	Strategy of drainage and flood control in Palembang city		E. Putra
25	Presentation Herman Mondeel		H.Mondeel
26	Urban Polders Guidelines		All stakeholder
27	Minutes if meeting 004		CiCi
28	Report template logo south		All stakeholder
29	Chapter book governance a case the banger polder		Benny Santiago
30	Minutes of meeting 001	05-07-07	
31	Minutes of meeting 018	11-09-07	
32	Minutes of meeting 002	24-07-07	
33	Minutes of meeting 003	26-07-07	
34	Minutes of meeting 013	08-08-07	
35	Minutes of meeting 014	28-08-07	
36	Minutes of meeting 015 Public hearing	29-08-07	
37	Minutes of meeting 017 DPU	10-09-07	
38	Minutes of meeting 021 PTKAI	03-12-07	
39	Minutes of meeting 022 HHSK	22-11-07	
40	Minutes of meeting 023 PB	30-11-07	
41	Minutes of meeting 024 PTKAI	03-12-07	
42	Minutes of meeting 027 PB	13-05-07	
43	Minutes of meeting 028 PM	08-01-08	
44	Minutes of meeting 029 Bappeda	18-05-07	
45	Minutes of meeting 031 P2JJ	14-01-08	
46	Minutes of meeting 034 BBWS	16-01-08	
47	Minutes of meeting 035 BINA	16-01-08	
48	Minutes of meeting 037	14-01-08	
49	Minutes of meeting 038 PH	05-02-08	

50	Sanitation and solid waste report	03-10-08
51	Minutes of meeting 040 Public hearing	13-02-08
52	Minutes of meeting 004 Project implementation unit	11-03-08
53	Minutes of meeting 047 Technical design team	06-02-08
54	Minutes of meeting 048 Technical design team	12-02-08
55	Minutes of meeting 051 Project implementation unit	22-05-08
56	Minutes of meeting 054 SIA	
57	Minutes of Meeting 053 Pumping station	01-07-08
58	Minutes of Meeting 055 Steering committee	07-07-08
59	Minutes of Meeting 058 Northern dike	22-07-08
60	Minutes of Meeting 060 Meeting ROEF	sept-2008
61	Minutes of Meeting 029 KOPA	21-01-08
62	Minutes of Meeting Project implementation unit	18-02-10
63	Socialization Meeting	07-08-07
64	Minutes of Meeting Steering committee 2008	10-07-08
65	INA384-3-003 USL team leader	
66	Specification kosten aqua4all	19-05-11
67	Minutes of Meeting Public hearing	29-08-07
68	Project implementation unit 1	24-07-07
69	Minutes of meeting Project implementation unit	30-09-09
70	Minutes of meeting coordination at Cipta Karya	14-01-10
71	Minutes of meeting project implementation unit	03-11-09
72	2090421 Notulen Rapat Banjir Semarang	15-5-2009
73	Finance draft MoU	08-11-09
74	Mayors Act	10-04-10
75	Rapd progress rapport November 2008 March 2009	
76	Draft MoU	16-08-11
78	INA 384-3-032-rapd-preliminary design report	29-04-08
79	Field visit report	08-05-07
80	Progress Report #1 May - October 2007	12-15-07
81	Progress Report #2 November 2007 - April 2008	28-05-08
82	Progress Report #3 May - October 2008	05-10-08
83	Rapd 384-3-033 Basics of design report 2008	29-04-07
84	Rapd 384- Detailed design report	29-04-07
85	Presentasi Roy Kraft van Ermel Operation and Maintenance	06-06-11
86	CV BBP SIMA pak Kumbino	
87	CV BBP SIMA ibu Nik	
88	CV BBP SIMA pak Suntanto	
89	Visit site report_BASH	16-07-11
90	Urban polder guidelines case study Banger Polder	

9.3.4 E-Mail correspondence

NR	From	Date
1	J. Helmer	17-5-2011
2	Sri Surnimi	30-9-2011
3	M. Tauvan	10-07-2011
4	H. Purnomo	11-09-2011

9.4 Evaluation of intended results

At the start of the project in the project proposal several intended goals were formulated. To asses if the process of accomplished the intend goals an overview is made for the technical and institutional phase. In Table 12 and assessment is made of the goals and results of the technical phase. Based on the results and goal attainment it can be stated that the process of the technical project is effective as it obtained its intended goals in time and within budget.

Goal	Result
Preparation of the implementation of the Pilot polder; a closed urban polder system as part of the water management system of Semarang.	Obtained ; the polder is being implemented
The creation of an urban water management plan, whereby the to be established Polder Authority can engage into decision-making and operation.	Obtained: The polder board is developing operation and maintenance procedures for water management in the polder.
Documentation and PR materials for public hearings	Obtained; Public hearings are documented and workshop material is created. A newsletter about the developments is being distributed regularly.
Manuel operation and maintenance of the pilot area; enlistment of activities; costs and frequencies for maintenance	Obtained; The handbook is created in 2009 and translated to bahasa in 2011.
Constructors estimate, concerning the necessary measures for the pilot and investment plan.	Obtained; Tender documents were prepared and applied
Manuel for urban water management for educational purposes and practical with technical, institutional and maintenance aspects.	Obtained; This book has been developed by Sawarendo, as a result of the process but not part of it. It is distributed privately

Table 12 Assessment of intended project goals (Source: project proposal PvW2)

In the project proposal for the institutional process several indicated results and indicators for the results were formulated. Important is that these indicated results had a run time until 2009. Based on Table 13 it can be concluded that three of the five indicated results are achieved. Based on the evaluation it can also be stated that the initial planning was ambitious for a project of this magnitude and complexity. Most of the intended results are still in progress or achieved later 2009. Overall the most important result set-up of a polder board is achieved, thus it can be stated that the approach followed by the Dutch is effective as it process its intended results.

Indicated results	Indicators	Results
- Water management plan implemented according to plan - MIS procedures in place and functioning	- Draft Water management Plan has become final and is operational - Draft MIS has become final and is operational	Not obtained yet; W+B made a management plan and the polder board is creating their own procedures in 2011, still without construction ready it is not operational.
- PA tasks/responsibilities and competences assessed and agreed upon by stakeholders - modified as required - and implemented	- PA terms of reference formalised and accepted and steers the organisation	Obtained; The Polder board is established and tasks/ responsibilities are agreed upon in 2010.
- Involvement of Local/informal leaders assessed - Conclusions and recommendations discussed, agreed by stakeholders - and implemented - Involvement of Polder Representative Board assessed - Conclusions and recommendations discussed, agreed by stakeholders - and implemented	- Local leaders own and support the Polder Project - PRB is competent, well established and communicates adequately with PA	Obtained; the project has support of the mayor, considered to be the highest local leader. In addition keluran an RT leaders are involved. Obtained partially; Competent people are present in the polder board, but it still needs attention from HHSK as indicated in interviews.
- Technical progress report accepted by stakeholders and recommendations implemented	- PA well informed on progress in construction works - PA does influence implementation process	Obtained; The polder board is present in the construction meetings. Influence is established through research.
- Handbook with maximum participation in process of development	- Draft Handbook complete, in line with the activities and results obtained in first/second year	Not obtained; a proper guideline of the process is not established.

Table 13 Results of the Polder project a related indicators summarised (Source application VNG international)

The objectives of the project contribute to the overall goal of the project: to improve the living conditions, the health and welfare of the people in Semarang living in the areas of the city those regularly inundate.

As a result of the project the following benefits are foreseen:

- Improvement of living standards of the people as results of the reduction of poverty.
- Improvement of the health condition of the people due to better sanitation.
- Protection of the environment (management waste, cleaning of the water).
- Improvement public awareness (for the environment and for the operation and maintenance of flood control infrastructure).
- Improvement of community participation as basic for sustainable solution (self-financing and self-management).
- Establishment of integrated water management approach.
- Example for other parts of the city and for other cities and regions with same problems.
- Creation of a climate for decentralisation and democratisation.

(Source: Project voorstel PvW 2- Semarang onderdeel 2)

9.5 Overview of main events of the Banger polder

Activity	Month	Year
4-party MoU cooperation for defending waterfront cities	June	June 2001
Seminar polders in waterfront cities		2001
Technical Agreement; Semarang & PU and RWS	February	2003
Feasibility study		2003-2004
Banger Area selected		2005
HHSK invited to be involved in institutional part		2006
Project proposal PvW2	September	2006
Project proposal HHSK	Augustus	2006
Technical design started		2007
Technical agreement Semarang & HHSK	February	2007
First steering committee Semarang	July	2007
Public hearings 1	September	2007
Public hearings 2	April	2008
First steering committee meeting in the Netherlands		2008
Public hearings 3	Augustus	2008
Roy Kraft van Ermel Hired		2008
Second steering committee turning point involvement municipality		2008
Closing ceremony and hand over design to PU	March	2009
Mayors act creation of BBP SIMA	April	2010
MOU and official start construction of polder	April	2010
Start construction pumping station	July	2010
Collapse pumping station	October	2010
Construction talud kali Banger		2010
Start dredging		2011
Re-start building pumping station	May	2011
Agreement PT-Kai land use retention basin	August	2011
Confirmation ORIO grant	November	2011

Overview of main project activities of the Banger polder (source: D17, I03, I04, D18, D19, D20, D21, D13, D14)

9.6 Overview of the Dutch activities in the design process

NR	Date	Activity
1	6-May-07	Field visit
2	9-May-07	several meetings with, HHSK, PusAir, DPU, polder board, local team
3	10-May-07	meeting with Walikota
4	11-May-07	several meetings with HHSK, PusAir, DPU, polder board, local team
5	21-May-07	Field visit
6	21-May-07	meeting with IBU haruti UNDIP University
7	22-May-07	meeting with pak Farchan (Bappeda) and pak Fauzi (DPU) / meeting with pak hartanto (DPU)
8	25-May-07	meeting with Ibu Iswari, representative HHSK
9	31-May-07	Team leader meeting 1
10	4-Jun-07	meeting with pak Farchan and pak Suhardjono about technical agreement and office supplies
11	5-Jun-07	meeting with DPU on data collection
12	6-Jun-07	meeting with PusAir on data collection
13	13-Jun-07	presentation design process to Institutional team at HHSK office Rotterdam
14	18-Jun-07	discussion on 2007 programme with Institutional team at HHSK office Rotterdam
15	3-Jul-07	Workshop on polder Jakarta (Organized by PusAir)
16	5-Jul-07	Steering Committee
17	26-Jul-07	Progress Meeting Bappeda and HHSK
18	27-Jul-07	Meeting with HHSK, preparation public Hearings and collection social data
19	6-Aug-07	Assignment contractor survey
20	6-Aug-07	Meeting Kelurahan Kemijen (Introduction technical team W+B
21	7-Aug-07	Meeting North and south sub system (Polder Authority)
22	8-Aug-07	Meeting Pelindo (harbor authority) to obtain master plan harbor
23	8-Aug-07	Meeting with Bappeda and DPU
24	8-Aug-07	Meeting Kelurahan Mlatibaru (Introduction technical Team)
25	9-Aug-07	Meeting Kelurahan Mlatiharjo (Introduction technical Team W+B)
26	9-Aug-07	Meeting Kelurahan Tanjung Mas (Introduction technical team W+B)
27	9-Aug-07	Persona Asia
28	15-Aug-07	Meetings PSDA (obtain coordinates of Benchmarks)
29	16-Aug-07	Meeting PJKA(Railway Company to obtain Master plan railways
30	20-Aug-07	Meeting Kecematan Semarang Timur (Introduction technical team W+B)
31	21-Aug-07	Public Hearing Kemijen
32	22-Aug-07	Meeting Bina Marga (Toll road): Nasterplan toll road in project area
33	15 to 24 Aug-07	Many meetings Dinas Pertambangan (Mining) to obtain data groundwater levels, groundwater extraction
34	24-Aug-07	Visit Rowing Festival Banger
35	27-Aug-07	meeting with Dutch delegation HHSK
36	27-Aug-07	dinner Bappeda, DPU and (Dutch Delegation(HHSK
37	28-Aug-07	Progress meeting with Bappeda, DPU, PU, Polder Authority
38	28-Aug-07	Public Hearing Kemijen, Rejomulyo, Mlatibaru
39	29-Aug-07	Public Hearing Mlatiharjo, Kebon Agung, Bangungan
40	3-Sep-07	Lunch Bappeda, DPU and Dutch Delegation HHSK
41	4-Sep-07	Meeting Kelurahan Rejosari (Introduction technical team W+B)
42	4-Sep-07	Meeting Kelurhan Sarirejo (Introduction technical team W+B)
43	5-Sep-07	Meeting Kelrahan Karang

44	7-Sep-07	Turi (Introduction technical team W+B)
45	5-Sep-07	Meeting with Kelurahan Karang Tempel (Introduction technical team W+B)
46	10-Sep-07	Meeting DPU (Specification Pumping Station)
47	11-Sep-07	Public Hearing Rejosari, Sarirejo, Karang Ture and Karang Tempel
48	12-Sep-07	Meeting with Bina Marga about the combination of future road and dike
49	19-Sep-07	Team Leader Meeting 2
50	3-Oct-07	Workshop Urban master plan Semarang
51	3-Oct-07	Meeting DPU (Kumbino) location pumping station
52	4-Oct-07	Meeting Railway Company for land acquisition
53	11-Oct-07	Meeting with Bina Marga about the combination of future road and dike
54	22-Oct-07	Assignment to UNDIP for economic analysis
55	September - October 07	Many meetings Dinas Pertambangan (Mining) to obtain data groundwater levels, groundwater extraction
56	6-Nov-07	Progress Meeting with Bappeda, DPU, PU, Polder Authority
57	8-Nov-07	Meeting with Polder Authority to explain BoD and polder principles
58	9-Nov-07	Meeting with Forum Pengembangan Economy dan sumer daya Jawa Tengah, talkin about involvement port of Semarang
59	14-16 November 2007	Course basic polder principles
60	15-Nov-07	Meeting DPU (pak Fauzi)
61	15-Nov-07	Meeting UndDip (Broto Sunaryo)
62	15-Nov-07	Meeting FPESD (Forum of economic development in Central Java) with Rob van Raaij
63	19-Nov-07	Meeting with Kerata Api, Bandung
64	20-Nov-07	Meeting with JBIC (Keike Kitamura)
65	21-Nov-07	Meeting with World Bank (Jan Yap)
66	22-Nov-07	Meeting with HHSK
67	22-Nov-07	Workplan HHSK 2008
68	22-Nov-07	Dinner with Insitutional Team HHSK
69	27-Nov-07	Meeting Djoko Sutrisno Bappeda
70	30-Nov-07	Meeting with Polder Authority
71	3-Dec-07	Meeting PT KAI Semarang
72	4-Dec-07	Dutch Team Leaders Meeting
73	4-Dec-07	Meeting PSDA for measures Banjir canal Timur
74	7-Dec-07	Meeting Bina Marga, for planning JL, Arteri and Ronggowarsito-Haryono
75	13-Dec-07	Meeting and field visit with VNG (Bebi Sutomo and Esther Sprangers)
76	13-Dec-07	Meeting VNG and Institutional Team
77	17-Dec-07	Speaker on Seminar Urban Drainage Semarang
78	18-Dec-07	Progress Meeting with Bappeda, DPU,PU, Polder, Authority, Bina Marga, Pertamina, PSDA, PT KAI-invited
79	8-Jan-08	Meeting for extension boundary and land acquisition
80	8-Jan-08	Meeting for pipes Pertamina oil company
81	14-Jan-08	Meeting P2JJ Co-ordination for toll road and polder
82	14-Jan-08	Meeting Telkom about cables for telephone
83	15-Jan-08	Meeting PDAM about pipes for drinking water supply
84	16-Jan-08	Meeting BBWS for coordination JBIC programme in extended area
85	16-Jan-08	Meeting Bina Programme PU for coordination of running project in Banger area
86	17-Jan-08	Meeting PLN about cables for electricity
87	21-Jan-08	Meeting PUSAIR to discuss progress, land acquisition, SC, Stimulus and transfer of knowledge

88	23-Jan-08	Meeting DPU about financing and the retention basin
89	24-Jan-08	Meeting HHSK about progress IT and preparation SC
90	24-Jan-08	Meeting Bappeda about acquisition of retention basin, JBIC involvement, transfer of knowledge
91	24-Jan-08	Meeting provisional polder board. Introduction to PB members
92	28-Jan-08	Meeting with PCI, Bappeda and DPU for cooperation for northern dike
93	6-Feb-08	Evaluation socialization and preparation PH
94	6-Feb-08	Transfer activities IT to TDT because mission Iswari
95	11-Feb-08	Feld visit with Lida scheldenwald van de Kleij as input for her book
96	18-Feb-08	Meeting Unesco-IHE guidelines
97	19-Feb-08	Meeting with Dinas Pertamanan for the use of the football field as retention basin
98	21-Feb-08	Meeting BPN about land ownership and illegal housing
99	22-Feb-08	Meeting with PCI Bappeda DPU for cooperation for Northern dike
100	28-Feb-08	Meeting pre steering committee with DPU, Bappeda and PUSAIR and HHSK
101	28-Feb-08	Feld visit with Bappeda DPU and PUSARI in polder Kapok Jakarta to show the polder concept
102	3-Mar-08	Field visit with HHSK
103	4-Mar-08	Meeting HHSK about progress HHSK
104	5-Mar-08	Meeting HHSK about O and M
105	10-Mar-08	Dinner HHSK Bappeda
106	11-Mar-08	Progress meeting IT and TDT
107	12-Mar-08	Meeting cooperation and synchronization JBIC and Banger polder
108	4-Apr-08	Pre-steering committee meeting with Indonesian steering committee members
109	4-Apr-08	Guidelines progress meeting
110	16-Apr-08	Meeting with PSDA for finance and cooperation for eastern dike
111	16-Apr-08	Field visit with DPU for land acquisition pumping station and garbage management system
112	21-Apr-08	Coordination meeting Semarang urban drainage projects.
113	5-May-08	Meeting with PCI to discuss Northern dike
114	13-May-08	Meeting with Bappeda and PCI to discuss northern dike
115	15-May-08	Informal meeting with PusAir (Arie Moerwanto) to discuss progress
116	21-May-08	Meeting with Balai Besar to discuss design eastern dike
117	22-May-08	PIU Meeting with Bappeda DPU Pertaminia, PSDA, PT Kai
118	30-May-08	Meeting PT KAI Bandung
119	3-Jun-08	Meeting Bina Marga/ P2JJ about Northern dike
120	3-Jun-08	Meeting Pertamina about northern dike
121	4-Jun-08	Meeting Balai Besar and PSDA about eastern dike
122	5-Jun-08	Seminar Harbor
123	6-Jun-08	Meeting Pelindo about northern dike
124	17-Jun-08	SC-preparation meeting with HHSK and IHE, Utrecht
125	1-Jul-08	Meeting with DPU and HHSk design pumping station
126	1-Jul-08	Social Impact assessment meeting with HHSK and Polder Board
127	2-Jul-08	Social Impact assessment meeting Bappeda
128	2-Jul-08	Meeting with Polderboard to discuss sanitation
129	3-Jul-08	Presentation to HHSk in Rotterdam
130	7-Jul-08	Steering Committee
131	8-Jul-08	Field visit with SC-members to Woudse Polder, Oosterschelde barrage and some pumping station
132	22-Jul-08	Meeting Bappeda, DPU, PT KAI, Pelindo, Bina Marga
133	24-Jul-08	Meeting Bappeda, DPU, Pold Board for Stimulus

134	28-Jul-08	Field visit HHSK
135	28-Jul-08	Meeting HHSK
136	28-Jul-08	Dinner Bappeda and HHSK
137	29-Jul-08	Meeting HHSK, Bappeda and HHSK
138	1-Aug-08	PIU Meeting HHSk, Bappeda, DPU and PusAir in Jakarta,
139	11-Aug-08	PIU Meeting, Bappeda, DPU and PusAir
140	21-Aug-08	Field visits with Hendriato Notosoegondo and PUSAIR
141	25-Aug-08	Course: demonstration of the miniature
142	25-Aug-08	Course: field visit
143	26-Aug-08	PIU Meeting HHSK, Bappeda, DPU, PusAir, Balai Besar, Cipta Karya, Bina Marga, P2JJ in Jakarta
144	26-Aug-08	Course: Lecture on polder
145	27-Aug-08	Course: Role play
146	27-Aug-08	Course: Lecture on polder
147	28-Aug- 08	Workshop on guidelines
148	3-Sep-08	Meeting with World bank for financing possibilities
149	4-Sep-08	Meeting with Simon warnerdam on financing possibilities
150	4-Sep-08	Meeting with Arie Moerwanto on financing possibilities
151	4-Sep-08	Meeting with Djoko Moerwanto (4P-MOU) on financing possibilities
152	4-Sep-08	Meeting with SDW and PLP about JBIC project
153	4-Sep-08	Meeting with Asian development bank
154	4-Sep-08	PIU Meeting HHSK, Bappeda, DPU, PUSAIR, Balai Besar Cipta Karya, Bina Marga, P2JJ in Jakarta
155	10-Sep-08	Meeting PCI to discuss Northern dike
156	20-Oct-08	PIU Meeting PUSAIR, Cipta Karya, Bina Marga, P2JJ in Jakarta
157	27-Oct-08	Presentation and field visit of Banger Polder to University Dipergoro
158	27-Oct-08	Presentation Banger polder
159	4-Nov-08	Presentation Banger polder at Workshop during visit MRS verhoeve and demonstration polder system by miniature
160	11-Dec-08	Meeting with DPU to discuss design, land acquisition and financing
161	15-Dec-08	Meeting with PusAir (Arie Moerwanto) in Bandung to discuss pending issues (northern dike financing)
162	21-Dec-08	Cleaning day in Banger polder. Assisting in the polder quiz and judge the cleaning works of the inhabitants the cleaning day was organized by the Polder board/ HHSK
163	19-Jan-09	Meeting with PUSAIR in Jakarta
164	20-27 January 2009	Visit state secretary Tineke Huizinga to Jakarta
165	21-Jan-09	Presentation on land subsidence in Semarang
166	28-Jan-09	Presentation and discussion Banger polder with Bappeda Province Central Java
167	4-Feb-09	Meeting PusAir, Bina Marga in Bandung to discuss Northern dike
168	5-Feb-09	Meeting with Bappenas (Donny Azdan) to discuss financing in Jakarta
169	10-Feb-09	Meeting with HHSK to discuss O&M
170	17- 18 Feb 09	Workshop on guidelines in Jakarta
171	20-Feb-09	Meeting with P2JJ and PUSAIR in Semarang to discuss northern dike
172	20-Feb-09	Meeting Bappeda, Protocol and DPU to prepare closing ceremony and visit HHSK
173	26-Feb-09	Meeting with PCI to synchronize northern dike Meeting with Bappeda to prepare closing ceremony
174	2-Mar-09	Meeting with Bappeda, DPU HHSK in Semarang
175	2-Mar-09	Meeting with HHSK in Semarang Dinner with Bappeda and Institutional team
176	3-Mar-09	Short course in Semarang
177	5-Mar-09	Closing ceremony in Semarang

Table 14 Overview of the Dutch activities in the design process

9.7 Summary of the methodology

Type of research						
Exploratory		Descriptive			Explanatory	
Research approach						
Deductive				Inductive		
Qualitative				Quantitative		
Research strategy						
Experiment	Ethnography	Action research	Case study	Archival research	Survey	Grounded theory
Time dimension						
Cross-sectional				Longitudinal		
Sample selection						
Non-probability convenience sampling				Probability sampling		
Data type						
Primary data				Secondary data		
Data collection method						
Observation	Interviews	Semi-structured interviews			Documentary	Questionnaire
Data analysis						
Within-case analysis				Cross-case analysis		

9.8 Overview financing of the construction elements

Minutes of Meetings "MoU Financing dan Scope of Work (SoW) Banger Polder"
Semarang, 09 April 2010

	Work Package	Total costs	KOTA Semarang		Prop. JaTeng		BBWS		ORIO/Ditjen Cipta Karya		ORIO/PUSAIR		remarks
			2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	
a.	construction of pumping station	33.2	21.25							12.0			Dinas PSDA dan ESDM Kota SMG dan DitJen Cipta Karya
b.	Dredging Kali Banger	9.7			4.6	5.1							Dinas Cipkataru
c.	Dam Kali Banger	2.6				2.6							Dinas Cipkataru
d.	retention basin Kemijen	10.6								10.6			Ditjen Cipta Karya
e.	improvement BKT dike	1.4					1.4						Balai Besar WSPJ
f.	construction northern dike	5.5				5.5							?*
g.	secondary drainage system, weirs	6.3		1.4		4.9							Dinas PSDA dan ESDM Kota dan Dinas Cipkataru
h.	Supervision												
	Total	**69.3**	**21.3**	**1.4**	**4.6**	**18.1**	**1.4**	**0.0**	**0.0**	**22.5**			
	Total 2010	**27.3**	**77.9%**		**16.9%**		**5.2%**		**0.0%**				
	Total 2011	**42.0**		**3.3%**		**43.0%**		**0.0%**		**53.7%**			
	TOTAL	**69.3**	**32.7%**		**32.7%**		**2.1%**		**32.5%**				

note:
1. Pumping station costs to be discussed between PSDA and Witteveen+Bos
2. *Permit (Izin) from DitJen Bina Marga is required to carry out Package Nothern dike by Province and Province will propose this work to be included in the Scope of SNVT PLP
3. Scope of Work Secondary drainage system between Kota Semarang and Province will be discussed
4. BKT dike on Action plan for relocation will be prepared by Bappeda and PSDA Kota Semarang dan Balai Besar
5. Supervisi will be prepared by Pusair when ORIO has not been ready.

Institusi	Nama	Tanda tangan	Institusi	Nama	Tanda Tangan
PUSLITBANG SDA	Amy Sutiati		BAPPEDA Kota Semarang	Nik Sutiyani	
BBWS Pemlai-Juwana	HARJANTO		Dinas PSDA & ESDM Kota Semarang	Gatot S	
BAPPEDA Provinsi Jawa Tengah	YULIANA Y.		Witteveen + Bos	Herman Mounier	
Dinas Cipkataru Provinsi Jawa Tengah	Tekat N		BPPB SIMA	SUSENO D	

9.9 Structures of the involved organizations

9.9.1 Central government

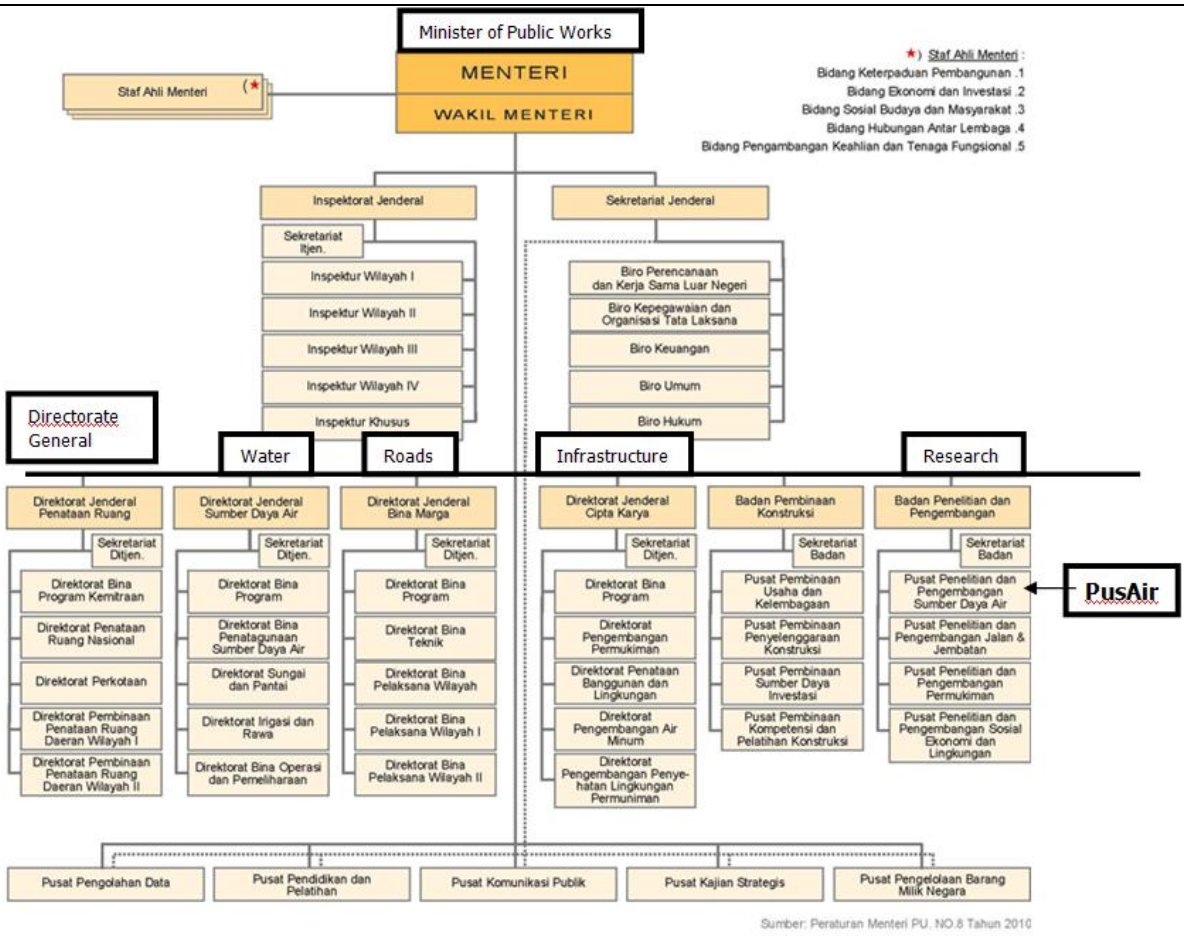

Figure 14 Organization structure Public Works (Source PU, 2011)

9.9.2 Institutional arrangement for Water management in the Indonesian water sector

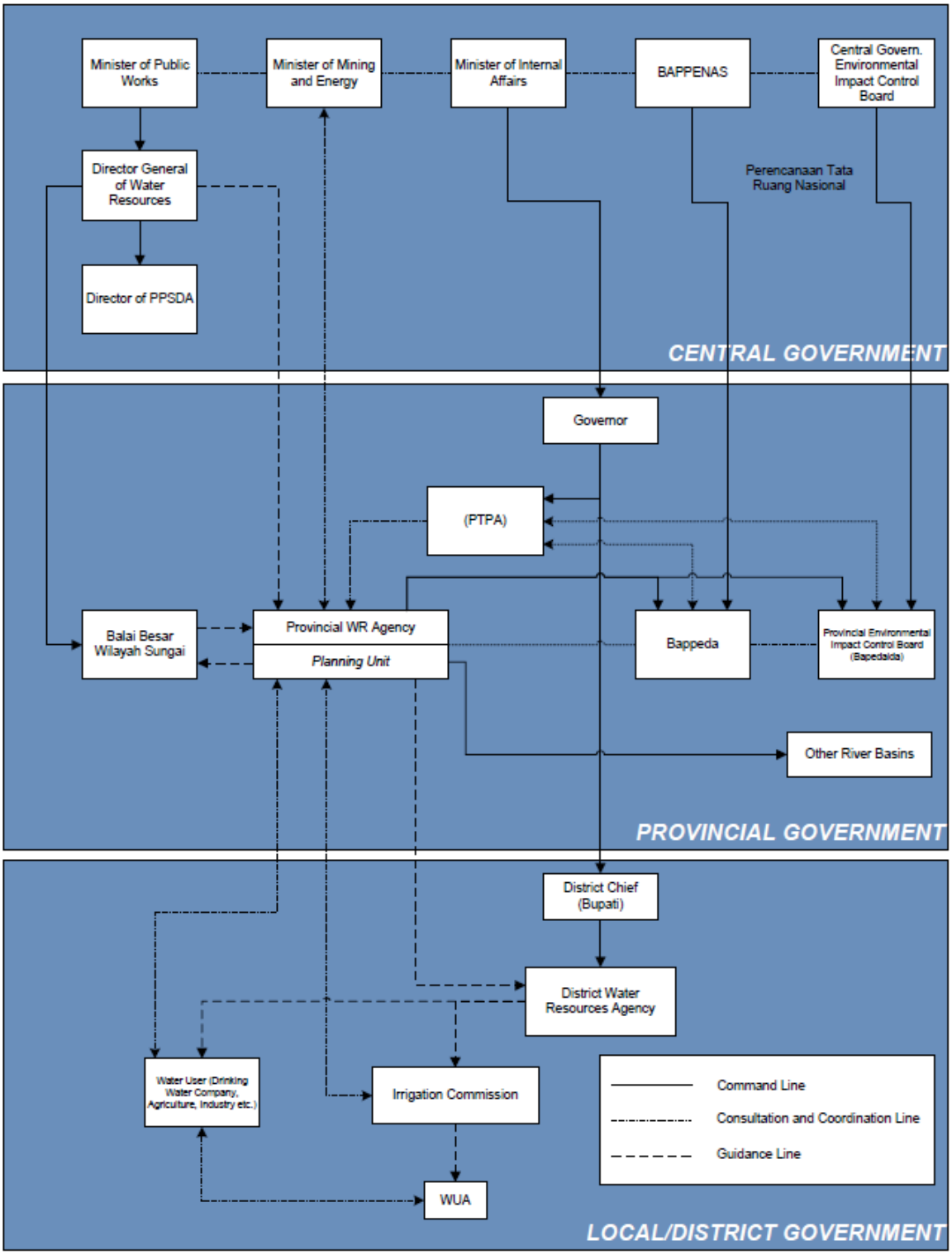

Figure 15 Institutional arrangements in the Indonesian Water Sector - Adapted from UNESCO, 2008 Source Wieriks, 2011)

9.9.3 Lower level government structure on sub-district level

The administrative structure of the polder area is given in Figure 16. The lowest level in the structure is the RT, a cohesive group of households (40 to 50 households per RT); these households have a relatively close relationship which each other. The chiefs of the RT are managed by the Kelurahan, which is managed by the Kecematan. Generally, the RW level is of less importance in the administrative structure. The Banger Polder project boundary falls together with the boundaries of Kecematan Semarang Timur [D83].

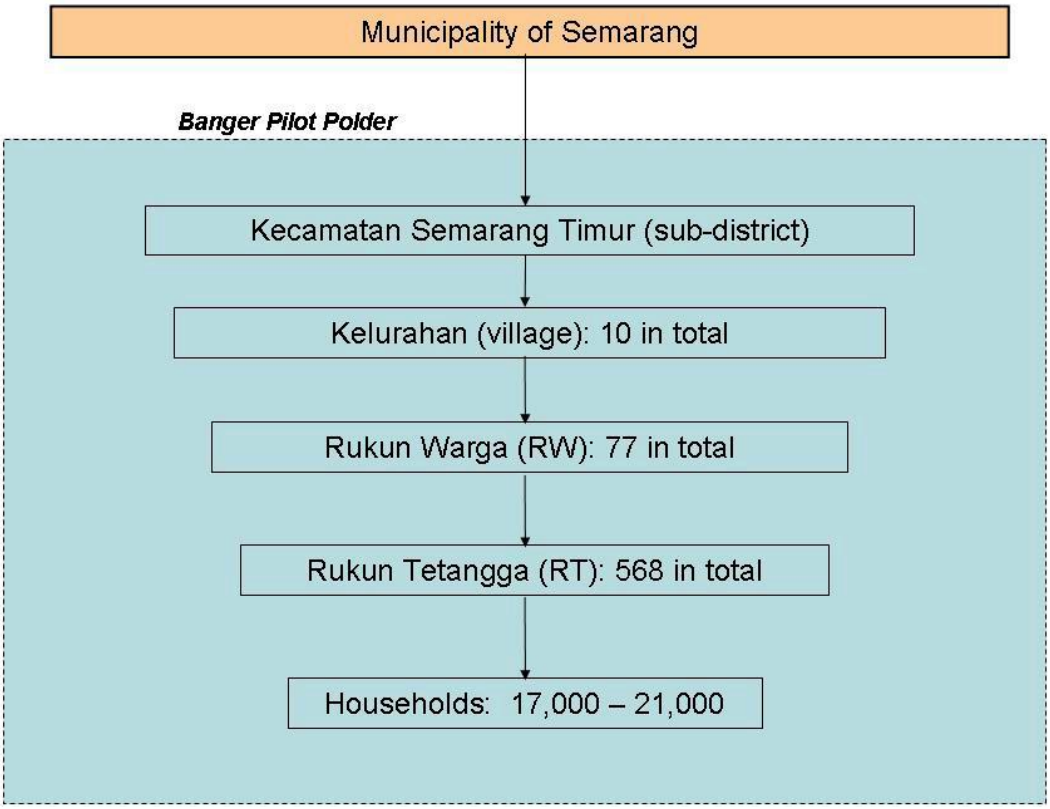

Figure 16 Arrangement of lower level government in the polder area. Source: Urban Polder Guidelines Vol4 Banger polder

9.9.4 Structure BBP SIMA

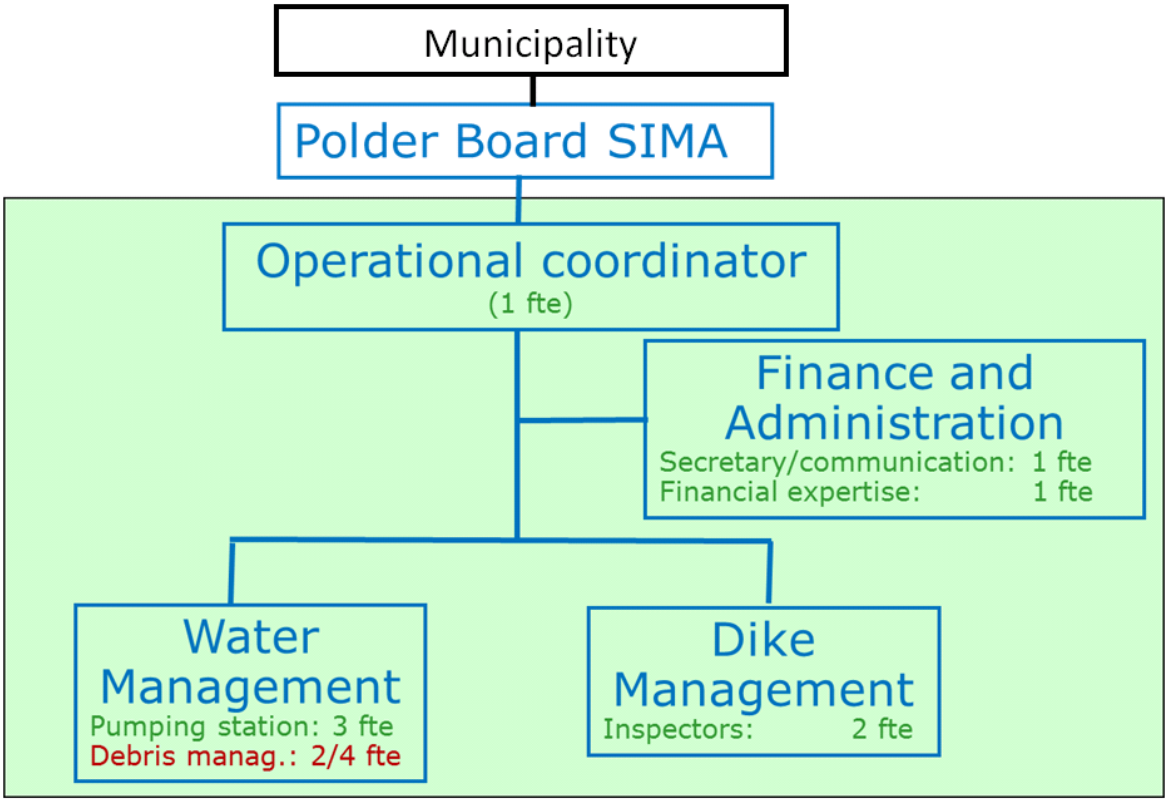

Figure 17 Structure BBP SIMA [Source: D85]

9.9.5 Vision, mission and activities BBP SIMA

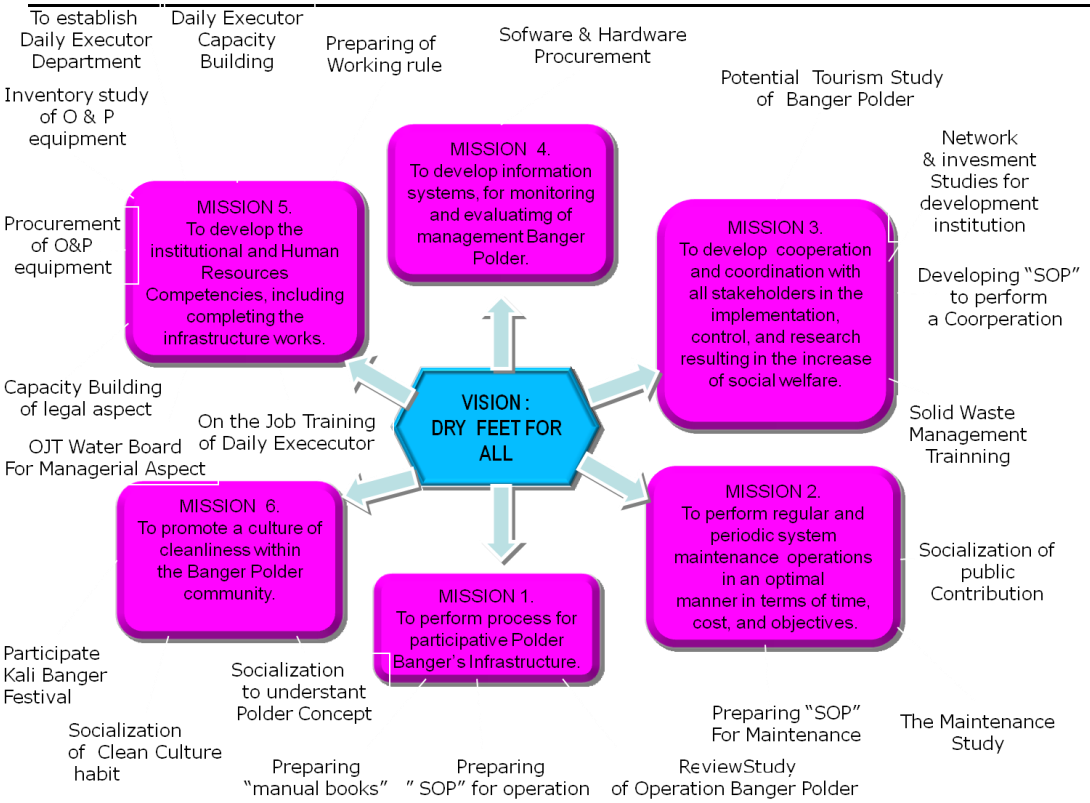

Figure 18 Vision BBP SIMA (Source: Presentation Ibu Nik, 2011)

9.10 Different legal models

The functioning and characteristics of legal processes in western and emerging countries differ significantly. The characteristics of the legal process in those respective countries are heavily influenced by the cost of information, the extent of risk in everyday life and the mechanisms of society to spread such risk. Based on these variables two systems exists the formal system and the informal system. In the western and developing characteristics of both systems may be present, but generally one dominates. The relevance of these two systems is that is influence the way business is and policy creation is conduced, as legal processes in western countries operate quite differently from those in emerging countries (Grey, 1991). In Indonesia the system is dominating towards the informal model, while in the Netherlands the formal model exists. In Figure 19 an overview is given of both systems to give insight in the differences and into the process of implementing the polder concept.

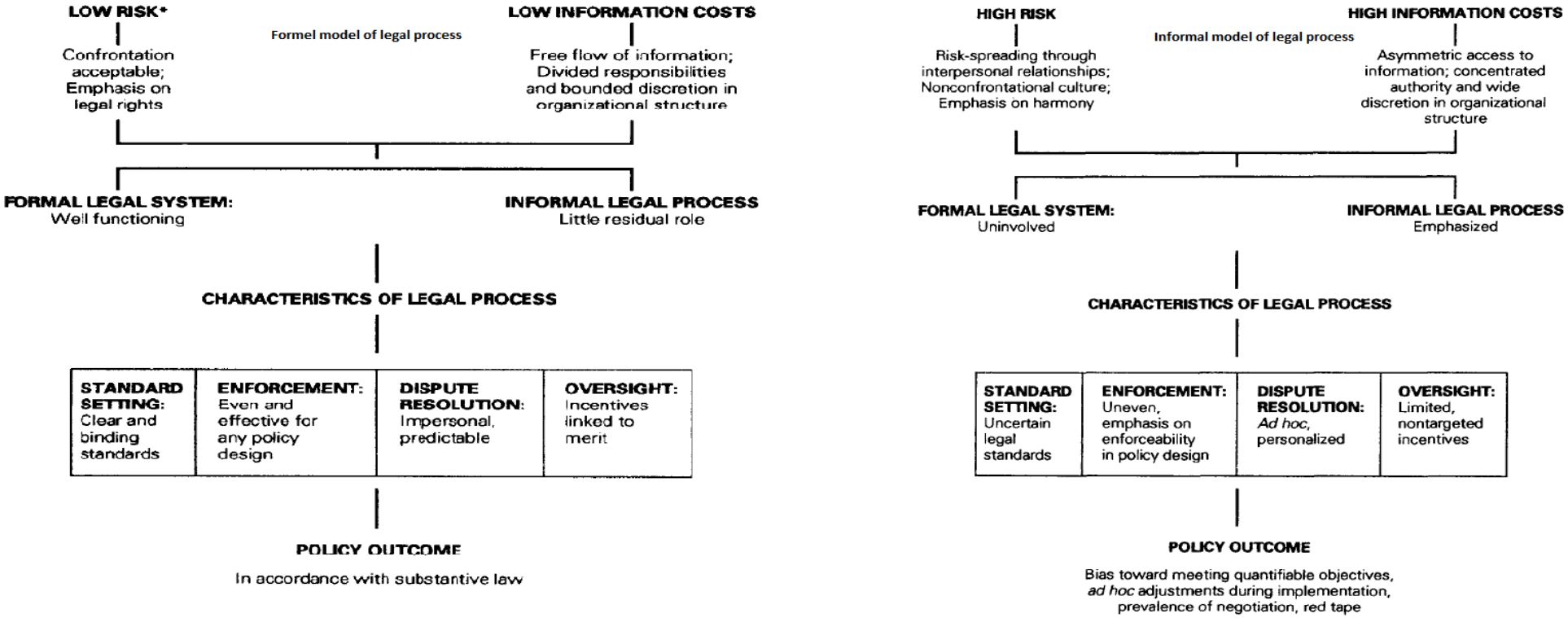

Figure 19 Public Administrative models (Gray, 1991)

9.11 Stakeholder analysis & participation:

The Semarang project is characterized by a complex stakeholder environment. To provide insight of the role of the different stakeholders in the process and outcomes an overview is given below. In total 38 different stakeholders for the Semarang project have been identified. A clearer overview is created, by dividing the actors in five subsets of participants, defined by giving there characteristics role an attribute (Bijlsma, 2010):

- Stakeholders: actors whose interest may be affected by the decisions that will result from the process that is being investigated;
- Decision makers: actors with the authority to make decisions
- Experts: actors whose knowledge on a particular topic is acknowledge by all participants
- Process manager: actor responsible for managing the process by planning and facilitating the interaction between participants
- Process sponsor: actor who has delegated the management of the process to the process manager and who can decide on the resources that are allocated for this process.

	Actor	Characteristics	General resources	Role in process	Role in outcomes	Stakeholder identification
	Indonesian central government					
1	HMA.	Embassy		Initator	Contacts, Authority	Stakeholder
2	Secretary General PU	Entry point for international cooperation		Initator		Decision maker
3	DG-Research & development-PU	Coordinator of Research and development,	Power (Echelon 1)		Coordination on DG level	Decision maker
4	- PusAir	Research Institute	Power (Echelon 2) Technical Assistance	Coordination Guidelines Information & Cooperation	Redesign, technical assistance, power	Process Manager
5	-Balai Basar	Organisation for river basin management	Finances, Land ownership, Information	Information	Construction of eastern dike	Decision maker
6	-Cipta Karya	Department for infrastructure development	Construction, social resources	Information	Construction: Dam, upper structure pumping station	Decision maker
	Semarang municipality	Capital city				
7	-Mayor	Mayor of Semarang	Power	Political power	Political power	Process Sponsor
8	-Bappeda Dinas	Local spatial planning department	Social& Human resources, Financial	Coordination	Member of Polder board Coordination	Process Manager
9	-DPU	Local public works	Technical assistance & knowledge	Developing polder design		Experts
10	-PSDA	Local department of water resources	Construction, Human resources	Member Polder board	Construction of lower structure pumping station Member polder board	Process manager
11	-Legal department	Legal department of Semarang	Human resources	Setting-up legal framework	Mayors act	Experts

12	Inhabitants	Inhabitants of the polder area	Human resources Financial resources	Member of Polder board Socialisation	Member of Polder board Decision making capacity, financing for maintenance	Stakeholders
13	Private companies	Companies in the area	Financial resources			Stakeholders
	Kecematan Semarang Timur	Sub-district administration	Authority Inhabitants	Information		Stakeholders
	-Kelurahan	Village	Authority Inhabitants	Information		Stakeholders
	--RW	Neighbourhood Administration	Authority Inhabitants	Information		Stakeholders
14	---RT	Neighbourhood Association	Authority Inhabitants	Information		Stakeholders
	Province Jawa Tengga	Province of central Java	Financial	Data/information	32,5% of Construction cost	Process sponsor
15	-Governor	Governor of Central Java	Power		Political support	Process sponsor
16	**-**Cipta karu	Construction department of the province	Construction & Information,	Data/information	Construction of: Northern dike, secondary drainage, dredging, weirs	Decision maker
17	-Bappeda	Spatial planning department	Finances		Finances	Process sponsor
	Universities	**Education Institution**		Economic & Social Planning Expertise	Capacity Building of the Community & Local Government	
18	-University of Diponogoro	Public education Institution	Research & technical assistance	Social studies for the feasibility of the polder		Experts
19	-University of Parahiyangan	Catholic education Institution	Research & social assistance	Economic studies for the willingness to pay		Experts
20	-UNIKA Soegiiapranata Catholic University	Catholic education Institution	Research (legal) & Human resources			Experts
21	-UNISSULA University	Islamic education Institution	Research & Human resource			Experts
	Netherlands					
22	Witteveen+Bos	Consultancy company	Technical knowledge	Technical design of the polder	Technical advice	Process manager / expert
23	HHSK	Water board	Institutional knowledge Authority	Setting-up polder authority	Guiding polder authority	Process manager/ sponsor/ expert
24	Unesco-IHE	Knowledge institution	Knowledge	Developing guidelines for polder development		Expert
25	Embassy	Dutch Embassy	Authority	Political support	Political support, coordination	Stakeholder
26	Delta-coordinator		Authority, Financial		Funding of steering committee, coordination, support	Process sponsor
27	Waterschap Groot-Salland	Water Board	Social resources	Coordination		Process manager
	Funds Netherlands					
28	Partners voor Water 1	Central governmental funding programme for water projects	Financial	Financing feasibility study		Process sponsor

29	Partners voor Water 2	Central governmental funding programme for water projects	Financial	Financing guidelines & design	Financing steering group meeting	Process sponsor
30	VNG International – Logo south programme	Funding programme for capacity building of local foreign municipalities	Financial	Financing institutional development		Process sponsor
31	Aqua for All	Foundation fund for improving availability of fresh water	Financial	Financing Pre-Chew study		Process sponsor
32	NWB-Funds	Fund for international cooperation for water boards	Financial	Financing Stimulus programme		Process sponsor
33	ORIO	Central government funding programme for infrastructure development in development countries	Financial		Financing 35% of construction cost, 35% of Maintenance cost	Process sponsor
	Indirectly involved in the project					
34	JBIC	Financial Institutions	Information	Synergy their project with polder project	Synergy their project with polder project	Stakeholder
35	Kerata-Api	National train company	Land ownership		Land for retention basin	Stakeholder
36	Binas Marga	National toll road operator	Land ownership	Information road planning	Land for Northern dike	Stakeholder
37	PT Pelindo	Port of Semarang	Land ownership	Information land, planning	Land for Northern dike	Stakeholder
38	- Drink water company (PDAM)	Drink water supplier	Fresh drinking water		Fresh drinking water	Stakeholder

Table 15 Stakeholders analysis banger polder (Sources: OB25, OB3, D16, I9 Websites: ORIO, NWB FONDS, Aqua for all, VNG International)

9.12 Stakeholder Map of the construction

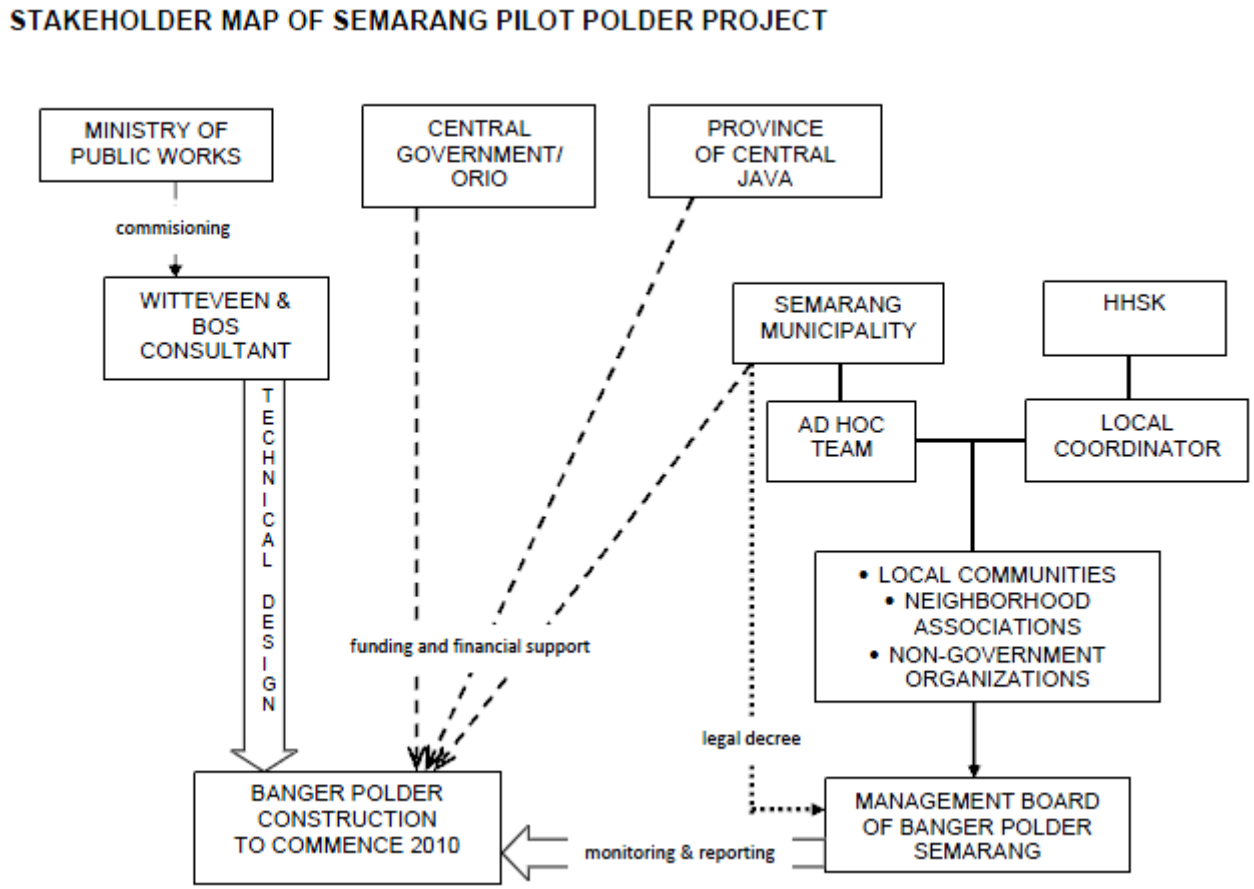

Figure 20 Stakeholder map of the construction (Source: D9)

9.13 Evaluation criteria after polder completion

In Semarang two projects the Dutch polder project with estimated cost of 11 million euro in total and the a Japanese project with a project sum of about 218 million euro. The Japanese project mainly offering "hard" technical measures while the Dutch polder project combines "hard" and "soft" institutional strengthening measures. Both projects roughly started at the same time and will finish in the same time. To gain negotiating power in the approach used by the Dutch for similar situation, ex ante evaluation based on the same criteria as the Japanese is useful. Focus of the Japanese area is on water availability and flood control, while the Dutch solution focuses mainly on flood control. Therefore only the measures concerning flood control area useful. Below a possible overview is given for comparison

Indicator	Baseline (2005)	Target (2016, 2 Years after completion)
Garang river improvement and jaltibarang Multipurpose Dam construction		
Annual highest water level simongan weir (m)	7.2	6.9
Inundated Area by Levee Breach or overflow (Km^2) at 50-year floods	4.9	0
Number of Inundated houses by Levee Breach of overflow	14,700	0
Amount of water supply from Jaltibarang Dam to Semarang (m^3/s)	0	1.820
Inundated Area due to poor drainage (km^2) (at 5-year floods)	6.62	0
Number of inundated housed due to poor drainage (houses at 5-year floods)	19.700	0
Projects internal rate of return 15.2 % Conditions (a) Cost: Project cost (excluding tax), operation and maintenance expense (b) Benefit: Reduction in damage amount due to floods, savings on price of supplying water, savings on purchasing other forms of electric power (c) Project Life: 50 years		

Source: JICA Semarang ex ante evaluation [D10]

Proposed criteria Banger area

Indicator	Baseline	Target 2016	
Inundated area due to poor drainage (km^2 at 5-year floods)	323 h.a.	0	
Number of inundated houses due to poor drainage (houses at 5-year floods)			
(a) Cost: Project cost (excluding tax), operation and maintenance expense (b) Benefit: 3.7 Million (4 million in existing situation -160.000 damage in the future situation - 133.000 O&M costs) (c) Project Life: 20 years * longer project life whiteout significant investment increases RRI slightly	NPV US$ 63 million (costs of no solution for floods)	NPV US$14 million (Cost of investment a future damage)	Internal rate of return 30,71% * taking into account all development cost estimated at 12 million (design + construction) Internal rate of return 41,94% *taking into account only construction Internal rate of return: 55,50% * taking into account the Dutch money is a grant

Source: presentation Aquaterra; Presentasi Tamzil [D4; D21; D83]

9.14 Role of the Dutch

Interview	About Dutch	Success factors for the case	Added value of Dutch actors	Difference Dutch NL
1	• Dutch are very direct normally			
2	• ORIO finances the construction. • Grant is very ethical and sometimes missing point • Also a big administrative burden • When bringing in money you have something to say. • Involvement of a Dijkgraaf as he has formal authority • HHSK was good with the relation with Indonesians • To do not let the project fail W+B became involved in the construction works	• Key of the project is that everyone is involved from a higher level • A good maintenance organization • Thrust inhabitants will pay	• Dutch are very direct when they say yes they do it. • Benefit of being white is that you can talk to all levels of hierarchy	• In Semarang it takes a long time when things get arranged; less compared to Jakarta
3	• Arranged that the municipality contributed four or five people. • The financing and co-financing of the Dutch government for the construction was important for creation of the water board		• Best things we done is Iswari as representative; (2) Roy Kraft van Ermel; administrative experience he has authority and the subtle language.	
4				
5		• When Roy went in the project that was good; And progress is part of Johan.		
6		• The project has a comprehensive approach • Learning occurred • It is in a small area which makes it more successful; as larger programmes are not doing well. • Introducing Roy was a smart move. • Knowing the right persons		• Decision making in Indonesia is much more interactive adaption after decision until everyone is satisfied • Building up relation is important
7	• Technical and governance for setting up polder board. • In the supervision the Dutch have advantage as they are trusted for what they say. • ORIO has an important role as every party need to provide information in order to receive grant and social aspects bring the project to a higher level.			• Decision making goes a bit differently in Indonesia when decisions are made it is used to question them again.
8	• NL have a relatively fast approach • Dutch are good with reporting • The miniature model was a good way to make the polder concept clear.	• Having a local representative • A low social threshold • Good communication.	• Dutch are relatively easy going with various people. • Learn the language well and speak good English	
9	• ORIO grant tales too much time and is slowing down the process			

10	• Getting everything from the ground requires a long breath	• Success factors of this project is the new character of this project, it is a real new concept especially for the institutional part	Value of the Dutch is how we think and anticipate if we make too many consensus and move to the problem straight forward. The Dutch bring in perseverance and vision It can be seen for the place we stand now. PvW works well.	Indonesians are bad in anticipating only see the problem when it is right before them. People from java always say yes and do their own thing. When an e-mail is send response is slow.
11	• Transfer of knowledge they have very many experience about polders and water management 700 years of knowledge.	• Herman, Roy and Hans Oosters have a kind and warm personality what we like about the Dutch	• Dutch have discipline with four season makes them strong	
12	• Witteveen+Bos is good at the technical part. Reaction of the government on this is physical.		• The Dutch get believed when they say something. They will listen to him and not to me.	
13	• ORIO is important as the Indonesians have a big expectation. When ORIO comes the Dutch have a strong voice. • Seeing is believing increase in motivating was that high person see effectiveness of the Dutch system when they were in the Netherlands • Inhabitants gained thrust in the Dutch and the government saw that.	• The communication lots of attention is given to that. and patience and enthusiasm as many problems came forth		
14			• Dutch have discipline and stay in the rule in Indonesia.	
15	• Dutch are the experts in the process the Dutch really help. • Discipline • Initiative	• When the people will be willing to pay money for maintenance for the pumping. • Will be success if it can solve the flood in east Semarang.	• When the Dutch are here people get the mind-set to clean. • Provides motivation,	
16			• the spirit to do good work • strong technical knowledge. • good spirit for good maintenance	
17			• Focus in this project • Togetherness the sense of cooperation people know each other already for a long time	
18	• Dutch have a good process and what they done now is good. But after development they still need guidance	• The project involves many good people • Success is not only about infrastructure development It is about the institutional side can operate • The important one is that the inhabitants is aware that they also have responsibility in the water management	• When the Dutch say something the inhabitants believe it. This is not the case when a Indonesians says the same.	• Indonesians are pessimist and many political problems occurs, everything is taken politically. • No support in regulation • Don t always have a sense of belonging.
19	• Herman is very professional every step must be reviewed and always room for discussion.		• Good language to improve the English • To be "zakelijk" what is written is done.	• Indonesians must become very professional and open.
20			• Professional attitude	
21			• Allot of experience in the polders • Giving management experience for polders	

22	• Dutch must know about the culture and must learn to be more carefully	• Coordination and competence of the people • commitment to reduce the non-technical aspects • support from the central government • Having budget	• Expert level of water for technical advice.	
23	• WB not open for review design. They should have responsibility so they can stop construction if there are problem like now.			
24				
25	• Dutch need to know and understand the character and limitations of Indonesians			
26	• Provided insight in how a water board works • Good relation with the mayor • Roy and Johan are good at lobbying • Dutch need to know the culture and not act on the western way you need someone to bridge it.	• Strong point is that the Dutch system is being applied	• Work integral • Have experience • Work with a strict schedule	
27				
28				
29	• HHSK Manage the transition really good. • HHSK has more intangible product. • Without HHSK there will be difficulties in the design		• Funding • Good knowledge in water management	
30			• Discipline • Good knowledge	
31	• W+B was difficult to contact during implementation			
32	• Provide knowledge needed • W+B design and give knowledge the people • Scale model very useful when you show they understand it. But to late many problem there	• Awareness of inhabitants • All stakeholders want the polder	• Discipline • Talk straight to the point	