Dutch expertise in Romanian water projects

Retrospective case study 'Teleorman Flood Risk Management Pilot Project'

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October 2009

CE&M research report 2009R-004/WEM-004
ISSN 1568-4652

Management Summary

Since 2005, the Province of Overijssel is cooperating with Teleorman County – located in the South of Romania – in the field of water management. This cooperation would initially focus on drinking water and wastewater. However, after Teleorman County was hit by three severe floods in 2005, Overijssel decided to initiate the 'Teleorman Flood Risk Management Pilot Project' (October 2006 – June 2009). Financial support for the project is provided by a Flood Fund established by the Province and several Water Boards and by the Dutch programme 'Partners for Water'. The project has been studied within the context of a PhD research. This PhD research includes the analysis of several Dutch-Romanian projects in the field of water management.

For this case study, data was gathered through document analysis and semi-structured interviews in the first part of 2009. In this period, most project activities were already completed. Hence, the case study has been undertaken in retrospective. Starting-point in the case study analysis is that water projects are 'processes of social interaction' in which various actors jointly solve a complex, unstructured problem. The analysis comprises: (1) an analysis of the *process course and its outcomes*; and (2) an actor centred analysis focusing on the *motivations, cognitions and resources of actors involved*. Particular attention is paid to the role of expertise, which is one of the resources of actors involved.

The analysis of the *process course and its outcomes* shows that the outcomes of several project components deviate from the initial work plan. One adjustment is that it was agreed to add several supplementary activities to the project. This considerably enlarged the number of interactive activities. Another adjustment is that the scope of the flood risk management plan was downscaled. In addition, the project took longer than planned; its end date was postponed from the end 2007 to June 2009. Factors that caused this delay relate to internal project organization (distribution of roles and responsibilities) and to institutional arrangements (permits and licences). The project was carried out by a team consisting of a mix of seven Romanian and Dutch organizations. This team was supported by a Steering Committee, an Advisory Board and various Romanian beneficiary organizations. The Steering Committee fulfilled an important role in shaping the demonstration project and the supplementary activities.

Interviews with several key stakeholders reveal that the cooperation between various project participants developed positively. Even though some Romanian actors were sceptical in the beginning, they are all positive about the project results. Their *motive* to participate in the project was in gaining access to Dutch expertise and money. The motivation of Dutch actors to participate is formed by a mix of economic and altruistic reasons. Conflicts of interests never emerged during Overijssel-Teleorman cooperation projects and did also not emerge during this project. As regards *cognitions*, it is observed that flood risk problems never received priority in Teleorman. Water managers rather focused on drought related problems as they were more frequent and significant. During the project, it was expressed that it was desirable that to pay attention to drought related problems as well. This was done in the form of a supplementary activity, but did not result in a concrete reduction of these problems. Besides the supplementary activities, the demonstration project also had to be shaped during the project. Boundary conditions for the design were the application of geo-textile and the available budget. The implemented solution was innovative and would never have been applied if Dutch experts would not have been involved. This shows that Romanian actors learnt about new solutions. In addition, they also gained new insights in Dutch expertise. In analyzing *resources*, a distinction is made between the following resources: financial, institutional, human and information. Financial resources were only provided by Dutch

organizations. Without these resources it would have been unlikely that, for example, the dam in Botoroaga would have been repaired by now (demonstration project). As regards institutional resources, the Romanian actors played a key role in arranging all necessary permits and licenses. Organization and information was taken care of by a mix of Dutch and Romanian stakeholders. As both Romanian and Dutch actors could not provide all necessary resources, they were mutually dependent on each other.

Expertise can be provided by relative 'insiders' (Romanian stakeholders in this case) and outsiders (Dutch experts in this case). In analyzing the role of expertise, a distinction has been made between expertise regarding *the content, the process and the network*. As regards the content of the project, Dutch expertise was decisive in arriving at an innovative solution for repairing the Botoroaga dam. Involvement of Romanian actors in designing this solution was crucial in creating support. With the development of flood risk maps there was also very limited experience among Romanian stakeholders. Hence, Dutch experts also played an important role in developing these. At the project start, the (Dutch) project leader had only limited knowledge about the local problem formulations, preferences, qualities and social relations. During the project, new insights were gathered concerning these aspects. However, the project team had only limited possibilities to use these insights to adjust the project. Concerning the management of the process and the network, the project leader(s) played a key role. Although their knowledge about the local situation was limited, he managed to involve the right actors and to manage the process successfully. What certainly played a role is that Overijssel and Teleorman were already cooperating and that they received support from various Romanian actors.

Based on this case study it is concluded that – in addition to an actors own objectives, external pressure and self-effectiveness assessment – 'social relations' may also be regarded as a source of motivation. The development of relations and trust, institutional learning, also appeared to influence the application of Dutch expertise. More broadly speaking, collective learning processes are crucial in solving water problems. During this project, there were only limited possibilities for joint problem-solving as most project components were predefined. Thus, there were not many opportunities to adjust the project based on what was learnt. Analysis of resources highlights that dependency relations exist between both Dutch and Romanian actors. Dutch experts did not have the context-specific expertise needed to successfully complete the project. The added value of Dutch experts was in providing more general knowledge (models and methods), which was innovative and integrated various project aspects.

It is recommended to design Dutch-Romanian projects as learning-oriented projects. This implies that there should be opportunities to learn (communication and interaction, a participatory setting) and that the project itself should be flexible (adaptive management).

Samenvatting (in Dutch)

Sinds 2005 werkt de provincie Overijssel op het gebied van water management samen met de Zuid-Roemeense district Teleorman. Deze samenwerking zou zich in eerste instantie richten op drinkwater en afvalwater. Nadat Teleorman district in 2005 werd getroffen door drie hevige overstromingen, besloot de provincie Overijssel om het project 'Teleorman Overstromingsrisico's Pilot Project' op te starten. Het project wordt financieel ondersteunt door een 'overstromingsfonds' met bijdragen van de provincie en verschillende waterschappen en door het programma 'Partners voor Water'. In het kader van een promotieonderzoek – waarin verschillende Nederlands-Roemeense projecten worden bestudeerd – is ook dit project geanalyseerd.

Data voor deze case studie is verzameld door het bestuderen van documenten en semigestructureerde interviews in het begin van 2009. Aangezien de meeste projectactiviteiten in deze periode al waren afgerond, gaat het om een case studie in retrospectief. Uitgangspunt bij het analyseren van de case studie is dat waterprojecten kunnen worden beschouwd als processen van sociale interactie waarin actoren gezamenlijk een complex, ongestructureerd probleem oplossen. Deze analyse omvat (1) een analyse van het *verloop en de uitkomsten van het proces*; en (2) een *analyse van de motivaties, cognities en hulpbronnen van de betrokken actoren*. Aandacht is in het bijzonder besteedt aan de rol van expertise, wat één van de hulpbronnen van betrokken actoren is.

De analyse van het *verloop en de uitkomsten van het proces* laat zien dat de uitkomst van verschillende projectonderdelen afwijkt van het initiële werkplan. Eén van de aanpassingen is dat er besloten is om verschillende aanvullende activiteiten toe te voegen aan het project. Dit heeft het aantal interactieve bijeenkomsten aanzienlijk doen toenemen. Ook de omvang van het overstromingsrisicoplan is verkleint. Hiernaast heeft de uitvoering van het project langer geduurd dan gepland: de einddatum is verschoven van eind 2007 naar juni 2009. Factoren die deze vertraging hebben veroorzaakt zijn gerelateerd aan interne project organisatie (de verdeling van rollen en verantwoordelijkheden) en institutionele regelingen (vergunningen). Het project is uitgevoerd door een projectteam bestaande uit een mix van zeven Nederlandse en Roemeense organisaties. Dit projectteam is ondersteunt door een stuurgroep, een adviesgroep en verschillende Roemeense begunstigden. De stuurgroep heeft een belangrijke rol vervult in het vormgeven van het demonstratieproject en de aanvullende activiteiten.

Uit interviews met verschillende betrokkenen blijkt dat de samenwerking tussen verschillende projectdeelnemers zeer positief is verlopen. Hoewel sommige Roemeense actoren bij de projectaanvang sceptisch waren, is iedereen positief over de uitkomsten van het project. De *motivatie* van deze Roemeense actoren om deel te nemen aan het project was gerelateerd aan het verkrijgen van toegang tot zowel Nederland geld als expertise. De motivatie van Nederlandse actoren om deel te nemen heeft zowel van economische als van altruïstische aard. Conflicterende belangen hebben nooit een rol gespeeld in de samenwerking tussen Overijssel en Teleorman en speelden ook in dit project geen rol. Wat betreft de *cognities* van actoren is geobserveerd dat het bestrijden van overstromingen nooit prioriteit heeft gekregen in Teleorman. Watermanagers hebben voorheen vooral aandacht besteed aan het bestrijden van droogteproblemen, aangezien deze van meer betekenis waren en vaker voorkwamen. Tijdens het project is de wens ook uitgesproken om ook aandacht te besteden aan droogteproblemen in het gebied. Hier is vervolgens ook aandacht aan besteed in de aanvullende activiteiten. Dit heeft echter niet geresulteerd in een concrete afname van droogte gerelateerde problemen in de regio. Tijdens het project moest ook nog een nadere invulling worden gegeven aan het demonstratieproject. Randvoorwaarden voor dit projectonderdeel waren de toepassing van geotextiel en het beschikbare budget. De geïmplementeerde oplossing was

innovatief in Roemenie en zou nooit zijn toegepast als Nederlandse experts niet bij het project betrokken waren geweest. Roemeense actoren hebben dus geleerd over nieuwe oplossingen. Hiernaast heeft men ook meer inzicht gekregen in de rol die Nederlandse expertise in Roemenie kan spelen. In de analyse van de *hulpbronnen* is onderscheid gemaakt tussen de volgende hulpbronnen: financieel, institutioneel, personeel en informatie. Financiële hulpbronnen zijn uitsluitend bijgedragen door Nederlandse organisaties. Het is onwaarschijnlijk dat de Botoroaga dam inmiddels zou zijn gerepareerd (het demonstratie project). In het regelen van benodigde vergunningen hebben Roemeense actoren een belangrijke rol gespeeld. De organisatie van het proces en het vergaren van data en informatie is verzorgd door zowel Nederlandse als Roemeense actors. Aangezien beide actoren niet alle benodigde hulpbronnen tot hun beschikking hadden was er sprake van een wederzijdse afhankelijkheid.

Expertise kan worden bijgedragen door relatieve 'insiders' (Roemenen in dit geval) and door relatieve 'buitenstaanders' (Nederlandse experts in dit geval). In het bestuderen van de rol van expertise is een onderscheid gemaakt tussen expertise die betrekking heeft op *de inhoud, het proces en het netwerk*. Inhoudelijk heeft Nederlandse expertise een doorslaggevende rol gespeeld in het formuleren van een innovatieve oplossing om de dam in Botoroaga te repareren. Het betrekken van Roemeense actoren in het ontwerp proces was cruciaal om draagvlak te creëren voor deze oplossing. In het ontwikkelen van overstromingsrisicokaarten hadden Roemenen vrijwel geen ervaring. Nederlandse experts hebben ook hierin een belangrijke rol gespeeld. Aan het begin van het project hadden de Nederlandse experts vrijwel geen kennis van de lokale problemen, voorkeuren, kwaliteiten en sociale relaties. Deze kennis is tijdens het project verder ontwikkeld. De mogelijkheid om op basis van deze inzichten het project aan te passen waren echter maar beperkt aanwezig. In het managen van het proces en het netwerk heeft de projectleider een sleutelrol vervuld. Hoewel zijn kennis van de lokale situatie beperkt was, is hij er toch in geslaagd om de juiste actoren te betrekken en het project succesvol te managen. Wat zeker een rol heeft gespeeld is dat Overijssel en Teleorman al samenwerkten en dat de projectleider is ondersteunt door verschillende Roemeense actoren.

Op basis van deze case studie wordt geconcludeerd dat – in aanvulling op de eigen doelstellingen, externe druk en zelfeffectiviteit – 'sociale relaties' ook kunnen worden beschouwd als een bron van motivatie. De ontwikkeling van relaties en vertrouwen, institutioneel leren, blijkt ook van invloed te zijn op de toepassing van Nederlandse expertise. In het algemeen spelen collectieve leerprocessen een cruciale rol in het oplossen van waterproblemen. Tijdens dit project waren de mogelijkheden om gezamenlijk een probleem op te lossen maar beperkt aanwezig, omdat de meeste projectonderdelen al afgebakend waren. Er waren dus weinig mogelijkheden om het project aan te passen op basis van wat was geleerd. Analyse van de hulbronnen laat zien dat er relaties van onderlinge afhankelijkheid bestonden tussen zowel Nederlandse en Roemeense actoren. Nederlandse experts hadden niet de contextspecifieke kennis die nodig was om het project succesvol af te ronden. De toegevoegde waarde van Nederlandse experts was dat ze algemene kennis (modellen en methoden) hebben, die innovatief is en verschillende project aspecten integreert.

Aanbevolen wordt om Nederlands-Roemeense projecten te ontwerpen als 'op leren georiënteerde' processen. Dit houdt in dat er ruimte moet zijn om te leren (communicatie en interactie, een participatieve setting) en dat het project zelf flexibel moet zijn (adaptief management).

Preface

This report is part of the PhD research *'Applying Dutch expertise abroad: How to contribute effectively in the Romanian context?'* This research started on the 1st of September 2008 and will be completed within four years. As part of this research, we intend to analyze at least two ongoing projects and several completed projects. This report presents the case study of an (almost) completed project. This report has been written within the context of the overall PhD project. It has been written specifically for the Province of Overijssel. However, it also aims to inform other researchers and practitioners, including other persons involved in Dutch-Romanian water projects.

This research is supported by the Institute for Governance Studies at the University of Twente, the Province of Overijssel and Haskoning Romania. Supervision is provided by the Water Engineering and Management (WEM) Department and the Centre for Clean Technology and Environmental Policy (CSTM). The following persons are involved as supervisor:
- Prof. Dr. Ir. S.J.M.H. Hulscher, Professor in Water Management (WEM)
- Prof. Dr. J. Th. A. Bressers, Professor of Policy Studies and Environmental Policy (CSTM)
- Dr. ir. D.C.M. Augustijn, Associate professor in Environmental Management (WEM)
- Dr. ir. V. Dinica, Senior Researcher (CSTM), until the 1st of September 2009

We thank representatives from Teleorman County Council, the Water Management Centre, Apele Romane, Royal Haskoning and the Province of Overijssel for giving us the opportunity to interview them. In particular, we thank the project leader Alex Hooijer and Irina Feleaga of Teleorman County for their assistance in providing documents and arranging interviews.

In this report, we present a reconstruction of the course and outcomes of a Dutch-Romanian project. In preparing the final version of this report, we received useful comments of various readers, for which we thank them. We hope that you enjoy reading this report and that it provides you with new insights in the export of Dutch water management and in Dutch-Romanian projects in particular.

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Bucharest, 29 September 2009

Table of contents

List of abbreviations

The English abbreviations used in this report are summarized below. Romanian or Dutch synonyms are provided in *italic*.

CC	County Council *(Consiliul Judetean)*
EU	European Union
EVD	(Dutch) Agency for International Business and Cooperation
G-CC	Giurgiu County Council *(Consiliul Judetean Giurgiu)*
MoE	Ministry of Environment *(Ministerul Mediului)*
NAAR	National Administration "Romanian Waters" *(Administratia Nationala "Apele Române")*
NIHWM	National Institute of Hydrology and Water Management (*Institutul National de Hidrologie si Gospodarire a Apelor*)
NWP	Netherlands Water Partnership
H-NL	Haskoning Netherlands, a company of Royal Haskoning
PO	Province of Overijssel *(Provincie Overijssel)*
SC	Steering Committee
T-CC	Teleorman County Council *(Consiliul Judetean Teleorman)*
TUCB	Technical University of Construction Bucharest *(Universitatii Tehnice de Constructii Bucuresti)*
T-WMS	Teleorman Water Management System *(Teleorman Sistemul de Gospodărire a Apelor)*
WD	Water Directorate *(Directia Apelor)*
WD-AV	Water Directorate Arges-Vedea *(Directia Apelor Arges-Vedea)*
WMC	Water Management Centre *(Centrul de Management al Apei)*
WMS	Water management System *(Sistemul de Gospodărire a Apelor)*

1 Introduction

This chapter introduces the scope, strategy and methods, theoretical basis and contents of this report. This report is part of a four year PhD research, section **Error! Reference source not found.** explains how this case study report relates to this research. The second section describes the basic strategy used to gather and analyze data. Section 1.3 explains how the actual process of doing research developed for this case study. Subsequently, section 1.4 describes the analytical framework that guides the case study analysis. The last section provides an outline of the report.

1.1 Research context

This case study report is part of a PhD research at the University of Twente. The overall objective of this research is:

> *To provide insights in the contribution of Dutch expertise to the solving of water management problems in transition countries, such as Romania, by investigating – for several Dutch-Romanian case study projects – the motivation, cognitions and resources (including Dutch expertise) of actors involved, and relevant contextual factors.*

The basic theoretical framework used to analyze Dutch-Romanian projects is presented in section 1.4. This section is limited to the definition of the main concepts used throughout this report. Each of them is discussed in more detail in an earlier publication (Vinke-de Kruijf 2009). We define problem solving as an *interactive process through which various actors arrive at a shared problem-solution combination. Problem solving takes place within a wider, structural and specific context, but the evolution and outcomes of problem solving basically result from the dynamic interaction between actors' resources, cognitions and motives*. One of the resources involved in Dutch-Romanian projects is Dutch expertise. Expertise is *a great skill or knowledge in a particular field, which may relate to the content, the process or the network. Expertise is also a resource of actors involved and thus a source of capacity and power*.

The empirical part of this PhD research focuses on the analysis of several Dutch-Romanian projects and of Romania's wider and institutional context. Some of these Dutch-Romanian projects are studied in *retrospective* (completed projects) and some through *real-time observations* (ongoing projects). Although 'Teleorman Flood Risk Management Project' was not completely finished at the time of our analysis – a dam was still under construction – this analysis is regarded to be a retrospective study as all other activities were already completed in June 2008. The advantage of analyzing a case study in retrospective is that the overall course and outcomes of the project are already known. However, this prior knowledge may also bias a study and it does not allow us to observe how the process actually unfolds (Van de Ven 2007). As retrospective and real-time case studies may provide complementary insights, this PhD research is based on a combination of both types of studies. Whereas the real-time studies will provide more insights in learning processes, the retrospective case studies can provide more insight which projects were successful and why.

In this retrospective case study, we intend to analyze the course and outcomes of Dutch-Romanian projects, and the contribution of Dutch expertise in particular. The case study analyses includes: (1) a description of the course and outcomes of the project; and (2) an analysis of the motivation, cognitions and resources of actors involved. As this Dutch-Romanian project is part of a cooperation programme between the Province of Overijssel and Teleorman County, this report also pays attention to this cooperation. During subsequent phases of the PhD research, this project will also be compared with other Dutch-Romanian projects.

1.2 Research strategy

The analysis of the retrospective and real-time cases is based on a *qualitative case study research strategy*. Whether retrospective studies are examples of 'case studies' is a matter of definition. As they do not include the observation of contemporary events, some scholars rather call them histories (Yin 2009). Other definitions of 'case studies' also include retrospective studies. For example, the definition that a case study is "*the intensive study of a single case for the purpose of understanding a larger class of similar units (a population of cases)*" (Gerring 2006). In any case, triangulation, i.e. the use of multiple sources of evidence, is an important aspect to create valid results (Gerring 2006; Yin 2009). In this case study, three sources of data have been used: project documents, face-to-face interviews in the period January - May 2009, and a report by Dinica (2007). The main project documents used are: progress reports written for the funding programme 'Partners for Water' and the substantive reports written by project team members. The author itself carried out six interviews, two in the Netherlands and four in Romania. These interviews focused on the evolution and outcomes of the Dutch-Romanian project. See also Annex A for more information on the interviews and project documents. The report by Dinica "An institutional analysis of water management issues in the Teleorman County, Romania" is based on research activities carried out in 2006. For this case study, the reports' part on flood risk management has been used, which includes in-depth face-to-face interviews with 16 key stakeholders and the results of 40 questionnaires that were filled out. The aim of these interviews and the questionnaire was to provide insights in the perceptions of various stakeholders regarding the most important factors behind the floods in 2005.

This study aims contribute to the knowledge of Dutch experts involved in projects abroad and is thus practice-oriented. A distinction can be made between three types of practice-oriented research: descriptive, hypotheses-building and hypotheses-testing. This research is mostly descriptive; we rather aim to identify and describe variables than to provide exact descriptions of the relations between variables (Dul and Hak 2007). The used method of inquiry is referred to as abduction (and not induction or deduction). This means that the analysis is build upon a continuous interplay between defined theoretical concepts and empirical data. Three important implications of abduction are: (1) the need for a detailed, rich case description (thick description) as we do not have one plausible idea yet about important variables and causal mechanisms; (2) in generating explanations for our findings we are continuously trying to create a linkage between our analytical framework and our empirical findings; and (3) try to quantify what you can and do not ignore the potential of qualitative information (Van Maanen et al. 2007). These implications are also applied in this report, e.g. by providing an extensive project description, a separate reflection chapter, and quantifying (i.e. counting the numbers of participants).

1.3 Research process

How the process of abduction develops, thus how a research actually unfolds often remains hidden (Van Maanen et al. 2007). This section aims to reveal this aspect of doing research. As this section is written from my own personal perspective, I (the author) present this section in the first person singular.

Officially, I started working on this case study in January 2009. By then, I already had my first experiences in Teleorman (the project area); six months earlier I attended the Danube Days in the area. The Province of Overijssel invited me to participate and to present my research for various Dutch and Romanian stakeholders. During these days I already met various people whom I interviewed later for the purpose of this research. I also visited the location where project works have been implemented. Following this event, I have been occupied with writing research proposals and the development of a theoretical framework. This reading and writing, supported by experiences with doing water-related research in the Netherlands, living in Romania and some

interviews, resulted in an initial idea of how Dutch experts may contribute to or play a role in Dutch-Romanian water projects. The resulting analytical framework is presented in the next section (1.4).

By the end of 2008, I was ready to start with the analysis of case studies. Case study research crucially depends on having access to case study material (Gummesson 2000). Before I started the interviews I was warned by other researchers that gaining access to relevant persons and information can be quite challenging in Romania. Fortunately this appeared not to be a problem for this case. First, I approached the project leader of Royal Haskoning for documents and for an interview. He provided me with access to case study material and we discussed the project. I also discussed the project with two persons of the Province of Overijssel. Following this, these people brought me in contact with relevant Romanian stakeholders.

All interviews were semi-structured: I prepared a framework for the interviews in advance, but the interviews were not limited to the prepared questions. During some interviews the questions did not even appear. This was particularly the case with Romanian stakeholders, with whom I had rather informal conversations about their organizations and about the project. During such conversations we discussed questions, such as: What kind of activities is your organization involved in? How were you (and your organization) involved in the project? What did you and other stakeholders contribute to the project? How was the cooperation during the project? What was the added value of Dutch expertise? What did you learn from the project? The interviews provided many useful insights in the projects. Although I have to admit that the implementation of works (one aspect of the project) got much more attention than other project components. What possibly caused this was that this project component was still ongoing.

During the process of gathering and analyzing data, I realized that there was a need to adjust some of my initial ideas. In preparing for the interviews, I went through various project documents. My first impression was that, since the project duration was much longer than expected, it was not a very successful project. However, during the interviews I discovered that both Dutch and Romanian respondents are looking back positively on the project. This raises the question how we can actually define a 'successful project'. I did nor explicitly predefine any evaluation yardsticks, but discovered that my analytical framework includes many assumptions about how a project develops. I will come back on this issue in the last section of the reflection chapter. Furthermore, I realized that my interpretation of Dutch expertise as one of the resources of actors involved was too limited. I realized, for example, that it does not make sense to link Dutch expertise only to resources; it is linked closely to the development of cognitions and motivations as well. This resulted in a slightly different discussion of expertise (see section 3.4). These and other reflections are elaborated further in Chapter 4.

1.4 Analytical framework

This case study report is the first in a line of multiple case studies. The analytical framework used for this study is described in more detail in a previous report (Vinke-de Kruijf 2009). This section summarizes the framework used to study this project. Based on this study this analytical framework may be adjusted and further refined for subsequent case studies.

The focus of the adopted analytical framework is on 'problem-solving'. The reason for this is that water projects – like engineering projects in general – are mostly designed to solve a specific problem (Beroggi 2000). Previous research shows that often the knowledge needed to solve a water problem is uncertain and that actors involved disagree about relevant norms and values. Consequently, many water problems are not technical or knowledge problems; they are rather problems of disagreement or ambiguity. Therefore, water projects as processes of social interaction

in which various actors with diverging perceptions formulate the problem and its solutions (Hommes et al. 2009).

The adopted framework for analyzing problem solving is inspired by the Contextual Interaction Theory developed by Bressers (2004). This theory states that – although policy processes develop within a wider, structural and specific context – the evolution and outcomes of problem solving basically results from the dynamic interaction between key characteristics of actors involved. These actor characteristics and related relevant questions are (Bressers 2007; Owens 2008):

- Actors' *motivation*: the motivation that drives their action. How motivated were actors to participate? To what extent did the project match their goals and values? To what extent were actors limited by external factors? How did actors assess their own role in the project?
- Actors' *cognitions*: the information they held to be true or their perception on the problem. To what extent does the problem addressed correspond to the problems experienced by actors involved? To what extent do they trust provided information? Were there any content-related discussions or ambiguity?
- Actors' *resources*: available and accessible resources which provide capacity to act and are sources of power. To what extent were all necessary resources available? How were various resources mobilized? Which contributions were made by which actors?

Previous research shows that it is useful to elaborate on actor characteristics over time and to include the role of contextual factors (Owens 2008). As a retrospective case does not allow for real-time observation, it is difficult to provide an in-depth analysis how each actor characteristic developed over time. However, it does allow for a more general analysis of the project course and its outcomes. Such an analysis focuses on impasses (deadlocks or stagnations) and breakthroughs, and generated outcomes (Koppenjan and Klijn 2004). How the project course and its outcomes depends on the motivation, cognitions and resources of actors involved. The ideal outcome of problem-solving is a joint formulation of the problems and its solutions, a *problem-solution combination* (Hommes et al. 2009). Key-questions regarding this outcome are: Was it possible to mobilize all necessary resources? Did actors arrive at an agreed upon and valid (*negotiated*) knowledge base? Did actors formulate a motivating goal? Of particular interest for this research is the role of (Dutch) expertise, which is one of the resources of actors involved. In solving water problems expertise about content, process and network appears to be relevant (Leeuwis and Van den Ban 2004; Wesselink 2007). This distinction between three types of expertise will be used to analyze the role of (Dutch) expertise in this project.

The project description also includes the role of contextual factors. A distinction can be made between three contextual layers: project-specific, institutional and wider (Bressers 2007; Bressers and Xue 2007). This case study includes an analysis of the project-specific context, this is the history of the project (previous decisions and plan) and specific circumstances, such as funding or relation with other cooperation projects. The project description does not include a separate analysis of the institutional and/or cultural setting. This will be part of a subsequent, separate analysis of contextual factors. The basic analytical framework of problem solving that guides the analysis of this Dutch-Romanian project is schematized in Figure 1.

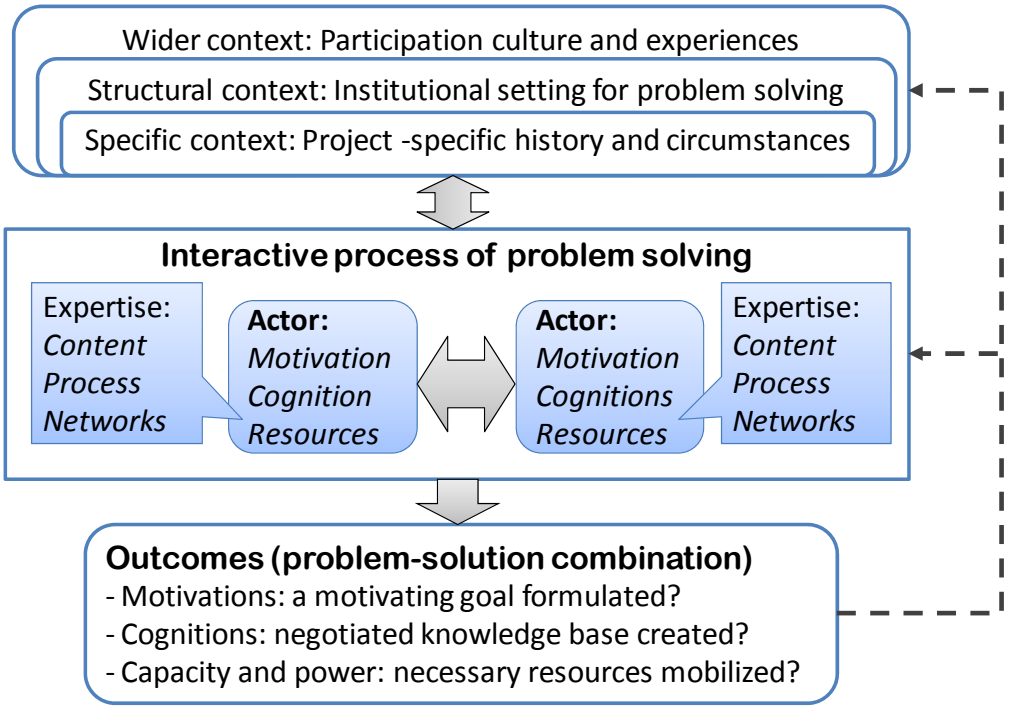

Figure 1 – Analytical framework: problem solving as an interactive process which is influenced by contextual factors and results in certain outcomes

1.5 Outline

This chapter introduces the case study 'Teleorman Flood Risk Management Pilot Project'. The remainder of this report further describes and analyzes this project. Chapter 2 starts with a detailed description of the project context, content and process. It describes how the project developed over time and how various actors have been involved. Chapter 3 also describes the project, but from a purely actor-centred perspective. Our focus in this chapter is on three characteristics of actors involved: resources, cognitions and motivations. We link every characteristic also to Dutch involvement. Chapter 4 reflects on the results of this study and connects these results to theory. This report concludes with conclusions and recommendations for the Dutch water sector in Romania and the Province of Overijssel in particular. This report also contains a list of abbreviations, a list of references and one annex with a list of interviews and project documents.

2 Project course and its outcomes

This chapter describes the background, content and process of the 'Teleorman Flood Risk Management Pilot Project'. The first section introduces the project-specific context, including the project background and history, the. Section 2.2 describes the development of various project components. The actors involved and their interaction is described in section 2.3. This chapter concludes with a synthesis of the project course and its outcomes.

2.1 Background and history

Our case study project is part of a broader cooperation project between Teleorman County and the Province of Overijssel (PO), the Teleorman Water Project, which is described in subsection 2.1.1. The second subsection describes the background of the project itself. The project objectives are presented in the last subsection.

2.1.1 Teleorman Water Project – Overijssel

On 14 January 2005, the two (Dutch) Provinces of Gelderland and Overijssel signed a formal agreement for cooperation with the (Romanian) Counties of Teleorman and Giurgiu (see Figure 2). The counties are located south-west of Romania's capital Bucharest. The counties are crossed by two main rivers, the Arges and the Vedea, that flow southwards into the Danube River. The Danube forms the south-border of both counties and the border between Romania and Bulgaria.

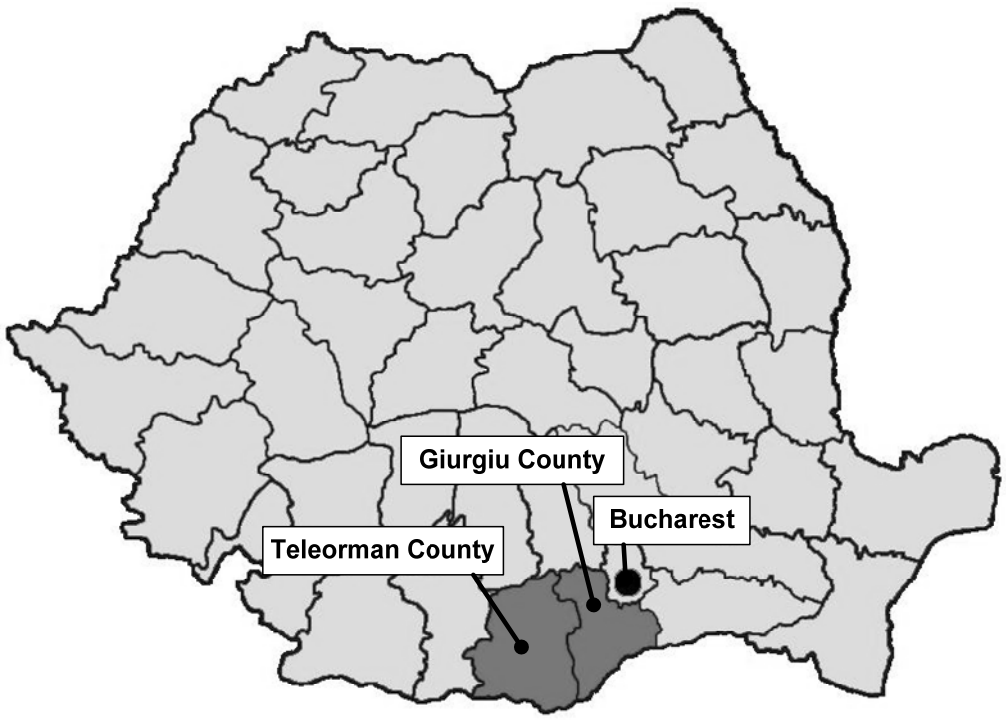

Figure 2 – Location of the Counties Teleorman and Giurgiu in Romania

On request of Teleorman County Council (T-CC), the agreement explicitly states that the first joint project would focus on water management. In the same year PO and T-CC established their first concrete cooperation project. Note that the Province of Gelderland did not have an active role in this project. The objective of the 'Teleorman Water Project' was:

"To improve the water systems in Teleorman County, with an emphasis on the drinking water supply, collection and processing of wastewater, and to lessen the risk of flooding"[1]

In addition to PO and T-CC, five Water Boards from Eastern Netherlands, and drinking water organization *Vitens*, also decided to participate in the project. This enlarged cooperation was confirmed during the Danube Days in June 2005. During the course of the project, the water company Vitens withdrew (it decided to focus only on urban areas) and a sixth Water Board joined. The 'Teleorman Water Project' has two central working groups: a Romanian working group coordinated by the T-CC (located in Alexandria) and a Dutch working group coordinated by PO. The project focuses in particular on the following sub-projects:

1. Improvement of drinking water and wastewater management in urban areas
2. Improvement of drinking water and wastewater management in rural areas
3. Reduction of flood risks in Teleorman
4. Water project for young people
5. Establishment and support of a Water Management Centre (WMC)
6. Training courses in drinking water and wastewater management
7. Institutional analysis of water management in Romania
8. Work visits by politicians

This report focuses on the 3rd sub-project, reduction of flood risks. The main locations for project activities are indicated on Figure 3. This includes Alexandria (residence of T-CC), Turnu Magurele (residence of the WMC) and Botoroaga (location of implemented works).

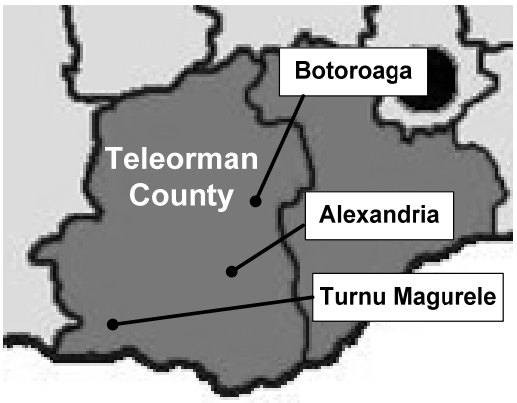

Figure 3 – Main locations of project activities

2.1.2 Project-specific background

When Dutch and Romanian partners signed their cooperation agreement, they expected that their cooperation would focus on drinking water and waste water treatment. Since Teleorman and Giurgiu did not experience any serious flood during the past eighty years, floods were not regarded as a serious risk. This changed when three severe floods hit the area between July and September 2005. These floods resulted in the inundation of 35 villages, the destruction of thousands of houses, collapsing of more than one hundred bridges and two deathly casualties. The causes of these floods are a combination of extreme precipitation and the failure of dikes and local discharge systems.

The first flood took place, just after a Dutch delegation visited the Danube Days in the area in June 2005. Upon these unexpected events, the delegation decided to raise funds for the structural protection against flooding in the region. Two provinces and five Water Boards decided to make a financial contribution to this special 'Flood Fund' which was managed by PO. PO also decided to involve Haskoning Netherlands (H-NL) as a consultant in developing a flood risk management project.

[1] Teleorman Water Project (Southern Romania) - Overijssel. Activities Programme 2008/Comprehensive Background Document, version 17 January 2007;

Preparations for this project started with several site visits by experts of H-NL and water boards (one in September and two in November 2005). During these missions three flood-affected areas were examined: Cainelui sub-basin, Calmatiu sub-basin and Calnistea sub-basin. In consultation with two Romanian key stakeholders (T-CC and local water managers), it was decided that the Calnistea basin would serve as a pilot project. The project would focus in particular on the southern part, the Lower Calnistea basin. The Calnistea river is a tributary of the Arges river and its river basin is located in the mid-western part of Teleorman, upstream of Giurgiu[2]. The location of the three river basins is indicated in Figure 4.

Figure 4 – River basins Arges and Vedea, with the sub-basins Calnistea, Calmatui and Cainelui (Source: project report 1, see Annex A)

The 'Flood Fund' could not cover the costs of all activities proposed under the Flood Risk Management Pilot Project. Therefore, in April 2006 a proposal was submitted to the Dutch 'Partners for Water' Programme. This programme is implemented by the Dutch Agency for International Business and Cooperation (EVD) and the Netherlands Water Partnership (NWP) and provides financial support for innovative water projects by Dutch partners abroad. One of the conditions for support is that the applicant (H-NL in this case) covers 20% of the costs, whereas Partners for Water covers the remaining 80%. In this case, it was agreed that the project team would undertake several supplementary activities, equivalent to 20% of the project costs. Some time was needed to agree upon this. Because of this the project started a few months later than intended. Initially, it would start in July 2006 and end in September 2007. In the formal agreement between H-NL and Partners for Water, which was signed only on 15 December 2006, it was agreed to start the project on 1 October 2006 and to complete it before 31 December 2007. The main project beneficiaries are the National Administration Romanian Waters, (*Apele Romane* or NAAR) and T-CC Department of International and External Cooperation.

2.1.3 Objectives

The activity programme of the "Teleorman Water Project – Overijssel" describes the objectives of the flood risk management project as follows:

> *Long-term goal: substantial reduction of the risk of flood damages and victims in all river basins in Teleorman and Giurgiu Counties.*

[2] Teleorman Water Project (Southern Romania) - Overijssel. Activities Programme 2008/Comprehensive Background Document, version 17 January 2007;

Short-term goal (2007): execution of a pilot project in a sub-river basin to discover institutional bottlenecks and opportunities, in order to develop guidelines and to carry out some effective measures in the area[3].

This objective clearly distinguishes between a long-term and a short-term goal. The objective on the short-term is to execute a pilot project. Although it is not explicitly mentioned in the objective above, it was already decided that the pilot project would be located in the Lower Calnistea river basin. What was still unknown was where the flood related measures would be located. Within the context of Partners for Water, the project team formulated the following specific objective:

To demonstrate the Dutch capabilities in providing support to: (1) address flood-related matters in the management of water resources in line with the proposed EU directive for Flood Risk Management and to support the development and refinement of flood risk management strategies and action plans; (2) the realisation of flood proofing measures; and (3) the modernization of institutional framework for flood and crisis management[4]

This objective connects the project with the implementation of the European Union (EU) Floods Directive (2007/60/EC) and the export of Dutch water management. The project proposal also expresses the ambition that the project will serve as a guide for structural and non-structural measures for flood risk management in other parts of Romania. Spin-offs are expected within the context of Romania's ambitious strategy for flood protection and the EU Floods Directive. For this, the project aims in particular at the successful absorption of Dutch supplies and services in relation to e.g. streamlining of implementation, communication and conflict management, laser-scanning, flood mapping and geotextile. Spin-off in the project area itself is also expected as the project is part of a broader cooperation between T-CC and PO. Furthermore, the project also involves Haskoning Romania, which is involved in other projects in Romania as well.

2.2 Evolution of project components

What catches attention when analyzing the progress of the project are its delays. During the project course, the initial end date (31 December 2007) was postponed four times and eventually became 30 June 2009. This section elaborates further on the evolution of various project components, including various delays. For this, we distinguish between the following components:

I. Flood risk maps: development of maps using data sources and models
II. Flood risk management plan: elaboration of a strategy for flood management
III. Guidelines and demonstration project: development of guidelines for the implementation of flood protection works and application of flood related measures at pilot-scale
IV. Institutional analysis: assessment, analysis and recommendations related to the institutional framework
V. Supplementary activities: activities that were added in the beginning of the project in consultation with Partners for Water

Next subsections describe the evolution of each project component in more detail. These subsections are mainly based on project reports and progress reports. In total, the project resulted in thirteen project reports and six progress reports (this includes the inception report). Annex A provides an overview of all reports. All project reports are written in English, except for the institutional analysis, which is also translated in Romanian. The progress reports were prepared by by the project leader of H-NL to keep Partners for Water about the project progress and therefore written in Dutch.

[3] Teleorman Water Project (Southern Romania) - Overijssel. Activities Programme 2008/Comprehensive Background Document, version 17 January 2007
[4] Proposal and Work Plan submitted at Partners for Water, 10 April 2006

2.2.1 I - Flood risk mapping

The development of flood risk maps started with two activities that are quite innovative in Romania: (1) collection of (elevation) data through airborne laser-scanning (LiDAR) and ortho-photo's; and (2) the processing of this data into a Digital Terrain Model. The collection of elevation data was delayed as problems were experienced in arranging required permits. Procedures just changed as a result of Romania's accession to the EU in January 2007. As a result, flights were not undertaken in February but in May 2007. The development of images was also affected by some minor technical problems, related to the reading of a hard disk. After this data was available, a hydraulic model was prepared using flood hydrographs. The software SOBEK was used for this. For the hydrographs, historic data about precipitation and discharges is required. As this information was lacking, use was made of synthetic instead of 'real' flood hydrographs. The outcome of the model had to be combined with geographical, social and environmental to assess potential damages, which was used to create flood risk maps. Final products of component I are the flood risk maps themselves and guidelines on the development of flood risk maps. All flood risk mapping activities and related reports were completed in the beginning of 2008, which is one year later than foreseen in the work plan.

2.2.2 II - Flood Risk Management Plan

Based on the data gathered during various flood risk mapping activities, it would be possible to develop a flood management strategy. The initial plan was to develop an action plan with flood related measures, including public consultation and information rounds. This ambitious plan was downscaled as the project area (Calnistea river basin) was too large to realize such action plan given the project duration. An important reason is that the realization of such plans involves intensive consultation of local authorities and a thorough investigation of economic possibilities. What also played a role is that such plan should integrate both floods and droughts (interviews showed that droughts impose a more pressing problem than floods in the area). During the 2nd meeting of the Steering Committee (see also subsection 2.3.2), it was discussed that preparing such integrated plan goes beyond the scope of this project. In consultation with key stakeholders it was later decided to pay attention to possible options for flood management during a final seminar. Thus, instead of developing an integrated flood risk management plan, it was decided to limit the project to the preparation of an action plan for Botoroaga, Mosteni, Drganesti and Bujoreni communities, which are located in the Calnistea river basin. The plan included the development of water management scenario's, with special attention to irrigation, a water balance and an environmental impact assessment. All relevant reports were completed in December 2007. The final seminar was organized in June 2008.

2.2.3 III – Guidelines and demonstration project

This project component consists of two elements: (1) the development of best practice guidelines for the selection, design, construction, operation and maintenance of flood protection works and flood related measures; and (2) application of flood related measures at pilot scale. The first elements resulted in a report concerning possible structural and non structural measures for flood reduction in Calnistea river basin. The report was completed in January 2008. The development of guidelines also included a familiarization visit of Romanian design institutes and/or universities and lectures on Dutch concepts and practices. How this has been implemented is unclear; the development of guidelines is not included in the progress reports.

One of the boundary conditions for the demonstration project was that it would make use of geotextile, to be supplied by a Dutch company. According to progress report 1, the idea to rehabilitate the damaged dam at Botoroaga, took shape already before the project started. For this, the damaged dam section would be replaced by a flood resistant overflow that allows for controlled flooding. Five possible options were reviewed for rehabilitation of the dam, but most of them did not fit within the available project budget. Two realistic options were explored furthering more

detail: (1) stabilization of the dam, this involves a minimum of repairs to make the dam flood resilient; this option could be complemented with (2) phased rehabilitation, this initially only involves making the dam flood resistant and full rehabilitation during a later stage. The Romanian stakeholders agreed that it was necessary to stabilize the dam and to use geotextile for this purpose. Following this decision, an engineering firm prepared two stabilization designs (with and without a geotube inside the dam). These designs were presented and analyzed during workshops in October 2007. Subsequently, the company prepared two detailed designs. The option that was preferred (for budgetary reasons) was to use geotextile for stabilization without any geotube. They completed the detailed design for stabilization in December 2007.

During 2007, the project leader raised two issues that might have constrained the demonstration project: ownership and timely arrangement of required authorizations (permits and licences). Ownership did not appear to impose problems as the dam was fully owned by the Local Council of Botoroaga. Timely arrangement of authorizations appeared to be more difficult. First, the Local Council had to apply for an urbanization certificate at the County Council (CC), which forms the basis for the application of licenses. As the project concerns a dam with a flood protection function, a special approval by a Committee for small dams was also required. After receiving this approval in February 2008, the Local Council could apply for a construction authorization.

When the project team was preparing for the actual construction of the dam, another issue arose: how to divide roles and responsibilities between project leader, owner and contractor? Various agreement options were studied. This resulted in the establishment of various contracts and agreements: an Implementation Agreement between H-NL and Botoroaga Council; an Execution Contract between Botoroaga Council and the contractor; and a Supervision Contract between Botoroaga Council and a Romanian supervisor. Because of this, the completion date of the dam was postponed further. The contractor started the construction of works in spring 2009 and was able to complete works within the time and budget agreed upon by the Local Council and the contractor. Eventually, the project component took 30 months (from exploration in the beginning of 2007 until completion mid-2009), instead of six months (initial plan). However, the dam was constructed within the available project budget. The dam was inaugurated on the 27th of June 2009.

2.2.4 IV - Institutional analysis

During the preparation phase of this project, a researcher of the University of Twente undertook an institutional analysis (2006 – July 2007). This analysis pays attention to 'floods prevention and crisis management' and to 'water services in rural and urban areas'. The latter was directly paid for by PO and is not related to this project. The part related to flood risk management is part of this project. However, this project component has always been quite separate from the rest of the project. Also because the time plan of the project differed from the time plan of other project components[5].

2.2.5 V - Supplementary activities

As described in subsection 2.1.2 the project agreement between H-NL and Partners for Water includes the formulation of several supplementary activities before August 2007. Initial ideas for activities were: (1) the organization of an international symposium; (2) project presentation for the Dutch water sector in cooperation with NWP; and (3) realization of flood related measures. Later, the third idea was rephrased as: (3) development of a water retention plan in the upper catchment; and (4) strengthening of the WMC with respect to the local development of risk maps and flood crisis management. All activities developed as planned, except that the budget allowed for the organization of one extra activity: two representatives of H-NL and PO visited a workshop on transboundary cooperation in north-eastern Romania in June 2008.

[5] Interview project leader, 22 January 2009

2.3 Process: actors and interaction

This section describes the main actors involved in the project and their participation in various project activities. To provide a better understanding of the Romanian actors involved, this section starts with a description of Romania's basic structure for public administration. The subsequent subsection describes the organization of the project itself in more detail. Subsection 2.3.3 describes the participation of actors in various project activities.

2.3.1 Relevant administrative structure

Public administration in Romania is structured following a three-tier system: national, county and local. The state is divided into 41 administrative divisions (counties or districts). These counties are formed by communes, cities and towns. Coordination of common interest projects or the operation of public services is taken care of at county level. The CC is elected directly by the county population and elects a President from its members. At county level there is also a representative of the national government, the Prefect. The duty of the Prefect is to oversee the administrative activities of the counties, communes, cities and towns. The Prefect is a high public servant with a non-political status. At local level, every city, town or commune has a Mayor and a Local Council. Both are elected directly by the population (Dragos and Neamtu 2007). In this project, one of the main beneficiaries is a department within T-CC involved in international cooperation projects. Another organization involved in supporting the project was the NGO EuroTeleorman, which is an association of all communities and communes in Teleorman. Another organization that participated in the project is the WMC, which was established in 2007 with support of PO. The mission of the WMC is to support and improve the knowledge of local communities in the field of water management.

Water management in Romania is carried out at by a large number of actors at various levels. This section only focuses on the actors that have been involved in this project. This paragraph is based on interviews[6] and Appendix 3 of the Institutional Analysis by Dinica (2007). The development of water management strategies, policies, plans and supportive research, and the monitoring of their implementation, is the task of the Ministry of Environment (MoE). MoE has several executive organizations under its authority, among which is Apele Romane or NAAR. NAAR is responsible for the administration, operation and maintenance of the quantity and quality of Romanian waters. They are also responsible for the implementation of EU Directives and have an important role in providing information in case of emergency situations. NAAR is divided into 11 Water Directorates (WD). The river basins Arges and Vedea are managed by the Water Directorate Arges-Vedea (WD-AV). Every WD has several Water Management Systems (WMS) under its authority. A WMS operates at county level and is responsible for several operational tasks, such as monitoring and maintenance. In Teleorman County, these tasks are undertaken by Teleorman Water Management System (T-WMS; also known as SGA Alexandria). Another organization under the authority of NAAR is the National Institute of Hydrology and Water Management (NIHWM). This institute is, among others, involved in research on water management and responsible hydrological forecasts and warnings.

2.3.2 Project organization

This Dutch-Romanian project involved various public and private stakeholders, both from the Netherlands and Romania. Figure 5 schematizes the general structure of the project organization. The role of public actors was mainly in steering the direction of the project and in providing institutional support. For this, they cooperated in a Steering Committee (SC) and in an Advisory Board. Through this cooperation, they could also strengthen their relations. The main Dutch public actors involved are PO and water boards. In the SC, a wide variety of Romanian actors participated: the MoE, the CC of Teleorman and Giurgiu, the NIHWM, NAAR and WD-AV. The Advisory Board consisted of a Romanian and a Dutch working group. The Dutch part is formed by specialists of

[6] Interview WD-AV, 29 April 2009; Interview T-WMS, 4 May 2009

various Water Boards and is also referred to as Teleorman Working Group. The work plan further mentions a 'project implementation unit', according to the project leader this unit never existed. Hence, it has been replaced by a box with the main beneficiaries. The work plan mentions the following project beneficiaries: T-CC and Apele Romane. Other institutes or organizations that benefited from the project are the communes in the Calnistea river basin (in particular Botoroaga) and the WMC. Apele Romane benefited from the project at the following three levels: national (NAAR), basin (WD-AV) and county (T-WMS).

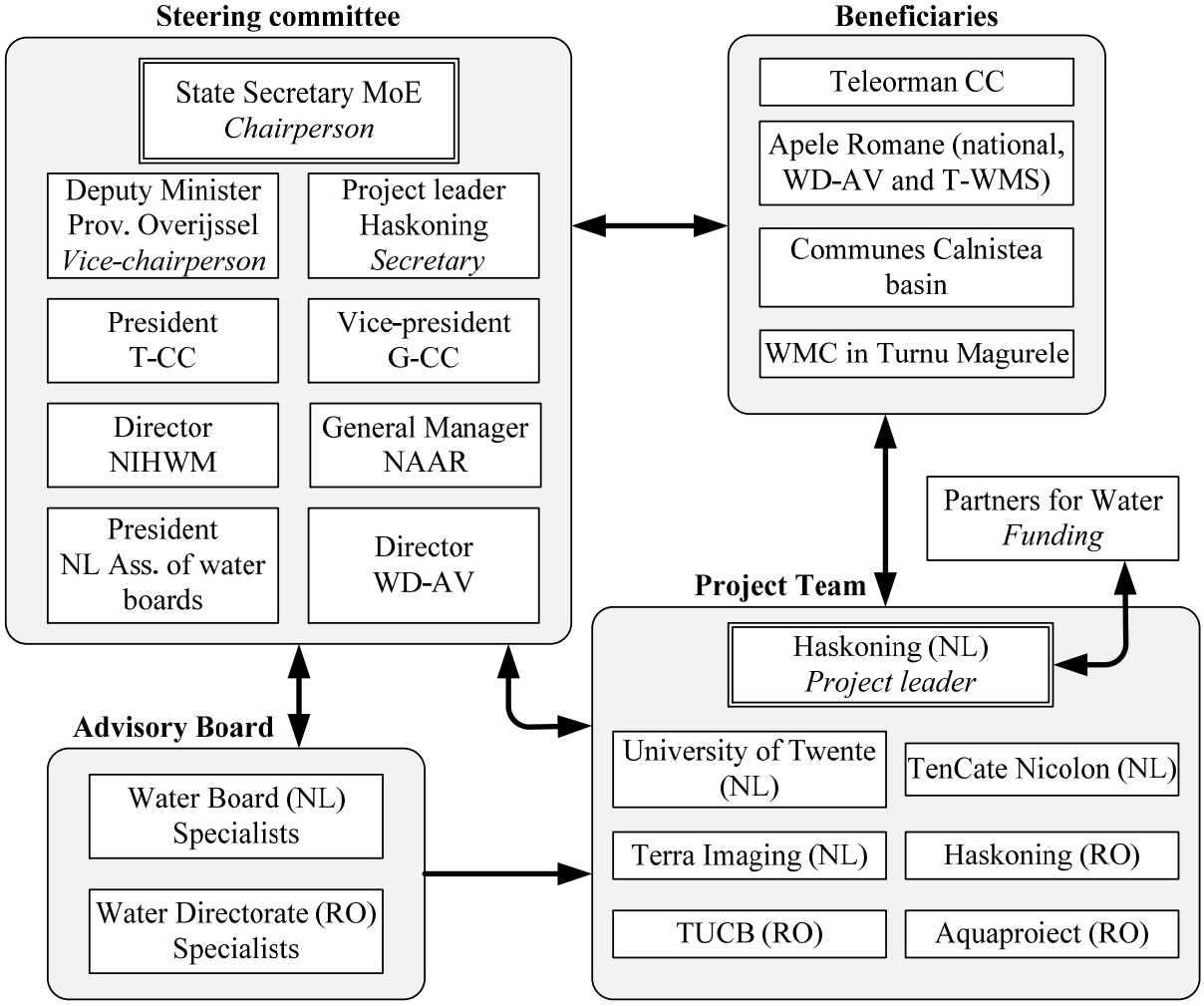

Figure 5 – Project organization (sources: project work plan, 2006; Inception report, 2007; project leader)

The implementation of the project is taken care of by a project team consisting of both Romanian and Dutch private organizations. The contribution of each organization to the project reports is presented in Annex A. Various members of the project team made the following contributions:

- Haskoning NL was the main actor involved in planning and implementation of the project was H-NL. Its project leader was involved in all project components and H-NL also prepared six project reports.
- Terra Imaging was mainly involved in the beginning of the project in data gathering and processing of elevation data (component I).
- Haskoning RO prepared the environmental and socio-economic studies that were needed for the flood risk maps and plan (component I and II).
- The Technical University of Construction Bucharest (TUCB) prepared the synthetic hydrographs, the water balance and irrigation options (component I and II).

- Aquaproiect carried out surveys that resulted in topographic information needed for the flood risk maps (component I). It also prepared the detailed designs for the demonstration project (component III).
- TenCate Nicolon supplied the geotextile needed for the demonstration project (component III).
- The University of Twente took care of the institutional analysis (component IV)

Besides the formal project team, several other actors also played a role in project implementation. For example, the Local Council of Botoroaga took care of the licenses for the demonstration project and the WMC and T-CC (sometimes through EuroTeleorman) assisted the project leader in the organization interactive activities. Funding was provided by Partners for Water. It was kept informed about the project through progress reports. All adjustments proposed during the project were approved by Partners for Water.

2.3.3 Participation in interactive activities

Several meetings, workshops and seminars were organized within the context of the project. An overview of various interactive activities is summarized in Table 1. This table does not necessarily represent all project meetings; it only represents the ones mentioned in various progress reports. As the project is an international project, language barriers are to be expected. All (formal) meetings and workshops in which Dutch people were involved were translated (English-Romanian). Regular interaction was mainly in English, as the main Dutch and Romanian actors had sufficient knowledge of the English language.

Table 1 – Overview of interactive sessions with the project component (I-V) between brackets ('workshop' is abbreviated with WS)

Activity	Date	Objective
Kick-off	16 October 2006	Discuss composition of SC
1st SC meeting I	22 January 2007	Discuss the project scope
2nd SC meeting	28 June 2007	Reach agreement about implementation III and V
Consultation	August 2007	Reach agreement about III
Teleorman Working Group	2 October 2007	Consult NL advisory board on implementation V
WS 'Integrated Flood Risk Management'	11 October 2007	Dissemination of experiences towards policy- and decision-makers (II)
WS 'Flood Risk Mapping and Flood Proofing'	12 October 2007	Dissemination towards professionals involved in design, application and operation of flood plans and flood related measures (I)
Working visit to NL	9-14 December 2007	Exchange of flood risk management experiences (III)
NWP-meeting	12 December 2007	Exchange of flood management experiences (V)
WS 'Water Retention Plan'	12 December 2007	Discuss activities within the context of the prepared water retention plan (V)
WMC Salcia WS	4 February 2008	Prepare local flood risk maps for Salcia (V)
WMC Crangeni WS	13 February 2008	Prepare a local emergency plan for Crangeni (V)
International seminar	8 - 9 March 2008	Exchange of experiences on flood risk management from NL, RO and Bulgaria and field visit (V)
'Interreg' workshop	9 June 2008	Exchange experiences with transboundary cooperation (V)
Final seminar	27 - 28 June 2008	Identify and share realistic flood management options on the basis of various project results (II)

The project started with a *kick-off meeting* with all key-stakeholders on 16 October 2006. During this meeting they discussed among others the composition and tasks of a SC. It was decided that a SC with nine members (see also Figure 5) would meet three times during the project. The task of the SC was to guide and supervise the project progress, to advice in case of any adjustments, and to involve relevant stakeholders. The SC played a decisive role in the selection of the supplementary activities and the demonstration project[7]. During the *1st SC meeting* several attendants expressed that it would be difficult to implement the demonstration project before the end of 2007. Hence, a six months extension of the project was asked for and granted by Partners for Water. During the *2nd SC meeting* they discussed among others the implementation of the demonstration project. It was decided to present one worked out option to all stakeholders for their comment and approval in August 2007 (*Consultation* in Table 1). Initially, a 3rd meeting was also foreseen to take place in the Netherlands. Later, the committee agreed to have their 3rd meeting in Romania. The date of this meeting changed several times, from early 2008 to 8 March 2007 to the end of June 2007. Eventually it was decided to skip the last meeting because the SC was well presented during the final seminar and because there was only one activity left: the stabilization of the dam. The Dutch part of the advisory board (*Working Group Floods*) advised on the actual activities to be undertaken of the supplementary activity 'realization of flood related measures'.

The initial project plan anticipated to organize three workshops (component I, II and III/IV) and a final seminar. The number of workshops increased during the project, because of the organization of the supplementary activities. *Two workshops* were planned to disseminate the results of components I and II. These workshops took place at 11 and 12 October 2007 and were each attended by around 30 participants. Participants consisted of representatives of the Romanian water sector, county councils, the local council of Botoroaga (day 1) and members of the project team. The third 'workshop' concerned a *working visit to the Netherlands*. Six Romanian stakeholders, whom represented the main beneficiaries, were invited to participate in a week full of excursions and meetings in the Netherlands. Participating organizations were: MoE, WD-AV, T-WMS, T-CC, Botoroaga Local Council and the Teleorman Prefecture. The programme of this field visit was developed in cooperation with the Teleorman Working Group. A *NWP-meeting* was organized during this visit, which was also attended by five other Dutch organizations actively involved in Dutch-Romanian water projects.

On the same day as the NWP-meeting, a workshop related to the development of the *Water Retention Plan* was organized in Romania. This workshop was attended by 3 Dutch participants and 16 Romanian stakeholders of the national, regional and local level. One other supplementary activity was the strengthening of the WMC. Within this context the WMC received training of Dutch experts in various subjects culminating in the organization of two workshops. The workshop organized in *Salcia* concentrated on the preparation of flood risk maps. The workshop organized in *Salcia* was about the preparation of flood risk maps. The workshop in *Crangeni* concerned the development of an emergency plan. The latter workshop was attended by 27 participants, mostly representing local government or community members and some representatives of WD-AV and T-CC. Preceding both workshops, a workshop was organized with Dutch experts at WMC to prepare for the workshops. These preparatory workshops were held on 11 December 2007 and 30 November 2007, respectively.

Another supplementary activity was the organization of an *international seminar*. The seminar was attended by over 50 participants (17 Dutch, 7 Bulgarian and the remaining participants Romanian). Most attendants were already participating in a certain way in the project. During the first day there were presentations of Romanian, Bulgarian and Dutch persons. During the second day a field visit was organized. During the project it was decided to focus the *final seminar* on the development of concrete plans for flood risk management in the area. The 1st seminar day seminar consisted of two

[7] Interview project leader, 22 January 2009

activities: working group sessions (20 participants from local and regional level) and a meeting with the Vedea River Basin Committee (42 participants from national, regional and local level). The 2nd day of the seminar reflected on the results of the working group. During this day a Dutch delegation (about 23 people mainly representing PO) also participated. The number of participants was increased with about 25 mayors during field visits in the afternoon, within the context of the yearly Danube Days. During the final project stage, an 'Interreg' workshop on Romanian-Hungarian cooperation was added to the project activities in order to come up to the budget of supplementary activities. Representatives of PO and H-NL presented their experiences. The results of this workshop were shared with other project members.

2.4 Synthesis: project course and its outcomes

The 'Teleorman Flood Risk Management Pilot Project' consists of five project components executed in the period October 2006 – June 2009. In comparison with the initial work plan, the following adjustments have been made:

- Four *supplementary activities* were added to the initial work plan. Most of the supplementary activities concerned interactive activities (three extra workshops and a seminar). It also included a water retention plan. Adding these activities was part of the project agreement between H-NL and Partners for Water.
- The *scope of the flood risk management plan* was downscaled to the Calnistea river basin. The reason for this was that the initial plan was too ambitious given the project duration. Furthermore, a discussion was added regarding possible flood related measures during the final seminar.
- The *project duration* was extended four times: from the end of 2007 to June 2009 (apart from the demonstration project all project components were completed in June 2008). Extra time was especially needed to arrive at a project agreement, to complete flood risk mapping activities and to implement the demonstration project. The two main causes behind the delays are: (1) time needed to arrive at an agreement about the distribution of roles and responsibilities; and (2) arranging authorizations (e.g. licences or permits) for the collection of elevation data and construction works.

In conclusion, both the project content and its duration were adjusted. All adjustments were reported in the progress reports and approved by Partners for Water. Even though the project took longer than expected, the available budget was not exceeded.

The project involved public and private actors both from Romania and from the Netherlands. The project was led by a project leader from H-NL. The total project team consisted of seven organizations, from which each took care of one or more project components. The project team was assisted by various Romanian organizations/beneficiaries. In addition to the beneficiaries mentioned in the project proposal (T-CC and NAAR), the project also benefited Apele Romane at basin and regional level (WD-AV and T-WMS), the communes in Calnistea river basin and the WMC. The project organization also included a Steering Committee and an Advisory Board. The Steering Committee consisted of Dutch and Romanian public actors and played an important role in deciding upon: the filling-out of the demonstration project and of the supplementary activities. Initially, this committee would meet three times, but this did not appear to be necessary.

3 Characteristics and expertise of actors involved

This chapter analyzes the project from an actor-centred perspective and focuses on the following characteristics of actors involved: motivations, cognitions and resources. Expertise, which is regarded as one of the resources of actors involved, is discussed separately in section 3.4. The analytical framework that forms the basis for this analysis is presented in section 1.4. Each section in this chapter starts with a short explanation of the analyzed actor characteristic and closes with a subsection synthesizing the analysis. The information in this chapter is mainly derived from project documents and interviews with key stakeholders (see Annex A).

3.1 Motivations: formulation of a motivating goal

The motivation of actors is what drives their actions. The most important source of motivation is the realization of actors' own objectives in relation to their work and other actors. External pressures, such as political or social influences, and actors' perception of their self-effectiveness may also affect their motivation (Bressers 2007; Owens 2008). Actors' interests and objectives may diverge or even conflict with each other. Hence, there is often a need for actors to intertwine their objectives, for example through an integrated design or compensations. This section starts with an analysis of the motivations of Dutch actors involved and of Romanian beneficiaries. Subsection 3.1.3 analyzes how actors involved arrived at a joint motivating goal. The last subsection synthesizes the main findings regarding actors' motivations.

3.1.1 Dutch actors involved

The main Dutch actors involved in this project were: Partners for Water, public actors from Overijssel (PO and water boards) and the Dutch consortium. The programme Partners for Water aims to unite Dutch forces (public, private, non-profit and knowledge institutes) in order to strengthen the international position of the Dutch water sector. One of its instruments is to provide financial support for innovative projects of Dutch partners abroad. Through this support, it aims to strengthen the international position of the Dutch water sector, to contribute to the achievement of Millennium Development Goals, social and economic spin-offs and to ease the financing of subsequent projects (Partners for Water 2009). The concrete objective formulated by the Dutch consortium was to demonstrate Dutch competences in addressing flood related issues and in realizing flood related measures. This objective is driven by the hope to become involved in subsequent projects as well.

For the PO and the water boards this project is part of their overall cooperation programme with Teleorman. This cooperation was initiated by Gelderland, but later also supported by a deputy from PO. When in 2005, floods hit the area – just after a visit by PO – the deputy regarded it as its social responsibility to assist the area in flood risk management (WaterForum Online 2005). In this specific project, which involves a company located in PO (TenCate Nicolon), stimulation of the regional economy may have been a motivation as well. According to the website of one of the water boards involved the motives for international cooperation are: learning from each other (e.g. regarding the implementation of EU directives); inspire and enrich employees involved; effective network building; image building; cooperation within the EU for innovation, research and subsidies; support the position and financial interests of the Dutch water sector; and contribute to the achievement of the Millennium Development Goals (Water Board Groot Salland 2009). The latter is also an important motivation for PO to continue their cooperation with Romania, at least until 2011. Its' cooperation with Romania initially focused on capacity building, but is currently also focusing on the exchange of knowledge (VNG International 2009).

3.1.2 Romanian beneficiaries

Subsection 2.3.2 shows that the following Romanian actors benefited directly from the project: Apele Romania (at national, basin and regional level), Teleorman County (T-CC and local communes in Calnistea river basin) and WMC. The supporting letter of NAAR states that it is especially interested in the development of flood risk maps. Furthermore, it regards the project as an important step in the formulation of nationwide strategies and plans. It explains that the Dutch-Romanian cooperation in flood risk mapping *"could be extended to other flood prone areas in Romania"*[8]. The role of the national administration of Apele Romane was mainly at strategic level in the SC. At basin level, the WD-AV actively participated in project implementation. Our respondent of WD-AV explained that currently his main priority is the implementation of the EU Flood Directive (the implementation of the EU Water Framework Directive is the priority of another department). This project has become an important step in the implementation of the Flood directive. Flood risk maps have been developed (one of the projects' main outcomes for WD-AV) and he learnt how to develop these maps in practice as he was closely involved in this. He can now put the project results forward as a feasibility study in applying for European funds. The reconstruction of the dam itself was also important, as the reservoir can function as a retention area. This implies that he can skip some other potential inundation areas from their list[9]. At regional level, T-WMS actively participated in project implementation. Various respondents mentioned the enthusiasm of our respondent of T-WMS, in particular after his visit to the Netherlands. The demonstration project itself did not benefit his organization directly as T-WMS does not administer the dam. Currently, his main priority is to handle the poor financial situation of T-WMS. After this, his main priority is the implementation of flood protection works[10].

Teleorman CC writes in its supporting letter that the project is of *"highest importance for the preparation of flood risk management plans"* in the area and nationwide. The letter also refers to the *"large number of other joint activities"*, which are "*opening up mutually attractive interregional cooperation"*[11]. However, the respondent of T-CC also explained that currently roads and the centralization of the drinking water and wastewater sector are the main priorities for the CC[12]. The project benefited the local communities in the Calnistea river basin most directly. The respondent of T-WMS states that Botoroaga community and downstream communities are the main project beneficiaries[13]. One of the interview questions included what the added value was of Dutch involvement. The answer on this question can be summarized with 'expertise and money'. The role of both resources is elaborated further in section 3.3 and 3.4, respectively.

3.1.3 Formulation of a joint motivating goal

According to the project leader, project participants were extremely motivated to participate. Even though the project was initiated and designed in the Netherlands, everybody was enthusiastic from the beginning. He mentions that this probably relates to the fact that Dutch money is involved. The project leader also stated that motivations were not negatively affected by various project delays and did not observe any conflict of interests; everybody was like-minded[14]. Interviews with Romanian participants confirmed this good cooperation, but the respondent of WD-AV also stated that he was quite sceptical about the involvement of Dutch experts in the project beginning. Why would Dutch people come and tell them what to do? And, why would Dutch approaches be useful to

[8] Proposal and Work Plan submitted at Partners for Water, 10 April 2006
[9] Interview WD-AV, 28 April 2009
[10] Interview T-WMS, 4 May 2009
[11] Proposal and Work Plan submitted at Partners for Water, 10 April 2006
[12] Interview T-CC, 13 April 2009
[13] Interview T-WMS, 4 May 2009
[14] Interview project leader, 22 January 2009

reduce flood risks in Romania? This scepticism disappeared during the project. He discovered that the Dutch and Romanian approach to flood risk management was quite similar. Furthermore, many meetings were organized in which both Dutch and Romanian experts were involved. During these meetings Dutch experts really listened and were always willing to adapt their existing ideas. He also mentioned that his collaboration (in particular with the project leader), was often informal and based on friendship. He had very different experiences in other projects, where the cooperation was limited to official and formal contact. He still contacts the project leader sometimes to ask for advice about other upcoming issues. He also valued that the project brought him in contact with interesting Romanian actors, such as Aquaproiect and TUCB[15].

The representative from T-WMS is also very positive about the Dutch-Romanian cooperation. He confirmed that delays had nothing to do with a lack of motivation, but were of financial and economic nature. The only dissatisfaction he had is that the dam was not completely restored for budgetary reasons, which is the solution he would have preferred[16]. It is observed that as most project activities were predefined, the demonstration project is the only component for which conflicts of interests would have been likely to occur. The next section elaborates how an agreement was reached between actors concerning the location and design of the demonstration project. It did not result in any conflicts of interest.

According to T-CC and PO this is not unique for this project; conflicting interests have never played a role in cooperation. Respondents of PO state that the cooperation between PO and T-CC is supported by highly motivated people on both the Dutch and the Romanian side. At the Romanian side no conflicts of interests seem to occur. After consultation in the region, T-CC is always able to come up with a clear list of priorities. The added value of the cooperation for Romanians is that it makes the impossible possible, such as innovative designs. By supporting such activities with money, PO proves that it is really committed to these ideas[17]. The respondent of T-CC confirmed that project selection does not impose any problems in the region. After a representative of T-CC and PO discuss together possibilities for cooperation, these initial ideas are reflected upon with the relevant actors. Project selection is based on expert judgement and do not involve political preferences. In consultation with PO, the T-CC decides upon the final project selection[18].

3.1.4 Synthesis: motivations of actors involved

This project involved various Dutch and Romanian actors, each having its own objectives. The project was largely initiated, designed and funded in the Netherlands. The *motivation of Dutch actors* is driven by a mix of economic reasons (to strengthen the international position of the Dutch water sector) and 'social responsibility' (especially to contribute to the achievement of the Millennium Development Goals). These are also the two main reasons mentioned by the Dutch government in its recent Water Vision to support the export of Dutch water management (Min. V&W 2007). The supporting letters of *Romanian beneficiaries* show that their main interest is in the development of flood risk management plans. From the interviews it appeared that the development of these plans is only having the highest priority of WD-AV. Based on the interviews, participation is rather driven by 'gaining access to the Dutch resources expertise and money'.

All respondents are very positive about the Dutch-Romanian cooperation during the project. Even actors who were sceptical or disagreed about certain choices were positively looking back on the project. Apparently, conflicting interests did not play a role during the project. This is not unique

[15] Interview WD-AV, 28 April 2009
[16] Interview T-WMS, 4 May 2009
[17] Interview Overijssel, 23 January 2009
[18] Interview T-CC, 13 April 2009

according to PO and T-CC; conflicts concerning project selection or formulation have never affected their cooperation projects.

3.2 Cognitions: development of 'negotiated knowledge'

An actors' cognition refers to information held to be true (Bressers 2007). Cognitions are based on ideas about norms, values, facts and interests regarding their environment. Cognitions are revealed in problem formulations that consist of ideas about the present (or expected) situation, the desired situation and a proposed solution to bridge the gap between the present and desired situation. Problem formulations often diverge, which implies that actors need to go through learning processes. In other words, problem solving requires actors to adjust their cognition. If actors are able to arrive at an agreed upon problem-solution combination that is scientifically valid, we call it 'negotiated knowledge' (Hommes et al. 2009; Koppenjan and Klijn 2004). Our analysis of cognitions focuses on two aspects: the correspondence of problem formulations and how Dutch expertise was perceived and what was learnt from it.

3.2.1 Perceived versus addressed problems

The project aimed to address problems at both local level and national level. As regards the national level the project proposal mentions the need to comply with EU directives. One of the issues observed was that Romania is facing an absence of adequate data to implement the EU Flood Directive. The State Secretary of MoE stated that the acquisition of reliable data was therefore highly important. NAAR mentioned in their supportive letter that the project is an important building stone in the development of a national strategy and action plans for flood management. The representative of MoE confirmed during the 2nd SC meeting that the project should serve as a pilot project for other projects, as the Botoroaga dam is not a single case in Romania. As regards the implementation of the EU Flood Directive, the project appears to correspond to problems at national level. The respondent of WD-AV confirmed that the project was really valuable as preparation for the Flood Directive[19].

As regards problems at the local level, the project proposal mentions that the area is poorly prepared for floods. What possibly contributed to the high flood damages in 2005 was the assumed low vulnerability to floods. The proposal also mentions that the cooperation between the large number of actors involved in flood risk management is poor. A direct cause of the floods itself was the lack of adequate drainage. This resulted in high damages because of the domino effect of collapsing barrages[20]. Interviews and a survey held within the context of the Institutional Analysis reveal that stakeholders formulated the main factors that caused the high damages slightly different. They regard the following four factors to be most important in explaining the damages: (1) the intensity of the rainfall; (2) insufficient drainage infrastructure; (3) poor condition of existing flood defences; and (4) the condition of the riverbanks. Poor performance of authorities was mainly subscribed to a lack of financial resources and the low priority and perception of flood risks. Priority has been given to droughts as these were more frequent and significant. Between various experts there is still disagreement about the role of other factors, such as the possible role of irrigation systems and the role of deforestation. However, there was a broad consensus that intensity of the rainfall was the main factor that caused the damages.

The project addressed several of the factors mentioned by stakeholders. Firstly, it contributed to the development of infrastructure by means of the demonstration project. The project also addressed the lack of financial resources to some extent, by providing Dutch financial resources (although this only a very limited solution for this problem). Furthermore, it addressed the low perception of flood

[19] Interview WD-AV, 28 April 2009
[20] Proposal and Work Plan submitted at Partners for Water, 10 April 2006

risks by initiating the project itself and by organizing several workshops, including two local workshops on flood management. The Institutional Analysis revealed that droughts imposed a more pressing problem than floods in the area. The importance of addressing drought related problems was reiterated during both SC meetings (among others by a representative from MoE). In reaction to this, it was decided to develop, within the context of supplementary activities, a water retention plan. Measures to retain water more upstream may contribute to both the reduction of peak discharges (floods) and prevent droughts. The report identifies several feasible flood related measures. However, the impact of these measures on the prevention of droughts is very little. Implementation of irrigation schemes would be an appropriate measure to prevent droughts, but the costs of implementing and maintaining irrigation schemes are significant (Nieuwaal and De Hamer 2007).

3.2.2 Arriving at joint solutions

During project preparations, Dutch actors (H-NL and PO) selected in consultation with T-CC and T-WMS the southern part of the Calnistea river basin as location for the demonstration project. Although other dams were also broken, the location of the demonstration project has never been under much discussion. Various respondents stated that the location was based on rational arguments by specialists[21]. These arguments were: the presence of a European road, downstream effects and presence of collapsed barrages[22]. As regards the design of the dam, there was a need to gather knowledge which design would fit within the project budget. H-NL studied five rehabilitation options, which were discussed in the SC. As rehabilitation options did not fit within the budget it was concluded that stabilization (create a flood proof overflow section) would be the only feasible solution. This could be the first step in full rehabilitation[23] (project report 10, 2007). During the 2nd SC meeting it was agreed that H-NL would work out a minimum repair option and present this option to the stakeholders for their comments. They jointly decided to apply geo-textile for stabilization of the dam as this was the only option that fit within the project budget and was regarded to be necessary. Following this, the Romanian design company Aquaproiect worked out two design options. Both options were analyzed during a workshop in October 2007. It was decided to prepare detailed designs, including costs estimates, for both options. Based on the costs estimates, a choice was made for a design in which geo-textile was only used to stabilize the dam[24].

The interviews with Romanian actors reveal that without Dutch experts being involved it would have been very unlikely that the dam would have been repaired in a similar way. According to T-WMS, without Dutch involvement the only option for the community would have been to repair the dam in the traditional way, which is by putting sand. The option he preferred was to fully rehabilitate the dam; he understood this was not feasible given the available budget. Using geo-textile was not new to him; it had been applied in Romania before[25]. The respondent of WMC confirms that it is likely that the solution would have been different without Dutch involvement. Instead of full rehabilitation, another solution has been found now[26]. When the application of geo-textile was discussed during the 2nd SC meeting, a person from Aquaproiect mentioned that he doubts the replacement of concrete by geotextile for flood protection. Up to his knowledge geotextile has only been used for consolidation works in Romania. During this meeting a design related problem was also brought up by a person from NAAR. He explained that by law every dam should be gated, so that it will not be demolished in case of flooding[27].

[21] Interview T-WMS, 4 May 2009; Interviews T-CC and WMC, 13 April 2009
[22] Inception report, 2 January 2007.
[23] Haskoning NL (July 2007), Project report 10: Options for rehabilitation of the Botoroaga dam
[24] Progress report 2, 31 October 2007; Progress report 3, 15 March 2008
[25] Interview T-WMS, 4 May 2009
[26] Interview WMC, 13 April 2009
[27] Progress report 1, 1 July 2007

As the dam has a function in flood protection, the small committee for dams had to approve the design. The respondent of WD-AV explained that this committee consists of employees from WD-AV and is chaired by a person from NAAR in Bucharest. After analyzing the proposed design, the commission decided to approve it. What played an important role in this, according to him, is that the Romanian company Aquaproiect fully supported the proposed design[28]. According the project leader it also played a role that WD-AV cooperated with H-NL before and therefore had trust in H-NL.

3.2.3 Romanian perceptions on Dutch expertise

From the interviews it appeared that Romanian water managers highly value Dutch expertise on flood management. The respondent of WD-AV stated that he participated in various international projects with various countries. However, when it comes to flood management Dutch experts are certainly the best in the world. The probable reason is that floods are really a problem of life and death in the Netherlands. He did not have this opinion from the beginning of the project. First, he did not understand why Dutch expertise was useful in Romania. Gradually, he discovered that the Dutch approach to flood risk management planning is very similar to the Romanian approach. He even discovered that these approaches are comparable in all EU countries. What he learned in particular during this project is how to apply steps that need to be taken in the development of flood risk maps[29].

For the respondent of T-WMS, his participation in the field visit to the Netherlands was an important activity to learn about Dutch expertise. During this visit, he became acquainted with the Room for the River concept. He also applies this concept in Romania now. After his visit to the Netherlands, he also had concrete discussions how the concept could be applied along the Arges river. These discussions were really helpful to him and changed his existing ideas about a possible solution[30]. Respondents of T-CC and WMC and the project leader emphasized the importance of various workshops in the transfer of knowledge. We did not verify with participants if this is indeed the case. According to WMC the demonstration project is very well known in the area. The WMC is now working on furthering the awareness of flooding in the area in a new project[31]. During the Danube Days 2009, the inauguration of the dam was visited

3.2.4 Synthesis: cognitions of actors involved

At first sight, the project objectives seem to correspond well with the most pressing problems at national and local level. During the project, it becomes clearer that one of the factors lying behind the floods was that drought related problems were given priority. The project team anticipated on the call to pay attention to drought related problems as well by developing a water retention plan. Despite that studies have been undertaken; this project could not provide solutions for these problems.

During the project, a decision had to be taken concerning the location and design of the demonstration project. As regards the location, this decision was taken by experts on the basis of certain criteria. As knowledge developed during the process it became clear that within the available budget, the only option would be to stabilize the dam with geo-textile. In arriving at this conclusion all relevant stakeholders were involved. Furthermore, the decision was based on knowledge developed by Romanian and Dutch experts. Without Dutch experts being involved, the dam would

[28] Interview WD-AV, 28 April 2009
[29] Interview WD-AV, 28 April 2009
[30] Interview T-WMS, 4 May 2009
[31] Interview WMC, 13 April 2009

never have been repaired in a similar way as the solution was never applied in Romania before. Dutch expertise is highly valued by our Romanian respondents. It also appeared that during the process the actors' perceptions on Dutch expertise developed. Examples showed that they did not only develop new insights, but also learnt that these insights are valuable in the Romanian context.

3.3 Capacity and power: mobilization of resources

Resources provide actors with the capacity to act and they are sources of power (Bressers 2007; Owens 2008). Resources required to solve water problems are often fragmented. Consequently, there is a need for actors to cooperate with each other. Apart from expertise, the following resources appeared to be particularly relevant in the realization of this project: financial, institutional, human and information. This section elaborates on the role of various actors in the mobilization of each of these resources.

3.3.1 Financial resources

The project was funded for 80% by the Dutch programme Partners for Water. The other 20% was paid for by PO. According to Romanian actors, providing financial resources is an important added value of involving Dutch experts in water projects. Without these financial resources it is questionable whether, for example, the Botoroaga dam would have been repaired at all. The respondent of WD-AV explained that flood protection is the responsibility of WD-AV. However, small dams are often not owned by WD-AV. By law, dam owners have the obligation towards WD-AV to repair dams with a flood protection function in case of any damage. If the owner lacks the financial resources to do so, they can address this issue to the prefecture or CC, who can ask for funding from the national budget. Experiences with two other dams – that were also collapsed in 2005 – show that there is neither money nor willingness to repair these dams. Although Botoroaga dam has an important function in flood protection, it is still unlikely that the dam would have been repaired by now without Dutch funding. The reason for this is that for the local community (the owners), repairing is a disastrous option from costs-benefits perspective; the benefits (fishing revenues) are much lower than the costs for reconstruction[32]. According to T-CC there was not even the need to repair the dam for fishing purposes, as it could still serve this function[33]. The respondent of WMC is of the opinion that it would have been very difficult to arrange the required financial resources. Because of this, it would have been taken much longer to repair the dam, even though it was necessary to repair it[34]. In the choice for the dam design, financial resources have been decisive. Initially, a design for full rehabilitation was prepared. However, this design was several times higher than the available budget. Mobilization of additional funding was not feasible within the timeframe of the project[35]. It is unlikely that other project components, such as the Institutional Analysis and the workshops, would have taken place without Dutch funding. As regards the flood risk maps, this is currently having the highest priority at the department for flood risk management at WD-AV. It now benefits from the early development of these maps[36].

3.3.2 Institutional resources

Institutional constraints affected this project, in the sense that the time needed to arrange the licences and permits for the demonstration project was longer than foreseen in the project plan. Arranging all necessary authorizations has been taken care of by Romanian beneficiaries. According to the project leader this was quite unique as this is not usually the case in international projects[37].

[32] Interview WD-AV, 28 April 2009
[33] Interview T-CC, 13 April 2009
[34] Interview WMC, 13 April 2009
[35] Progress report 1, 1 July 2007
[36] Interview WD-AV, 28 April 2009
[37] Interview project leader, 22 January 2009

The institutional preparations included the preparation of building permits and the preparation of agreements and contracts between H-NL, the Local Council of Botoroaga and the contractor. As owner of the dam the Local Council of Botoroaga had to apply for an urbanization certificate and construction authorization at T-CC. According to the respondent of T-CC the arrangement of building permits had the full attention of a local authority from Botoroaga[38]. A crucial step in arranging the building permits was to receive an approval from a special committee for small dams[39]. As discussed in subsection 3.2.2, this approval did not cause any problems.

3.3.3 Human resources

The contributions by various actors are already summarized in subsection 2.3.2. This section focuses on the time spent on the project by various actors. From the Dutch actors, the project manager from H-NL was the only person involved in all project components. The participation of other Dutch organizations (TerraImaging, TenCate Nicolon and the University of Twente) was limited to the execution of specific project components. The progress reports demonstrate several changes in human resources. These changes include replacement of the project leader by another employee of H-NL (for time reasons) and enlargement of project days for the project leader.

Three Romanian organizations (H-RO, TUCB and Aquaproiect) were sub-contracted for specific inputs. During the SC meetings, representatives of these organizations were also present; H-RO and Aquaproiect attended both SC meetings, TUCB only the 1st one. The project proposal does not define the role of the Romanian beneficiaries. According to the project leader, they also played an important role in project implementation. He mentioned, for example, the support given by WMC, which was mainly supposed to receive support; the efforts of T-WMS in preparing detailed presentations and a special programme for the project leader; and the assistance of T-CC (through EuroTeleorman) in facilitation of workshops and meetings[40].

3.3.4 Information resources

The development of flood risk maps crucially depended on context-specific data and information. Some of the required data was gathered during the project itself, such as terrain information, socio-economic data and environmental data. Apele Romane at basin level (WD-AV) and local level (T-WMS) were important sources of information concerning floods. T-WMS provided data and information about previous floods and participated in discussions about the technical design[41]. A formal request for data required for the developments of the hydrographs were sent by TUCB to WD-AV. During the 1st SC meeting, the TUCB mentioned that they were still waiting for a response upon their formal request for data. The respondent of WD-AV assured that the required data would be provided, which was indeed the case. The only problem was that the available data did not allow for the development of 'real' flood hydrographs. Because of this lack of information, it was decided to develop synthetic hydrographs instead. The collection and processing of flood related data largely resulted from joint efforts of both Dutch and Romanian actors (see also the overview of project reports in Annex A). The only exception is the Institutional Analysis, which was fully prepared by the University of Twente. According to the project manager there have never been any problems during the project with gathering information. The project was characterized by good relations between various experts[42].

[38] Interview T-CC, 13 April 2009
[39] Interview project leader, 22 January 2009
[40] Interview project leader, 22 January 2009
[41] Interview T-WMS, 4 May 2009
[42] Interview project leader, 22 January 2009

3.3.5 Synthesis: resources of actors involved

The above analysis shows that all resources needed to complete the project were mobilized by both Dutch and Romanian actors. As regards financial resources, it was observed that all funding was provided by Dutch actors. Without this Dutch funding it would have been unlikely that, for example, the demonstration project would have been implemented by now. Other project components, such as the flood risk maps, would also not have had priority in 2007. Institutional resources, in the form of required authorizations, were fully taken care of by Romanian stakeholders. Human and information resources were provided by Dutch and Romanian actors. The contributions of subcontracted organizations were laid down in the project work plan. Besides these contributions, Romanian beneficiaries provided assistance to the project leader, in particular with organizational aspects.

3.4 Expertise regarding content, process and networks

Expertise is defined here (based on: Leeuwis and Van den Ban 2004; Wesselink 2007) as *"a great skill or knowledge in a particular field, which may relate to the content, the process or the network. Expertise is also a resource of actors involved and thus a source of capacity and power"* (Vinke-de Kruijf 2009 p. 48). Expertise refers to the personal and collective competences or sources of capacity and play an important role in achieving successful outcomes (Van Buuren 2006). This section subsequently describes the role of the following types of expertise: substantive (content), process and network.

3.4.1 Substantive expertise

Substantive expertise refers to knowledge about the background and history of the project, various problem formulations and potential solutions (Leeuwis and Van den Ban 2004). The substantive base for the project proposal was created by experts from H-NL and water boards during three visits. These visits resulted in the formulation of a flood risk management project focusing on Calnistea river basin. During the project, new substantive knowledge was gathered. The Institutional Analysis and the SC meetings resulted in new knowledge concerning the background and perceptions on flood risk management. One of the resulting conclusions was that droughts have always been a pressing issue in the area. In answer on this, it was decided to address droughts in one of the supplementary project components. However, this did not result on a solution for drought related problems in the area. This example illustrates that new insights about the specific context were gathered during the project. However, the project team only had limited possibilities to use these insights to adjust the project activities.

The project proposal predefined the project budget and its duration. What would be feasible within these boundaries had to be worked out further during the project. This resulted in the decision to downscale the Flood Risk Management Plan. It also resulted in the decision to use geo-textile to stabilize Botoroaga dam. The expertise needed to develop this solution came from both Dutch and Romanian companies. According to the WD-AV respondent, the involvement of the Romanian company has been an important factor in getting approval for the dam design, i.e. in creating support (see subsection 3.2.2). As only Romanian stakeholders know the specific context, context-specific knowledge also needs to be provided by them. The interviews demonstrate that the dam would never have been repaired in the same way without Dutch involvement. Hence, Dutch experts played a decisive role in the implementation of the innovative design. Dutch experts also played an important role in providing models (e.g. Sobek) and approaches (e.g. Lidar) to collect and process data needed to develop flood risk maps and plans. Especially regarding the maps and plans that needed to be developed within the context of the EU Flood Directive, there was practically no experience among Romanian actors.

3.4.2 Process expertise

When solving water problems it is important to know about local preferences and obstacles to learning and negotiation, how to design interactive processes and how to overcome difficulties (Leeuwis and Van den Ban 2004). The project was designed by a very experienced project leader. He became involved during the project preparations, but was never involved in a Romanian water project before. Hence, he did not have much knowledge about local conditions. He managed the project until September 2007 when he was (for time reasons) replaced by a subsequent project leader (2nd project leader). According to the 2nd project leader, the project was mainly invented and designed in the Netherlands. Despite this, all stakeholders were really motivated and enthusiastic. Moreover, there were no conflicts of interests or real disagreement. What probably helped is that he paid a lot of attention to communication and consultation. In the actual organization of the process – e.g. arranging meetings and facilitation of workshops – he was strongly supported by T-CC (also through EuroTeleorman). Support was also provided by WMC. He also mentioned a totally different form of support, namely the role of the person involved of TUCB who was always prepared to ask questions and a real team player. Looking back, he is really satisfied about the cooperation with all Romanian stakeholders[43]. That the Dutch-Romanian cooperation has been really positive was confirmed by all Romanian respondents.

The project course and its outcomes (see section 2.4) show that the actual project does not completely match the initial plan. The supplementary activities and the dam design had to be filled out. Furthermore, it became clear that not all initial plans were feasible within the available time and budget. There was a need for approval by Partners for Water to postpone the project end date. An agreement also had to be reached among stakeholders about what was feasible and desirable given the project budget. There was thus a clear need for negotiation and learning and difficulties had to overcome. The interviews demonstrate that the project leader, with the help of Romanian beneficiaries, possessed the process expertise needed to complete the project successfully for all relevant stakeholders.

3.4.3 Network expertise

Network expertise refers to knowledge about who the relevant stakeholders are, about the social relations between these stakeholders and the availability of special qualities (Leeuwis and Van den Ban 2004). According to the 2nd project leader, the 1st project leader was a highly experienced project leader who succeeded to involve the right actors from the beginning – even though he had not been involved in Romanian projects before. The 2nd project leader got involved in the project during 2007, but was involved in a Romanian water project before. During this project, he became acquainted with one of the key actors, WD-AV[44]. The respondent of WD-AV confirms that the project consisted of a good team, although he does not know how various people came together. He also mentioned that he met interesting actors whom he was not aware before the project[45].

As the cooperation between PO and T-CC already existed, there was already a network between Dutch and Romanian stakeholders. Despite the existing Dutch-Romanian cooperation, it was observed during the Danube Days (in 2008 and 2009) that it is still difficult for Dutch and Romanian actors to understand each other. This has been a special point of attention for the project leader. If he observed misfits between Dutch and Romanian actors, he tried to put things right afterwards[46]. Existing cooperation (e.g. in the form of EuroTeleorman and WMC) in Romania has probably also been a supportive factor. During interviews in Teleorman it was confirmed that stakeholders in the

[43] Interview project leader, 22 January 2009
[44] Interview project leader, 22 January 2009
[45] Interview WD-AV, 28 April 2009
[46] Interview project leader, 22 January 2009

area know each other well. The Romanian actor with a key position in the network is T-CC (through EuroTeleorman). According to PO, this is the organization taking care of all necessary arrangements. According to the project leader, it also played a key role in the organization of this project.

3.4.4 Synthesis: expertise of actors involved

Expertise from Dutch and Romanian actors was used to successfully complete the project. As regards the project content, the strength of Romanian expertise was in providing context-specific knowledge and creating support. The strength of Dutch expertise was rather in providing models and approaches and in the introduction of innovative ideas. During the project new substantive knowledge was developed. However, the project content, its duration and its budget had to be defined prior to the project start. Consequently, the possibilities to adjust the project based on lessons learnt were limited. On the other side, budgetary limits also forced Romanian actors to learn about innovative solutions. Despite the limited experience of the project leaders in Romania, they managed to involve the right stakeholders and to complete the process in a satisfactory manner for all stakeholders. In managing the process and network, support was provided by T-CC in the form of EuroTeleorman.

4 Results and discussion

In the previous chapters the 'Teleorman Flood Risk Management Pilot Project' has been analyzed as a process with a certain input, evolution and output (chapter 2) and in terms of actors' motivations, cognitions and resources (chapter 3). This chapter reflects upon the adopted analytical framework and the results of these chapters. The first three sections are guided by the following questions:

- How do actors' resources, motivations and cognitions develop during Dutch-Romanian water projects and influence the course and outcomes of these projects?
- What is the role of Dutch expertise in the development of actors' resources, motives and cognitions?
- How do contextual factors affect the course and outcomes of Dutch-Romanian water projects, and the application of Dutch expertise in particular?

The last section pays attention to evaluation of Dutch-Romanian water projects. What is actually a successful project and when is Dutch expertise applied effectively? Various literature sources are used to answer these questions.

4.1 The development and role of motivations, cognitions and resources

Starting-point for this case study is that the course and outcomes of a water project can be explained by the dynamic interaction between motivations, cognitions and resources. This section starts presenting theoretical insights that further explain this interaction. Subsequently, the factors lying behind the motivations, cognitions and resources of actors involved and their dynamic interaction are elaborated.

4.1.1 Dynamic interaction between actor characteristics

According to Bressers (2007; forthcoming 2009) the process course and its outcomes are shaped by actors' motivations, cognitions and resources. These characteristics are in dynamic interaction with each other and with the process itself (see Figure 6). In analyzing these interactions, this research typically focuses on resources (including expertise). Resources influence and are influenced by cognitions and motivations. For example, money and capacity influence the gathering and processing of data, and thus cognitions. Furthermore, a lack of resources results in a low self-effectiveness assessment, which is an important aspect of an actors' motivation. Cognitions influence the application of, for example, expertise. Information can also serve strategic purposes and used as a source of power.

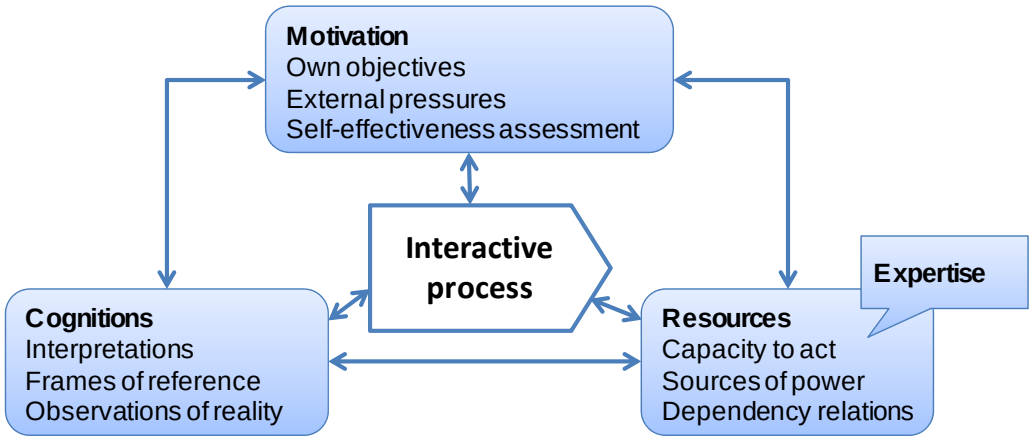

Figure 6 – Dynamic interaction between actors characteristics and the interactive process (slightly adapted after Bressers forthcoming 2009)

4.1.2 Motivations

Motivation is what drives the action of an actor involved in processes of social interaction. The most important source of motivation is the realization of actors' own objectives. Besides this, an actors' motivation may be affected by external pressure and its self-effectiveness assessment. The latter refers to the relation between motivation and the availability of resources. If an actor assesses that preferred behaviour is beyond its capacity, this will have a negative effect on its motivation. The availability of resources may also positively influence an actors' motivation. Own objectives, external pressure and self-effectiveness assessment may all affect an actors' motivation. What is needed to solve a problem is that actors arrive at a goal that motivates (Bressers 2007). This is not straightforward; when people strive for a meaningful change, conflicts of interests are likely to emerge. Hence, there is often a need for negotiation, learning or goal intertwinement (Bressers et al. 2004; Koppenjan and Klijn 2004; Leeuwis 2000).

The objective of this project was formulated by Dutch experts, who visited the area three times, and had to be in line with Partners for Water requirements. According to support letters by T-CC and NAAR this objective corresponded with their priorities and objectives. However, it was also observed that flood related problems did not have priority for all Romanian actors involved. Hence, the motivation of these actors is likely to be affected by other aspects than actors' own objectives.

Not all project components were predefined. This means that conflicts would have been likely to occur, for example, about the location of the demonstration project. The SC, with representatives from higher level authorities, played a key role in shaping the components that were not predefined. These actors may have acted as a source of external pressure on local actors, so that conflicts of interests were prevented. Another, more general, source of external pressure may have been the existing cooperation with Overijssel, i.e. actors involved in this cooperation did not want to disturb this relation. Furthermore, it is observed that the motivation of Romanian actors may have been influenced positively by the availability of resources. According to Romanian actors it was because of Dutch funding that the Botoroaga dam has been repaired already. Thus, they assessed that stabilization of the dam was possible because of Dutch funding. Thus, self-effectiveness assessment may have influenced their motivation in a positive way.

The motivations of Romanian actors in particular were influenced not only by their own objectives, but also by external pressure and self-effectiveness assessment. The latter two sources of motivation probably played a less important role for Dutch actors involved. In addition to the above-mentioned sources of motivation, the interviews revealed that actors involved are very positive about the cooperation and were motivated to participate. This suggests that social relations were also an important source of motivation during this project.

4.1.3 Cognitions

Cognitions refer to the knowledge an actor holds to be true. Cognitions are not only a matter of observation and information processing capacity; they are subjective interpretations influenced by frames of reference and observations of reality. To solve a problem it is necessary that actors create a shared interpretation of reality (Bressers 2007). We refer to this outcome as 'negotiated knowledge', i.e. knowledge that is relevant, agreed upon and scientifically valid. Arriving at this knowledge requires 'joint image building', this is that a better insight in the problem has been created as a result of interaction and research and that parties have come to an agreement (Koppenjan and Klijn 2004). Within the context of Dutch-Romanian projects, it is useful to broaden the analysis of cognitions to the knowledge or perception of Romanian and Dutch actors about Dutch expertise and the Romanian context, respectively. In this case study, a focus has been on problem formulations and on cognitions of Dutch expertise.

The basis of this project was formed by a problem formulation, which was formulated by Dutch experts. This problem formulation was deepened during the project, among others, in the Institutional Analysis. Drought problems appeared to have been a more significant and frequent problem than floods and it was suggested in the SC to include this issue in the development of action plans as well. This was regarded to be infeasible, given the project budget and its duration, but it was decided to include a water retention plan in the supplementary activities. This example shows how new insights (learning) were used to slightly adjust the project contents, i.e. a change of cognitions affected the project course and its outcomes. The extent to which various Dutch actors learnt about the Romanian context was not assessed in particular. Probably, Dutch actors who most actively participated in site visits, workshops and seminars also learnt most about the Romanian context.

In designing the demonstration project, learning processes are also observed. Initially, Romanian actors had little confidence in using geo-textile for stabilization of the dam, as it was never applied before. During the project actors gradually arrived at an agreement to implement this innovative design. The case study highlights the importance of involving Romanian actors in the design of innovative solutions to create support. Using geo-textile in the design was one of the objectives of Dutch actors, i.e. they had an interest in applying it. Therefore, it was for Romanian actors probably important to have the opinion of relatively 'independent' experts as well. What was also important in arriving at a joint solution is that all actors learnt about what was possible given the available financial resources. As regards the perception of Romanian actors on Dutch expertise, it is observed that Romanian actors highly value Dutch expertise. During the project, the Romanian actors developed their knowledge of Dutch expertise.

4.1.4 Resources

In order to solve a problem, it is important that all necessary resources to act and intervene become accessible and available. In an interactive setting, resources are not just providing the capacity to act, depending on the intended action they may also be sources of power (Bressers 2007). Power can be defined as the capacity to influence the behavior of others, in a way that it becomes in line with one's own objectives (Hoogerwerf and Herweijer 2003). The balance of power is not only shaped by resources itself, but also by the dependency of an actor on the resources of another actor (Bressers 2007). A dependency relation is determined by both the importance and the substitutability of a resource. When a resource is substitutable and not very important, there is no dependency relation. High dependency exists if a resource is of relatively high importance and its substitutability is low (Koppenjan and Klijn 2004).

In the case study, a distinction has been made between four different types of resources: financial, institutional, human and information. Financial resources were mobilized and provided by Dutch actors. The financial budget determined the course and outcomes of the project, and the design of the demonstration project in particular. Apparently, the substitutability of these financial resources was low: without Dutch financial resources the dam would not yet have been repaired. Besides that these resources had a motivational effect (see 4.1.2), they were also indispensable to realize the project. That the dam would be repaired was for some Romanian actors involved more important than for others. In terms of dependency, financial resources created low to high dependency from Romanian actors on Dutch actors. This dependency means that financial resources could also be used as a source of power. 'Who pays the piper calls the tune' also applied to this case. For example, because Dutch actors paid for the stabilization of the dam, they could also set the boundary condition that geo-textile had to be used. To some extent Dutch actors also depended on Romanian actors. In particular, in mobilizing all necessary institutional, information and human resources. Not all these resources could be substituted easily. The project itself was influenced by

the mobilization of resources. For example, mobilizing all institutional resources took longer than expected and affected the project duration.

4.2 Role of (Dutch) expertise

Starting-point in the analysis of expertise is that in solving water management problems, three types of expertise (knowledge and competences) are relevant: (1) Substantive expertise, issue-related expertise about problem formulations and context; (2) process expertise, on social processes such as negotiation and social learning and how to design interactive processes; and (3) network expertise, on actor relations and how to deal with people and networks (Leeuwis and Van den Ban 2004; Wesselink 2007). This expertise may be provided by relative 'insiders' or 'outsiders'. Knowledge from relative outsiders – scientists, external facilitators and Dutch experts in this case – may be very useful and enriching, but is unlikely to be the dominant force in a process, as a great deal of relevant knowledge has to be provided by insiders (Leeuwis and Van den Ban 2004). In terms of the types of expertise of knowledge needed in consultancy, Gummesson (2000) distinguishes between: (1) general knowledge of theories, models and concepts and techniques, methods and tools; (2) specific knowledge of institutional conditions and social patterns; and (3) personal attributes, such as intuition, creativity, vitality and human understanding. The latter type of knowledge either supports or impedes the implementation of general and specific knowledge. An important distinction between specific and general knowledge is that specific knowledge is not easily accessible and does not provide the same opportunities for preparation in advance as general knowledge (Gummesson 2000, p. 72-73). Previous research shows that often context-specific knowledge is not ready available; it needs to be constructed using different sources of knowledge (Eshuis and Stuiver 2005; Hommes et al. 2009).

When applying these theoretical insights to the case study, it is observed that the 'outsiders', the Dutch experts, mainly provided general knowledge. They provided substantive expertise in the form of e.g. digital terrain model, hydraulic model, geo-textile, methods for preparing flood risk plans and integrated approaches. Romanian experts also provided general knowledge (e.g. Aquaproiect and UTCB), but this knowledge was less innovative and did not integrate various project aspects. As insiders, the strength of Romanian experts was in providing context-specific knowledge. As regards the management of process and network, Dutch project leaders fulfilled a key role in both. Despite their limited experience in Romania, they managed the process and network successfully. In this, they were supported by several Romanian actors. Although this single case study cannot prove it, it is very likely that the existing cooperation was crucial in managing the process and network. The case further confirms the importance of local stakeholders in Dutch-Romanian water projects. As relative outsiders, Dutch experts provided very useful and enriching expertise, but in realizing the project they were highly dependent on Romanian actors. As relative insiders they could provide the specific knowledge needed to complete the project. Considering follow-up of this project, it is crucial that during the project Dutch actors learn about this context-specific knowledge and that Romanian actors learn to appreciate the general knowledge of Dutch actors.

The paragraph above shows that for various reasons it is highly important for Dutch actors to involve Romanian expertise in Dutch-Romanian projects. In addition, the case also reveals that involving Romanian actors is important to arrive at a supported knowledge base. To provide a better understanding in this, it is useful to introduce the concept of 'trust'. The following three types of trust (or confidence) can be distinguished: trust in competence, trust in intentions and trust in external conditions. For Romanian actors it is important that Dutch actors intend to do their best (no opportunistic behavior) and that they will not be stopped by unforeseen or uncontrollable conditions (Nooteboom 2000). One of the interviewees clearly stated that he did not have much confidence in Dutch experts in the beginning. He wondered 'why would Dutch actors come to tell Romanian water managers what to do?' and 'why should Romanian water managers use Dutch

approaches to flooding?' This reveals that he did not trust the intentions of Dutch actors and that he doubted that their approaches would be useful in Romania (competence). During SC meetings, it was also mentioned that the application of geo-textile in this manner may not be allowed in Romania (external conditions). The interviewees' confidence increased when Romanian experts appeared to support the solution. For this person, this really contributed to his confidence in Dutch actors and expertise. The process of developing trust and relations is also referred to as 'institutional learning' (Koppenjan and Klijn 2004). Previous research on Dutch water projects reveal that 'strategic learning' (awareness of mutual dependencies) and 'cognitive learning' (problem, solutions, interests and objectives) are mostly influencing problem solving directly (Hommes et al. 2009). This case study suggests that within an international setting, institutional learning is just as important as cognitive and strategic learning. In the section on 'motivations' it was observed that 'social relations' may be one of the sources of an actors' motivation. The motivation of actors to accept Dutch expertise is thus influenced by institutional learning.

4.3 Contextual factors

Regarding contextual factors, it is assumed that they are only influential to the extent that they influence the motivations, cognitions and resources of actors involved (Bressers 2004). To analyze the interaction between process and context, it is useful to distinguish between three contextual layers: the project-specific, institutional and wider context (Bressers 2007)

The project-specific context of this case was characterized by an existing cooperation (Overijssel-Teleorman) and Dutch project funds. Because of this cooperation, a network between Dutch and Romanian actors was already established. This probably positively influenced the mobilization of resources (see 4.1.4). That the project was funded by a Dutch programme affected resources, motivations and cognitions in several ways (see the former sections). Institutional aspects, including governance and property and use rights, affected the mobilization of institutional resources. For example, the owner of the dam had to be determined and had to take care of arranging various licenses. The wider context also influenced the project. For example, that geo-textile was never used in Romania (technological context) affected cognitions of actors involved. Another example is that flood related problems (problem context) were never regarded as a pressing issue. How contextual factors influences a project has not been profoundly studied in this case study, this will be part of a subsequent study. This case study confirms that contextual factors are only influential to the extent to which they influence characteristics of actors involved.

4.4 Design and evaluation of water projects

Starting-point in our analysis of problem solving is that water problems are not objective givens, but highly subjective social constructs (cf. Van de Graaf and Hoppe 1996). As knowledge is often uncertain and people disagree upon relevant norms and values, they are examples of complex, unstructured problems. Consequently, instead of being knowledge problems, they are rather problems of uncertainty, disagreement and ambiguity (Hommes et al. 2009). It is widely accepted now that solving these problems requires a problem structuring or learning-oriented approach which pays attention to: (1) interaction and communication between stakeholders with diverging perceptions; and (2) a connection between these perceptions and the knowledge base (Hommes et al. 2009). This is in line with the idea that collective learning (so-called social learning) is needed to develop and sustain the capacity of actors involved and the public to manage their water systems effectively (cf. Ison et al. 2007; Mostert et al. 2007; Pahl-Wostl et al. 2007a). A basic requirement for this is that stakeholders have the opportunity to communicate and interact with each other in a participatory setting. This involves the promotion of participatory learning platforms where individuals can meet, interact, learn and take collective actions (Muro and Jeffrey 2008).

Learning-oriented processes are very dynamic, which implies that process management should be adaptive (Edelenbos and Klijn 2006; Hommes et al. 2009). Adaptive management refers to the idea that management is continually improved by learning from new insights and experiences. It recognizes that strategies and goals may have to be adjusted during a process as new information becomes available, and that the quality of the process is essential for the outcomes (Pahl-Wostl et al. 2007b). This has implications for the manner in which problem solving can be evaluated. Traditionally, the effectiveness of an instrument or process can be assessed to the extent to which it contributes to the achievement of a specified goal. For processes characterized by uncertainties, there is – at least theoretically – no central objective, no substantive yardstick or a yardstick prior to the project start. Hence the best way to assess the quality of problem solving is the degree to which learning occurred (Koppenjan and Klijn 2004). In terms of effective application of Dutch expertise, this implies that it should be embedded in a learning-oriented project in which Dutch experts and Romanian actors can interact with each other and that both contribute to the formulation of the problem and its solutions. This is particularly relevant for international projects in which relative outsiders lack context-specific knowledge and where insiders lack general knowledge. Both types of knowledge are required to solve a problem. This implies that a project's success depends on the degree to which learning occurred *and* the degree to which the lessons learnt were used to adjust the project.

When applying these theoretical insights to the case study, it is observed that the project fulfilled one of the basic requirements for learning, namely interaction and communication. On the other hand, the possibilities to adapt the process based on new insights were limited to the components that were not predefined (location and design of the demonstration project and the supplementary activities). Learning processes were observed in particular in designing the demonstration project, one of the project components which was not predefined. It was also observed that during the project, more insights were gained in the specific context, among others through the Institutional Analysis. The possibilities to adjust the project content, for example, by paying more attention to drought related problems were limited.

5 Conclusions and recommendations

The previous chapter presented and discussed the case study results. This chapter starts with a summary of these results. Section 5.2 presents some recommendations regarding the design of Dutch-Romanian water projects. These recommendations are specifically written – but not limited to – the Province of Overijssel. Subsequent case studies are expected to provide new insights in how to design and manage Dutch-Romanian water projects successfully.

5.1 Problem solving in Dutch-Romanian water projects

This case study intended to study how motivations, cognitions and resources (actor characteristics) influence the project course and its outcomes. Special attention was given to the role of (Dutch) expertise. Starting-point was that contextual factors are only influential to the extent to which they influence the characteristics of actors involved. The rough analysis of the role of contextual factors in the case study confirms this basic assumption.

Motivations
Based on the case study, it is concluded that the motivations of actors involved are influenced by their own objectives. For Romanian actors, external pressures and self-effectiveness assessment also played a role. Besides these sources of motivation described in literature, another source of motivation was identified, namely social relations.

Cognitions
In the case study the analysis of cognitions has been focusing on how problem formulations developed. It was concluded that the problem formulated in the project proposal did not necessarily correspond to local problem formulations. The project only provided limited possibilities to use lessons learnt to adjust the project. Exceptions are the location and design of de demonstration project and the supplementary activities. These project components were not predefined. Hence, Dutch and Romanian actors could jointly develop these activities, which enhanced learning processes. During the project Romanian actors learnt about what Dutch expertise has to offer for the Romanian context.

Resources (including expertise)
Mobilization of necessary project resources (financial, institutional, human and information) was a taken care of by both Dutch and Romanian actors. It is concluded that Romanian actors depended on Dutch actors (especially for financial resources) and that Dutch actors depended on Romanian actors (as they did not have context-specific expertise). This case study confirms that expertise from relative 'outsiders' was useful and enriching, but not the driving force in the project. Only Romanian actors could provide the necessary context-specific knowledge about the content, process and networks.

The importance of learning
The project offered many opportunities for communication and interaction in the form of seminars and workshops. However, the possibilities to use the lessons learnt to adjust the process were limited. This means that the project was not designed as an learning-oriented process, which includes adaptive management. It was observed that for Dutch-Romanian projects, institutional learning – the development of trust and relations – is particularly relevant. Furthermore, it is concluded that considering follow-up it is crucial that Dutch actors learn about the specific context and Romanian actors about what Dutch experts have to offer.

5.2 Recommendations for Dutch-Romanian projects

The motivation of PO to cooperate with Teleorman County used to be focused on capacity building. Currently, its main purpose is the mutual exchange of knowledge. The wish to contribute to the achievement of the Millennium Development Goals also plays a role in continuing this cooperation. This does not only apply to PO, but to other public actors involved in water management as well. Effective application of Dutch expertise, which is the focus of the PhD research, is an important requirement to reach any of these objectives. Theory on problem structuring, social learning and network management all emphasize the importance of learning-oriented approaches in solving water problems (see 4.4). Based on this, we recommend that Dutch-Romanian water projects should be designed as learning-oriented approaches. Particular attention should be given to:

- Communication and interaction within and between Romanian and Dutch actors, for example, by organizing meetings, workshops, and other interactive activities.
- Involve various actors in the formulation of the problem and its solutions, so that a connection between perceptions (or cognitions) and the knowledge base is created.
- Adopt an adaptive management approach that allows for adjustments based on lessons learnt.
- Involve persons who are expert in participatory management alongside with experts in engineering, ecology and so on (Krywkow 2009).

Based on the conclusions, we intend to pay in subsequent case studies more attention to learning processes. What did Dutch actors learn about the Romanian context? What did Romanian actors learn about Dutch expertise? To what extent did institutional learning, besides strategic and cognitive learning, play a role? This is expected to provide additional insights in the application of Dutch expertise in solving water projects in Romania. In addition, a separate analysis will be undertaken regarding the governance system for flood risk management in Romania.

References

Beroggi, G. E. G. (2000). "Employing analytic tools in large-scale engineering public policy-making." *International Journal of Technology Management*, 19(3), 336-356.

Bressers, H. (2004). "Implementing sustainable development: How to know what works, where, when and how." In: W. M. Lafferty, ed., Governance for sustainable development: the challenge of adapting form to function, Edward Elgar Publishing, Cheltenham, 284-318.

Bressers, H., Fuchs, D., and Kuks, S. (2004). "Institutional Resource Regimes and Sustainability: Theoretical backgrounds and hypotheses." In: H. Bressers and S. Kuks, eds., Integrated Governance and Water Basin Management: Conditions for Regime Change towards Sustainability, Kluwer Academic Pub, The Netherlands, 23-60.

Bressers, H. T. A. (2007). "Contextual Interaction Theory and the issue of boundary definition: Governance and the motivation, cognitions and resources of actors." *External report ISBP EU-project, ISSN 1381-6357*, CSTM series Studies and Reports No. 323, Enschede.

Bressers, H. T. A. (forthcoming 2009). "From public administration to policy networks: Contextual interaction analysis." In: S. Nahrath and F. Varone, eds., Rediscovering Public Law and Public Administration in Comparative Policy Analysis: Tribute to Peter Knoepfel.

Bressers, H. T. A., and Xue, Y. (2007). "The feasibility of environmental negotiated agreements in China." *International Journal of Environment and Sustainable Development*, 6(3), 221-241.

Dinica, V. (2007). "An institutional analysis of water management issues in the Teleorman county, Romania." *CSTM Studies and Reports nr. 320*, CSTM, University of Twente, Enschede, The Netherlands.

Dragos, D. C., and Neamtu, B. (2007). "Reforming local public administration in Romania: trends and obstacles." *International Review of Administrative Sciences*, 73(4), 629-648.

Dul, J., and Hak, T. (2007). *Case study methodology in business research*, Butterworth-Heinemann, Burlington.

Edelenbos, J., and Klijn, E. H. (2006). "Managing stakeholder involvement in decision making: A comparative analysis of six interactive processes in the Netherlands." *Journal Of Public Administration Research And Theory*, 16(3), 417-446.

Eshuis, J., and Stuiver, M. (2005). "Learning in context through conflict and alignment: Farmers and scientists in search of sustainable agriculture." *Agriculture And Human Values*, 22(2), 137-148.

Gerring, J. (2006). *Case Study Research: Principles and Practices*, Cambridge University Press, Cambridge.

Gummesson, E. (2000). *Qualitative methods in management research*, Sage Publications, Inc., Thousand Oaks.

Hommes, S., Vinke-de Kruijf, J., Otter, H. S., and Bouma, G. (2009). "Knowledge and Perceptions in Participatory Policy Processes: Lessons from the Delta-region in the Netherlands." *Water Resources Management*, 23(8), 1641-1663.

Hoogerwerf, A., and Herweijer, M. (2003). *Overheidsbeleid: een inleiding in de beleidswetenschap*, Kluwer.

Ison, R., Röling, N., and Watson, D. (2007). "Challenges to science and society in the sustainable management and use of water: investigating the role of social learning." *Environmental Science and Policy*, 10(6), 499-511.

Koppenjan, J. F. M., and Klijn, E. (2004). *Managing uncertainties in networks: a network approach to problem solving and decision making* Routledge, London.

Krywkow, J. (2009). "A Methodological Framework for Participatory Processes in Water Resources Management," University of Twente, Enschede, the Netherlands.

Leeuwis, C. (2000). "Reconceptualizing Participation for Sustainable Rural Development: Towards a Negotiation Approach." *Development and Change*, 31(5), 931-959.
Leeuwis, C., and Van den Ban, A. W. (2004). *Communication for Rural Innovation: Rethinking Agricultural Extension*, Blackwell Science Ltd, Oxford.
Min. V&W. (2007). "Safeguarding our future: the government's vision of national water policy." Ministry of Transport Public Works and Water Management (Min V&W).
Mostert, E., Pahl-Wostl, C., Rees, Y., Searle, B., Tàbara, D., and Tippett, J. (2007). "Social Learning in European River-Basin Management: Barriers and Fostering Mechanisms from 10 River Basins." *Ecology and Society*, 12(1), 19. Retrieved from http://www.ecologyandsociety.org/vol12/iss1/art19/
Muro, M., and Jeffrey, P. (2008). "A critical review of the theory and application of social learning in participatory natural resource management processes." *Journal of Environmental Planning and Management*, 51(3), 325-344.
Nieuwaal, M., and De Hamer, W. (2007). "Water Retention Plan Calnistea Catchment." *9R6217B1/R001/901711/Nijm*, Haskoning Nederland.
Nooteboom, B. (2000). "Learning by interaction: absorptive capacity, cognitive distance and governance." *Journal of Management and Governance*, 4(1), 69-92.
Owens, K. A. (2008). "Understanding how actors influence policy implementation; a comparative study of wetland restorations in New Jersey, Oregon, The Netherlands and Finland," PhD thesis, Universiteit Twente, Enschede, The Netherlands.
Pahl-Wostl, C., Craps, M., Dewulf, A., Mostert, E., Tabara, D., and Taillieu, T. (2007a). "Social learning and water resources management." *Ecology and Society*, 12(2), 5. Retrieved from http://www.ecologyandsociety.org/vol12/iss2/art5/
Pahl-Wostl, C., Sendzimir, J., Jeffrey, P., Aerts, J., Berkamp, G., and Cross, K. (2007b). "Managing Change toward Adaptive Water Management through Social Learning." *Ecology and Society*, 12(2), 30. Retrieved from http://www.ecologyandsociety.org/vol12/iss2/art30/
Partners for Water. (2009). "Website Partners for Water." Retrieved12 August 2009, from www.partnersvoorwater.nl
Van Buuren, M. W. (2006). "Competente besluitvorming - Het management van meervoudige kennis in ruimtelijke ontwikkelingsprocessen (in Dutch)," PhD-thesis, Erasmus University, Rotterdam, The Netherlands.
Van de Graaf, H., and Hoppe, R. (1996). *Beleid en politiek: een inleiding tot de beleidswetenschap en de beleidskunde (in Dutch)*, Coutinho, Bussum
Van de Ven, A. H. (2007). *Engaged Scholarship: A Guide for Organizational and Social Research*, Oxford University Press, Oxford.
Van Maanen, J., Sorensen, J. B., and Mitchell, T. R. (2007). "The interplay between theory and method." *Academy of Management Review*, 32(4), 1145-1154.
Vinke-de Kruijf, J. (2009). "Applying Dutch Water Expertise Abroad: How to Contribute Effectively in the Romanian Context. Theoretical Framework." *CE&M research report 2009R-002/WEM-002*, University of Twente, Enschede, the Netherlands.
VNG International. (2009). "Internationaal beleid van provincies: van ontwikkelingssamenwerking naar internationale samenwerking." Zijlstra Drukwerk, Rijswijk.
Water Board Groot Salland. (2009). "Motieven voor internationale samenwerking." Retrieved12 August 2009, from http://www.wgs.nl/informatie/uw_waterschap/buitenland/motieven_voor
WaterForum Online. (2005). "Overijssel wil Roemenie te hulp schieten na overstromingen." Retrieved12 August 2009, from www.waterforum.net
Wesselink, A. J. (2007). "Integraal waterbeheer: de verweving van expertise en belangen (In Dutch)," PhD thesis, Univerisity of Twente, Enschede.
Yin, R. K. (2009). *Case study research: design and methods*, Sage Publications, Thousand Oaks, California.

Annex A – List of interviews and project documents

In the period January-May 2009 the researcher conducted interviews with key stakeholders involved. The purpose of these interviews was to provide more insight in the development of the process. The length of the interviews varied from 90 to 150 minutes. Most interviews were held in English except for the interview at T-WMS. This interview was translated by Mrs. Vasile who was also involved as a translator during the project.

Organization	Respondent	Role	Place and date
Royal Haskoning	Alex Hooijer	Involved since 2007 and project leader since September 2007	Nijmegen (NL), 22 January 2009
Province of Overijssel	Leo Hendriks; Hermen Klomp	Head of Water & Soil Dept; Coordinator Romania programme	Zwolle (NL), 23 January 2009
Teleorman County Council	Irina Feleaga	Employee at T-CC Department for International and External Cooperation (beneficiary)	Alexandria (RO), 13 April 2009
Water Management Centre	Dana Banu	Director WMC, advisory role in project	Turnu Magurele (RO), 13 April 2009
Water Directorate Arges-Vedea	Cristian Barbu	Head of Dept. of Dispatch and Defence against Flooding	Pitesti (RO), 28 April 2009
Teleorman Water Management System	Mr. Velea	Director of T-WMS	Alexandria (RO), 4 May 2009

The project resulted in thirteen project reports. Most of these reports relate to one of the following project components: (I) Flood risk maps; (II) Flood risk management plan; (III) Guidelines and demonstration project; (IV) Institutional analysis; and (V) Supplementary activities. For each project report, the completion date, name and related project component are summarized in the table below.

Project comp.	Date	Report No. and title (organization that prepared the report)
	January 2006	1. Selection of the project area (Haskoning NL)
I	June 2007	2. Lidar Teleorman (Terra Imaging)
I	January 2008	3. Calnistea river basin synthetic floods (TUCB)
I	November 2007	4. Hydraulic modelling and flood hazard mapping (Haskoning NL)
I	January 2008	5. Flood risk mapping: Guidelines and application to the Calnistea river basin (Haskoning NL)
II	August 2007	6. Calnistea river basin water balance (TUCB)
II	August 2007	7. Calnistea basin environmental study (Haskoning RO)
I	February 2008	8. Calnistea basin: socio-economic report (Haskoning RO)
III	January 2008	9. Flood risk reducing measures: guidelines and application to the Calnistea basin (Haskoning NL)
II	July 2007	10. Options for rehabilitation of the Botoroaga dam (Haskoning NL)
IV	July 2007	11. Institutional analysis of flood prevention and management issues applicable to the Teleorman county (University of Twente)
V	December 2007	12. Water retention plan Calnistea catchment (Haskoning NL)
II	December 2007	13. Calnistea river basin irrigation options (TUCB)

The following progress reports were prepared for Partners for Water. The reports are written in Dutch and prepared by the project leader of Royal Haskoning in Nijmegen, the Netherlands.

Author	Date	Title (in short)
Sutmuller	2 January 2007	Inception Report
Sutmuller	1 juli 2007	Progress report 1
Hooijer	31 October 2007	Progress report 2
Hooijer	15 March 2008	Progress report 3
Hooijer	31 August 2008	Progress report 4
Hooijer	31 December 2008	Progress report 5